

ENTOMOLOGIST

At Chicago, Illinois

GENERAL ENTOMOLOGY

EDITED BY THOMAS M. ALDRICH

Volume 1, No. 1

Published by the Entomological Society of America
1914

Subscription price, \$1.00 per annum in advance

THOMAS M. ALDRICH



Published by the Entomological Society of America, 1914

THE
ENTOMOLOGIST

An Illustrated Journal

OF

GENERAL ENTOMOLOGY.

12
581

EDITED BY RICHARD SOUTH, F.E.S.

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WEST, NEWMAN & CO., 54, HATTON GARDEN,

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Vol. XLIII.]

JANUARY, 1910.

[No. 560.

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THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

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CICADETTA MONTANA.
NYMPH-CASES AND IMAGINES.

THE ENTOMOLOGIST

VOL. XLIII.]

JANUARY, 1910.

[No. 560

CICADETTA MONTANA.

BY G. LYLE.

(PLATE I.)

Cicada montana, Scop. = *C. hæmatodes*, Linn. = *C. orni*, Sulz.
= *C. tibialis*, Latr. = *C. anglica*, Sam. Ent. Comp. et
Curt. Brit. Ent.

FROM Homer downwards poets have sung the praises of the Cicada, though possibly cicadas and grasshoppers were not distinguished by the ancients, and the words of the poet in honour of Tettix, the singer, may refer as much to the one as to the other.

In this country, however, the Cicada appears to have been discovered at about the date of the Battle of Waterloo, and probably the first reference to the species as British occurs in Samouille's 'Ent. Useful Compendium,' published in 1819, where we read: "The only species known to inhabit this country was lately discovered by Mr. Daniel Bydder, near the New Forest" (*in* the New Forest according to Kirby & Spence). Swainson (1835) mentions *C. anglica* as the only British species. Westwood (Class. vol. ii. p. 426, 1834) tells us very little more than that it is found in the New Forest; that a female was kept in captivity by Dale for two or three days; that Curtis's name is supposed to be synonymous with *C. hæmatodes*; and that Weaver found the pupa-case attached by the legs to a stem of a fern, upon the roots of which he, as well as Curtis, supposed that the larva feeds.

Abel Ingpen, "A.L.S. & M.E.S.," gives it among the special rarities to be taken in the New Forest, in his 'Instructions' of 1839. J. R. Wise, in his 'History of the New Forest' (1862), tells us that it was taken in June, 1858, by a Mr. Farren, who was attracted to it by its peculiar monotonous humming noise. On June 2nd, 1862, he captured two others, which rose from the fern, and at the same time heard two more.

Houghton says, in his 'Sketches' (1877, p. 35): "The English Cicada (*C. anglica*)"—rather well figured at pl. i. fig. 1—

"has been occasionally seen in great numbers in the New Forest," while Dallas puts it pretty clearly in his 'Elements' at p. 408. He says: "We have only a single British representative; this is *Cicada hæmatodes*, an insect of great rarity in Britain, being only found in the New Forest, and even there it seems to be of very uncommon occurrence."

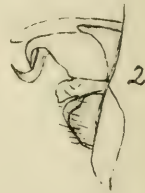
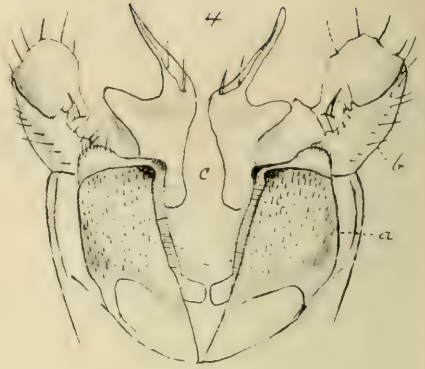
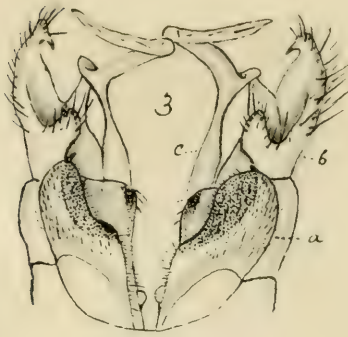
According to a local guide-book, a nymph was bought from a collector in the forest by Mr. A. Piffard, of Hemel Hempstead, in 1881.

A specimen was exhibited at a meeting of the South London Entomological Society, on August 13th, 1896, said to have been one of three taken by Mr. Heasler, in Surrey, he having been attracted to it by its song; and the late Mr. C. G. Barrett records it from the same county (E. M. M. vol. i. 1864-1865); these, so far as I know, are the only records of captures outside the New Forest.

My first introduction to the Cicada occurred on June 26th, 1901, when I netted a specimen on the wing near Lady Cross, Brockenhurst, and for some years I saw nothing more of it; but in 1907 Mr. C. W. Colthrup informed me that on June 11th, 1901, he took a female apparently just emerged, and sitting on its pupa-case, chirping merrily, at about 11.30 a.m. He suggested that we should pay a visit to the locality, with a view to obtaining other specimens. This we did on June 12th, 1907, the day being wet and windy. Although no imagines were forthcoming, we soon found three of the empty nymph-cases lying loose but undamaged on the grass, showing that the insects had but recently emerged.

A dry sunny bank, with a south-westerly aspect and light soil, covered with rabbit-cropped grass, dwarf bracken, and stunted heather, and overhung by pine-trees, appears to be the metropolis of the Cicada. This spot has clearly been occupied by it for many years, Dr. D. Sharp having informed me that he took it there in the seventies. Referring to this locality, Mr. Claude Morley says (*in litt.*, August 20th, 1909): "On June 16th, 1907, I took a pair *in cop.* on bracken-stem: this pair I was able to trace by their song. They were sitting *in cop.* on the stem of a bracken, close to the ground. It would almost appear as though this copulation had taken place immediately upon emergence from the nymph, though, if such be the usual course, of what use is the song?" He also mentions that in 1907 he heard the species "singing," or, rather, "whistling," in several different parts of the forest, and that all the others appeared, without exception, to be in trees.

In 1908 I searched the spot thoroughly on June 7th, in company Mr. W. J. Lucas, but neither of us could meet with any trace of the Cicada. During the past summer, however, the Fates have been more propitious, for on June 11th four



empty nymph-cases were found, and six more within the next few days. Of these, six were lying on the turf, two were hanging from blades of grass, while the remaining two were firmly attached to the stalks of bracken some two or three inches above the ground, in a manner similar to that in which the nymph-cases of many dragonflies are to be found. It seems clear that the last four were in the position that the nymphs themselves assumed, the others having probably been dislodged by rabbits or other browsing animals. Although none of the imagines were found actually at this spot, four (two males and two females) were captured in the near neighbourhood.

The following particulars regarding the nymph-cases may be of interest:—

Length of male, 15.5 mm.; female, 20 mm. Length of wing-case: female, 7 mm.; male, 5.5 mm. Dorsal split along head and thorax, through which the imagines have escaped. Surface slightly pubescent, especially ventral surface of abdomen and legs. Colour pale ochre, with dark dorsal bands at the sutures. The fore legs are modified for digging, somewhat as in the mole-cricket, and in every case soil was adhering to them. The tongue appendage and wing-cases are free, as, of course, are the legs, and traces of the ovipositor may be discerned in the female.

My best thanks are due to Dr. D. Sharp and Messrs. C. W. Colthrup, W. J. Lucas, and Claude Morley, for kind help in the preparation of these notes.

A NEW SPECIES OF *POLYCENTROPUS* (TRICHOPTERA).

BY KENNETH J. MORTON, F.E.S.

(PLATE II.)

In a small lot of Neuroptera (in the Linnean sense), collected by the Rev. A. E. Eaton in the Pyrenees in 1905, and kindly presented by him to me, there are included three specimens of a *Polycentropus* which is evidently undescribed, and which possesses appendages very different from those of any of the other known species.

McLachlan (Mon. Rev. and Syn., first additional supplement, p. 54) gave up the attempt to describe the insects of this genus from general characters, and relied entirely on the appendages as a means of separating the species. He found it practically impossible to give any intelligible description based on form, colour, and size. The present species is quite as ordinary looking as the others, while it takes a foremost place with respect to the peculiar structure of the appendages.

Polycentropus intricatus, n. sp.

Anterior wings fuscous, thickly irrorated with golden yellow spots, the dark portions of the anterior wings, especially the spots on the costal margin, being rather pronounced, as in *P. kingi*. In the male the dorsal plate, in dried specimens, is gradually dilated to the apex, which is shallowly excised for the greater part of the hind margin. At the base, on either side, is a small triangular lobe. The superior appendages are elongate, their form best seen from beneath, concave, with a basal, inwardly directed process with rounded apex; the tips inturned and hooked. Intermediate appendages slender, first divergent then approximated, and afterwards abruptly turned outwards. Inferior appendages obtuse, concave; on the inferior apical portion punctate in a prepared example. Expanse of anterior wings, 14–16 mm.

Laruns, September 3rd and 4th.

In studying this new species I had occasion to make preparations of all the European forms of which I possessed adequate material, including all the described species excepting those which are known exclusively from the Iberian peninsula. The figures given here (3 to 7) show the apex of the abdomen from the under side. The dorsal plate is not shown at all. This plate (tenth tergite) is in the genus a rather thin, membranous structure, liable to shrivel when treated with caustic potash, and also, from its transparency, sometimes difficult to define. The parts shown are the inferior appendages (genital feet of Klapálek and others), the superior appendages (*appendices præanales*), and, lastly, what McLachlan termed the intermediate appendages ("chitingräten" of Ulmer). The genital feet and the *appendices præanales* are the true genital appendages, and are attached to the ninth abdominal segment. The "chitingräten" are probably *processes* of the tenth segment. The term "intermediate appendages" employed by McLachlan has no definite morphological meaning, having been used by him to designate different parts in different groups or genera.

In the figure of *flavomaculatus* the *appendices præanales* are not shown. In fig. 2 alone is the penis indicated.

EXPLANATION OF FIGURES.

1. *Polycentropus intricatus*, n. sp. Apex of abdomen from above.
2. " " " " " " from side.
3. " " " " Apex of abdomen from beneath (more enlarged).
4. *P. kingi*, McLach. Apex of abdomen from beneath (more enlarged).
5. *P. excisus*, Klapálek. " " "
6. *P. multiguttatus*, Curt. " " "
7. *P. flavomaculatus*, Piet. " " "

a, inferior appendages; b, superior appendages; c, intermediate appendages.

ON THE GENUS *ZETHENIA*; WITH DESCRIPTION OF A NEW SPECIES.

BY LOUIS B. PROUT, F.E.S.

THE eastern Asiatic genus *Zethenia* (family Geometridæ) was established by Motschulsky in a paper on Insects from Japan in Et. Ent. ix. p. 34 (1860), and was well re-characterized by Meyrick (as *Zettienia*—name wrongly written) in Trans. Ent. Soc. Lond. 1892, p. 102; so that I need not discuss generic characters, beyond mentioning that I find the normal base of the first subcostal of the fore wing often weak or obsolete, leaving this vein to arise apparently out of the costal, as in the genus *Gyadroma*, Swinhoe—which, indeed, might perhaps be treated as a subgenus of *Zethenia*, differing only in secondary sexual structures on the male hind wing.

The type of the genus is, of course, *Z. rufescentaria*, Motsch. = *consociaria*, Christ. I do not know on what ground Staudinger queries Motschulsky's older name; if he means that he cannot determine it at all I would suggest that it is illogical to use the generic name *Zethenia* for other species than Motschulsky's; if he merely wishes to indicate a doubt whether the Japanese form is co-specific with that of the mainland (*consociaria*), he should have catalogued the two provisionally separately, or at least omitted Japan from the given range of the latter; but I would submit that his excellent figure in vol. x. of 'Iris' sets the identity of the Amur and Japanese forms at rest.

The second species made known to science was *albonotaria*, Bremer, described as a *Selenia*, from East Siberia. Its range is similar to that of *rufescentaria*, and Bremer (ignorant of Motschulsky's work) treated the last-named as "var. c" of *albonotaria*, while Staudinger suggests that the two are perhaps "Darwinian forms." I see no necessity for this, though admittedly the alliance is very close. To me they are full "species," and Mr. A. E. Wileman, who collected for about fourteen years in Japan, and used to beat out both species in abundance, tells me that he never saw any reason to doubt their distinctness. He found *rufescentaria* the more abundant of the two. I may point out that it is, on the average, the smaller species, has the elbow in the margin of the fore wing (at end of second radial) somewhat less strongly pronounced, usually has the discal spot of hind wing larger and more conspicuous, and the postmedial line of both wings developed (whereas in *albonotaria* it is expressed by mere series of vein-dots), and never possesses the characteristic mark between third radial and first median, which is never absent in *albonotaria*, and which gave it its name. Christoph also mentions that the antenna in *albonotaria* is much more shortly ciliated, and that this

species lacks a row of terminal dots which are present in *rufescentaria*.

A third genuine *Zethenia* (for Staudinger's other two are entirely out of place here) was described from China by Leech in 1897 as *contiguaria* (Ann. Mag. Nat. Hist. (6) xix. p. 223). In addition to its dark colour it is quite easily known from the two older species by the more gently convex (not elbowed) termen of the fore wing, and by characteristic pale marks between submedian and first median veins (veins 1-3) at the postmedial line. Warren's *Z. obscura* (Nov. Zool. vi. p. 66) from Formosa is either a synonym of *contiguaria* (so Swinhoe, Trans. Ent. Soc. Lond. 1902, p. 613), or at most a slight geographical race. Perhaps the termen of fore wing is even less convex (or less concave below the apex), and if it be separable on this ground a female from Chekiang in coll. Brit. Mus. should be associated with it. Bastelberger, in his new Catalogue of the Geometridæ of Formosa, records only one *Zethenia*—*Z. rufescentaria*—one in good condition in coll. Moltrecht ('Iris,' xxii. p. 175). No description is given, but it hardly seems likely that he took a *contiguaria* (*obscura*) for a form of *rufescentaria*.

Before describing the new species I may add that Leech, in his well-known paper, briefly mentions two aberrational forms. *Z. rufescentaria* var. [ab.] *grisearia*, Leech (Ann. Mag. Nat. Hist. (6), xix. 223), refers to the greyer forms, which often have the central area darkened; these seem more frequent in the female, the redder forms in the male, but the variation is not wholly sexual; the name can therefore stand as aberrational, *consociaria* being mainly synonymous with type (see Bull. Mosc. 1880 (2), p. 68). The other aberration mentioned (*loc. cit.*), and which Leech was mistaken in supposing to be Christoph's *consociaria*, consisted of two light specimens which are still traceable in his collection, and which must have been studied less closely than most of his material; one of the specimens (from Nagasaki) is a light *albonotaria*; the other (from Ningpo) belongs to the new species (see below).

ZETHENIA INACCEPTA (Warren MS.), mihi, nov. sp.

♂ ♀, 40 mm. Wings shaped nearly as in *Z. contiguaria*, Leech; apex of fore wing acute, distal margin straight or faintly sinuate inwards below apex, slightly gibbous behind cell; distal margin of hind wing somewhat crenulate, but less strongly than in *albonotaria*. Ground colour pale yellowish brown (slightly yellower in the male), densely irrorated with purplish fuscous, the fuscous scales absorbing nearly the entire marginal area of fore wing for a breadth of about 5 mm., in the male leaving only a few apical scales of the ground colour, in the female a conspicuous pale apical mark, and irregular pale markings elsewhere in this dark area; male in addition strongly clouded with purplish fuscous over the greater part of fore wing, and nearly the whole of hind wing (variable in individual specimens), tending to

leave pale patches behind median shade of fore wing (from costa nearly to third radial, and again from first median to inner margin), and narrowly behind postmedial line of hind wing. Discal spots blackish, rather distinct. Transverse lines inconspicuous, the most noticeable being the median shade, which, on hind wing, passes *behind* discal spot (as in *contiguaria*), not across it, as is so usual in *rufescentaria* and *albonotaria*; inner line scarcely traceable, indicated by one or two blackish dots, outer (postmedial) by rows of blackish vein-dots, these being rather distinct towards costa of (or rarely throughout) fore wing and throughout hind wing. Under side practically identical with upper.

Types (male, August 2nd, 1909; female, August 26th, 1909) from Chungking, Szechuan, China, in coll. L. B. Prout; collected by Mr. Barry, presented by Dr. M. Culpin, of Shanghai. Dr. Culpin also sent another pair, precisely similar but somewhat worn, taken at the same place on August 14th, 1909. The species must be widely distributed, at least along the Yang-tse-kiang, but it is somewhat interesting that the only known localities, though separated by nearly nine hundred miles, agree almost precisely in latitude. Besides the four specimens in my collection, from which the description has been made, I know three only, all in the British Museum. Two males, labelled Chekiang, collected by Pryer, and bearing the MS. name of *inaccepta*, Warr., which I have adopted, are clearly co-specific, though somewhat more variegated than the type-form, and one somewhat redder in tone; they did not come through the Leech collection, but were, on the presentation of that collection, merged in the series of *contiguaria*, from which they differ in the pale apex, absence of white mark at postmedial line, weakly marked under surface, &c. One almost typical female, from Ningpo (Leech coll.), has been mentioned above, as Leech had it mixed with a similarly coloured aberration of *albonotaria* as possibly representing Christoph's *consociaria*.

ON A NEW SPECIES OF PARASITIC BEE (*NOMADA*) FROM BORNEO.

BY P. CAMERON.

Nomada testaceobalteata, sp. n.

Head, antennæ, and abdomen black; the apex of the first abdominal segment, the basal two-thirds of the second, the apex of the last and the greater part of the ventral segments, dark testaceous, the thorax rufous; the legs black, the femora broadly testaceous. Wings hyaline, the nervures and stigma black, the apex with a narrow but distinct blackish cloud. Face, clypeus, apical half of metanotum and pleuræ densely covered with silvery white pubescence. ♂. Length, 4 mm.

Kuching (Mr. John Hewitt, B.A.).

The mandibles are of a paler rufo-testaceous colour than the face. Front and vertex closely strongly punctured. Temples straight, sharply obliquely narrowed. Occiput transverse, margined, as is also the base of the pronotum. Mesonotum and scutellum closely distinctly punctured, the sides of the former depressed. Apex of scutellum obliquely sloped. Metanotal area large, reaching almost to the apex, its base finely closely punctured, the apex smooth and shining; the sides and apex of metanotum are finely distinctly aciculated. First abscissa of radius longer than the following two united, the second about one-fourth longer than the third. There is a distinct keel between the antennæ, projecting clearly above and below them. Apex of clypeus bluntly broadly rounded. Flagellum of antennæ dark brownish below. Abdomen smooth, the basal segments more smooth and shining than the others.

Allied to *N. adusta*, Sm.

THE *ATHALIA* GROUP OF THE GENUS *MELITÆA*.

BY REV. GEORGE WHEELER, M.A., F.E.S.

(Continued from vol. xlii. p. 152.)

BEFORE speaking of the unnamed forms of aberration in this group it will be well to mention one named variety of *M. deione* which had hitherto escaped my notice, viz. var. *nevadensis*, Obth., 'Etudes de la Lepidoptérologie comparée,' i. p. 15 (1904), of which he writes as follows:—* "Elle se distingue par une tinte plus pâle en dessus comme en dessous; par les lignes transversales médianes des quatre ailes plus anguleuses; par l'absence, sur les ailes inférieures en dessous, près de la base, de la coloration fauve qui, dans tous les autres exemplaires, remplit, du bord costal au bord anal des ailes, un espace compris entre deux lignes noires et au centre duquel reste une tache chamois clair, c'est-à-dire de la couleur du fond des ailes." In other words, the inner dark band un. s. h. w. is wanting, and the central and basal bands and the light spots coalesce, except for the usual bordering black lines. These specimens were of the second brood, and were taken at a considerable height in the Sierra Nevada.

This is not a very unusual form of aberration in several species, especially when less completely carried out; I have seen it more or less completely in *athalia*, *parthenie* (especially Italian

* It is distinguished by a paler tint above and below, by the more angular transverse median lines on all four wings, by the absence on the hind wings, under side, near the base, of the fulvous colouring, which in all other specimens fills, from the costa to the inner margin, a space enclosed between two black lines, and in the centre of which is a spot of clear yellow, i. e. of the ground colour of the wings.

specimens), and *asteria*, and the same tendency shows itself occasionally even in *dictynna* and *britomartis*. I do not, however, remember to have seen it either in *aurelia* or *varia*, and certainly have not done so in the case either of *berisalensis* or of *dictynnoides*. An opposite form of aberration in which this inner band is enlarged at the expense of the basal band and the light spot, and sometimes of the central band also, is occasionally to be seen in all the species, but is more usual in *aurelia*, *varia*, and the others in which the lighter aberration is least common. A great difference in facies is produced by the great difference which exists in the breadth of the central band, and in the comparative breadth of the two parts into which it is normally divided, though the latter observation does not, of course, refer to *deione* and *asteria*, in which the two divisions are of the same shade. A not uncommon form of aberration, especially in *athalia*, is the absence of the division in this band; in cases where the band itself is also unusually broad the effect is almost startling; there is a magnificent example of this in the National Collection. The other bands of the un. s. h. w. are also liable to great differences in breadth and intensity of colour, especially perhaps in the size of the lunular portion of the terminal band. I have already mentioned the tendency of the light spot to coalesce with the third spot of the basal band. I have seen this occur in every species, and possess examples of it in all except *asteria*. The principal, if not the only, forms of aberration on the f. w. un. s. consist in the intensification or obsolescence of the black markings, and of the number of, and the greater or less prominence given to, the light submarginal lunules.

On the upper side the greater or less breadth of the black markings, their obsolescence or exaggeration into melanism, their sharpness or suffusion, and to a less extent their angulation, form one great cause of aberration, the other is the intensity and the variegation of the ground colour. All these forms of aberration are, to some extent at least, common to all the species, but I think it may be safely asserted that variegation in the ground colour is confined in *this group* to the female. A very wide and difficult question is opened up by the approaches made, individually or racially, by one species towards another, but this will perhaps be best dealt with in considering the range of variation in each species.

As *athalia* is at present the dominant species in Europe, and is also that to which all the other species except those of the high mountains, viz. *asteria* and *varia*, are usually considered to approach most nearly, it will be well to take it first. With very few exceptions it seems hopeless to give characteristics for local races of this species for three reasons: first, because in many localities such different forms are found together; secondly,

because in other places neighbouring valleys produce such distinctive forms that one would require a detailed knowledge of all localities to cope with them; and thirdly, because no sooner does one seem to have discovered a rule than it is upset by the next piece of knowledge acquired on the subject. As an example of the first difficulty I may refer to the specimens bred by Mr. South from North Devon larvæ, which were exhibited at the South London Society, and of which an account may be seen in the 'Proceedings' of that Society for 1885, p. 33; with them were exhibited specimens of Swiss *aurelia*, *parthenic*, and *dictynna* to show how these English specimens approached in different instances one or other of these forms. These specimens having been long dispersed I have been unable to see them, but the facts adduced, together with Kane's comments on them (Entom. xix. p. 145, 1886), are a striking example of the difficulty referred to. With regard to the differences between neighbouring localities I may mention the forms found in the valley of the Avençon behind Bex, and in the little valley behind Lavey-les-Bains, the very next opening from the Rhone Valley, and on the same side of it; the specimens from the first locality being large and bright, and the black markings of fairly even breadth, those from the other being small, of a rather pale ground colour, and the black markings having a tendency to form broadish central and narrow outer lines. This may be accounted for by the fact that the valley of the Avençon is moist and the other dry, so that the food-plant in the former is juicier and more nutritive than in the latter. With regard to the third difficulty, I may adduce the observation of Rühl and other Swiss authors to the effect that in Tessin and Lombardy (and generally south of the Alps) the tendency is to decrease in size. Now this was thoroughly borne out by my own experience, my specimens from Cadenabbia and Reazzino entirely conforming with the rule, but in the National Collection are a pair from Vallombrosa quite as large as the average of the Rhone Valley, and not differing in colour or markings from many of the brighter specimens from that part of Switzerland; and, worse still, Mr. Lowe has this year brought home, from Reazzino, large and brilliantly coloured examples, which upset not only my rule, but my actual previous personal experience! Again, however, it is possible that these facts may be accounted for. The localities both at Cadenabbia and Reazzino where I took my specimens were very dry; now much of the neighbourhood of the latter place is very moist, not to say marshy, and, as Mr. Lowe also brought back specimens of *britomartis*, which is confined to the marshy parts, it is very likely that his *athalia* came from the same spot; and, whilst Cadenabbia is dry, Vallombrosa is not. Furthermore, it is a curious fact, for which I am not yet able to account, that the forms of Central Italy are far less southern (paradoxical as it

sounds) than those of the lake district of the north—*Pararge mæra*, e. g. does not approach var. *adrasta*, nor *Argynnis adippe* var. *cleodoxa*, or even *intermedia*.

It will then be readily seen that such approaches to race characters as can be given are merely indicative of a general tendency, and cannot be applied to every individual case. Scandinavian specimens do not seem to differ greatly from average English ones, but are rather lightly marked, and have a slightly paler ground colour; these tendencies are rather more strongly marked in specimens from the neighbourhood of St. Petersburg, which are moreover rather larger. English specimens are, as a rule, smaller than the plain form of Germany and Switzerland, but rather larger than those found in the mountains; the latter are also in general somewhat more heavily marked. In the lower Misox Valley, e. g. at Cama, a rather unusually bright form is found with a divided marginal blotch, and I have already alluded to the form at Faïdo, in the Leventina, where the elbowed line is so thickened as to bring to mind the var. *mehadiensis* of South-eastern Hungary; the Leventina form is, however, rather small. The Hungarian form just mentioned is, on the other hand, large as well as brilliant in ground colour, and heavily marked. This form is exaggerated in Bulgaria, and except as to size in Bosnia; the borders being sometimes so broad as scarcely to show the fulvous lunules, thus approaching *deione* var. *berisalensis*; this form is very fine and striking. The form from Bukowina, on the contrary, is small, heavily marked and dull, and, notwithstanding the shape of the wings, I should have taken it for a form of *dictynnoides* had it not been for the biological distinctions given by Hormuzaki (vol. xlii. p. 6). I have seen nothing from Spain which bears out Staudinger's description of var. *iberica*; four of the six specimens so labelled at the present moment in the National Collection are certainly *parthenie*, of a rather usual form, and the other two, though not heavily marked, are not paler in ground colour nor larger than usual. The females from the Pyrenees have a lighter ground colour, but are smaller than the average, as are the males, and both sexes are also rather heavily shaded with black.

ON TWO OF FRED. SMITH'S SPECIES OF JAPANESE ICHNEUMONIDÆ.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

THROUGH the generosity of Mr. A. E. Wileman, the British Museum has just acquired the second known specimen of *Pimpla luctuosa*, Smith (Trans. Ent. Soc. 1874, p. 394). I have examined the type, brought forward by Smith in his "Descriptions of New

Species of Tenthredinidæ, Ichneumonidæ, Chrysididæ, Formicidæ, &c., of Japan" (*loc. cit.*), which is in the General Collection. Smith gives but a very short description, which is, however, rendered sufficient by his remark that "this species very closely resembles the *Pimpla æthiops* of Europe"; this is perfectly true and a comparison of the new specimen with the type and the latter species in the British Collection proves its identity with the former. The female in question was bred on June 27th, 1901, from a larva of *Attacus (Philosamia) walkeri*, Feld., at Kobe, in Central Japan.

Mr. Wileman has also presented two males of *Protichneumon laminatorius*, Fab., bred by him at Kobe, in Central Japan, from the cosmopolitan Sphingid, *Macroglossa stellatarum*, Linn. Its occurrence in Asia is remarkable, though it has been known to occur at Yokohama, whence Kriechbaumer records three females (*Sitzb. Nat. Ges. Leipzig, 1895, p. 127*). These Japanese males, both of which have very faint traces of a flagellar band, differ from the European form only in their darker wings (as noticed, *loc. cit.*), with incrassate nervures, the basal nervure slightly more continuous through the median and the flavidous angles of the postpetiole. *P. laminatorius* has nowhere before been bred from this host, though the closely allied *P. fuscipennis*, Wesm., is known to prey upon it (*cf. my 'British Ichneumons,' i. 19*).

Fred. Smith says in his above-quoted paper that "it would be difficult to point out a specific difference" between *Ichneumon laminatorius* and his *I. cognatorius*, and does not attempt to do so, relying solely upon the different habitat to distinguish them. He gives three male and one female varieties, besides the type form, all of which are preserved in the General Collection. Their synonymy needs rectifying thus:—

I. COGNATORIUS, Smith, *Trans. Ent. Soc. 1874, p. 387*, male and female.—The single type is a large male with infumate wings, exactly resembling Wileman's specimens, except that the apical angles of the second segment are also narrowly pale. Taken by Lewis at Hiogo.

VAR. i.—A single large male, differing from the type only in having the wings less infumate, the face black with its orbits alone narrowly pale, and the flagellum broadly pale-banded. Captured with the type.

VAR. ii.—Three large females, undoubtedly those of the type form, and agreeing well with Kriechbaumer's description. One labelled "Hiogo. Var. 2; male," and all collected by Mr. R. Fortune in Japan."

VAR. iii.—This is an entirely distinct species from the above, belonging to the genus *Stenichneumon*, with its metanotal areola distinctly longer than broad but not rectangular.

ICHNEUMON FLAVITARSIS, Smith, *Trans. Ent. Soc. 1874, p. 389*.—This must be added to the above varieties, since it is a

small male, much resembling the British form, with hyaline wings, the nervures not incrassate and the basal normal, and the postpetiolar angles not pale; the tarsi are white, not flavous, marked. Taken at Hiogo by Lewis.

Thus, *PROTICHNEUMON LAMINATORIUS*, Fab. = *Ichneumon cognatorius*, Smith, excl. var. iii.

PROTICHNEUMON LAMINATORIUS, Fab. = *Ichneumon flavitarsis*, Smith.

STENICHNEUMON COGNATORIUS, Smith = *Ichneumon cognatorius*, Sm., var. iii. only.

British Museum (Nat. Hist.): Dec. 10th, 1909.

NOTES ON ODONATA OBSERVED IN GREAT BRITAIN DURING THE SUMMER OF 1908.

BY E. R. SPEYER, F.E.S.

THE summer of 1908 will always remain pre-eminent in my notes and observations on British Odonata, for not only have twenty-four species been obtained, but two of great interest and rarity have been taken, and five others, hitherto unrecorded by me, have been met with in comparatively large numbers. The discovery of a wonderful locality in Sussex accounted for no fewer than sixteen species in two days at the beginning of August, including one which has up till this year been found in Scotland only—as far as the British Isles are concerned.

The following is a list of the Odonata recorded, with notes on their duration of flight and any peculiarities in their bionomics which chanced to come under my observation:—

Sympetrum striolatum, Charp.—First taken on July 28th in a very immature condition at the Aldenham Reservoir, in Hertfordshire. At the beginning of August it was common round Tunbridge Wells, and on August 16th round Shenley. At the end of August it was exceptionally plentiful near Tunbridge Wells, and I then took specimens no larger than *S. sanguineum*. One male was taken in a gravel-pit near Shenley on September 15th, and this specimen was worn.

S. fonscolombii, Selys.—On June 24th I had the pleasure of capturing two males of this beautiful species in a rather worn condition near Shenley, Herts. I did not observe it again until July 27th, when I netted a female at the Aldenham Reservoir.

There seems little doubt that my specimens are migratory, and possibly belonged to a swarm which visited Switzerland this year. There have most probably been two movements, the second of which would account for the female I took in July.

So far as I know, this insect has not occurred in England since 1903, when Mr. Boyd took a single female in Cornwall ('Ent. Month. Mag.,' vol. 39, p. 201).

On July 29th I thought I saw another male at Aldenham, but I could not capture the insect.

Libellula depressa, Linn., was very common this year. A mature male was caught at Burnham Beeches on June 23rd while at rest on a tyre of my bicycle which was lying on the bank of one of the ponds there. On June 24th it was exceedingly abundant at Shenley, Herts. I distinctly saw a male and female in Ogwen Lake Valley, Carnarvonshire (North Wales) on June 25th. On July 12th I took a female near Shenley which showed obvious signs of blue powder on the abdomen. The last specimen taken was a blue female on August 4th near Tunbridge Wells, in Sussex.

L. quadrimaculata, Linn., has also been very abundant, and there are possibilities of a migration having taken place. It was observed in great numbers in June at the Capel Curig lakes, in North Wales, and many immature specimens were caught. Near Tunbridge Wells it was very common at the beginning of August. Having heard of a migration of dragonflies round Alderney, I at once communicated with my friend Sir William Parker, in the Isle of Wight, and he took a specimen of this species (the only dragonfly he saw), which has very little wing coloration, but it is not justifiable to assume that it was one of the swarm from Alderney.

The wing-suffusion in many specimens from North Wales was greatly marked, whereas many from Sussex had very little colouring on the wings, showing that there is no foundation in the theory that in more northerly regions the wing-suffusion is diminished, and in more southerly extended.

When on the wing I have repeatedly noticed that this dragonfly appears of a bright blue colour, and resembles the mature male of *L. depressa* very closely. This is probably due to the reflection of light from the abdomen of *L. quadrimaculata*, and is doubtless a case of two insects obtaining a similar colour-effect by different means; but the question as to whether the colour of both species is protective, or whether there is mimicry between the two insects, presents a problem difficult of solution, especially when regarding two animals so well equipped against the dangers which arise in their struggle for existence.

Orthetrum cærulescens, Fabr., was very common on August 4th and 5th in a marsh near Tunbridge Wells. The insect did not fly very fast, and was not difficult to net. I took several specimens with very dark wings, and there was a very wide range in the size of the male.

O. cancellatum, Linn.—Two specimens of this uncommon insect were obtained at the Aldenham Reservoir (Herts), a much

worn female on July 27th, and a fine male on July 29th. In addition to these, I believe I saw a male at Shenley on July 24th, but it may have been *Libellula depressa* male.

Somatochlora metallica, Van der Lind.—The fact that this insect had been found in what is practically a single locality in Scotland and nowhere else in the British Islands was a mystery in the geographical distribution of animals, and my discovery of it this year in a very restricted locality in Sussex has not gone very far to solve this mystery at present. However, I took this magnificent dragonfly in the above-mentioned county on August 3rd and 4th, and I observed it there in considerable numbers, though I did not come across the female. I first noticed the males flying round the trees and bushes which overhang the margins of certain large ponds near Tunbridge Wells, but afterwards I also saw them flying about high up in the woods and along the hedgerows in the close neighbourhood of these ponds. Settling very seldom and being peculiarly adept at avoiding the net, they were very difficult to capture, especially as the collecting-ground was treacherous. Along the hedgerows they flew with remarkable rapidity. Their food consisted of small flies, as far as I could make out. Another visit to the locality at the end of August was not wholly unsuccessful, for in addition to seeing a female which I was unable to capture, and which was ovipositing among some reeds, I saw other specimens. It seems highly probable to me, from my observations on this and the next species, that the green colour of the Corduliine Odonata is protective. It remains to be seen whether the insect has migrated from the Continent, but there is no reason for supposing this to be the case.

Cordulia aenea, Linn.—Two males were taken on June 23rd at Burnham Beeches, Bucks, where many others were seen flying at the tops of trees as well as over the water.

Cordulegaster annulatus, Latr., was fairly common in Carnarvonshire at the end of June, and I took several males near Tunbridge Wells on August 3rd and 4th. A female seen in Wales was ovipositing at about six o'clock in the evening in a stream of water by the side of the road, in which there was certainly not more than five millimetres depth of water.

Anax imperator, Leach.—On June 23rd several specimens were seen at Burnham Beeches, Bucks, and on June 24th a male and two females were captured in a gravel-pit near Shenley, Herts. The male mentioned was caught with a mature male *L. depressa* in its jaws (or perhaps it would be more accurate to say "in its legs," as the legs are used for catching the prey), showing how voracious this interesting insect is. Another observation, made in Sussex on August 4th, when several specimens were flying over a pond near Tunbridge Wells, seems to point to their love of killing apparently for their own amuse-

ment. Large numbers of white butterflies (*Pieris brassicæ* and *P. rapæ*) were flying across the water; these the *Anax* attacked, and having caught them, either divested them of a wing or two, or maimed them in a way I was unable to make out exactly, and then let them fall into the water without eating them; the detached wings were also let fall. I am not convinced, however, that this was a mere act of cruelty; it seems to me that there must be some reason for this habit, and there are two possible solutions—(1) that the maimed insects are dropped into the water for the female to eat while she is ovipositing, and more probably (2) that they are dropped there for the young nymphs to feed on. Unfortunately I observed no females in Sussex, and I was unable to collect any of the maimed butterflies, owing to their having been dropped a long way from the water's edge.

The two females taken in Hertfordshire were ovipositing by dipping the abdomen deep into the water while at rest on weed. The green colour of the female renders her almost invisible while ovipositing, and is without doubt protective.

Brachytron pratense, Müll., was plentiful at the Marston Ferry, near Oxford, in May and early in June. The female oviposits by dipping the tip of the abdomen at random into the water while flying along.

Æschna cyanea, Müll.—Common in Sussex and Hertfordshire during August and September, but much less common than usual in the latter locality.

Æ. grandis, Linn., was out in considerable numbers at Shenley, Herts, in an immature condition on July 22nd. It was common in that locality and in Sussex during August. It was still abundant at Shenley on September 17th.

In addition to these Anisopteridæ, *Sympetrum sanguineum*, Müll., was almost certainly seen near Tunbridge Wells on August 4th. Mr. K. J. Morton visited Carnarvonshire a short time after I left in June, and very kindly sent me specimens of *O. cærulescens* and *Æ. juncea*, from Capel Curig.

Eleven species of Zygopterids came under my notice:—

Calopteryx virgo, Linn.—This very beautiful insect was found plentifully flying about bushes and in the meadows round several lakes in the neighbourhood of Capel Curig, Carnarvonshire. I found one specimen dead in a spider's web, but I am doubtful if it lost its life through the agency of the tenant of the web, who was absent when I found the dragonfly. I observed the insect at the end of June.

C. splendens, Harris, was, as usual, abundant on the Thames at Oxford in May and June.

Lestes sponsa, Hans.—Near Tunbridge Wells this dragonfly was found in swarms during August. When flying over the water in the presence of *Somatochlora metallica*, it made darts at the thorax of the latter insect as it flew along, dazzled, perhaps,

by the reflection of the sun's rays from the metallic surface of that insect.

Platycnemis pennipes, Pall.—Very abundant at Oxford in June. First observed on June 7th (male var. *lactea*), it was still plentiful on June 19th.

Erythromma naidis, Hans.—This dragonfly was exceptionally plentiful. It was taken in large numbers at Burnham Beeches, Bucks, on June 23rd; it was abundant at Shenley on June 24th, scarce during July in that locality, but exceedingly abundant at the Aldenham Reservoir on July 29th.

The last specimen was taken near Tunbridge Wells on August 29th, a very late date for this insect; it was of the male sex.

Pyrrhosoma nymphula, Sulz.—A single male at Oxford on June 19th. Very plentiful in North Wales at the end of June, and also at Burnham Beeches, Bucks. A few were taken near Tunbridge Wells on August 3rd and 4th. The variety "*melanotum*, Selys," was found in Wales. Many specimens were found in spiders' webs at a lake in Carnarvonshire in June.

P. tenellum, Linn.—This small dragonfly was found so plentifully near Tunbridge Wells in August as to rise up out of the grass in swarms. The variety "*æneatum*" was observed. The insect behaved towards *S. metallica* like *L. sponsa*.

Ischnura elegans, Van der L., was found uncommonly in Oxford during June, and round Tunbridge Wells in August. It was plentiful at Shenley from June to the end of August, the female var. *rufescens* being taken abundantly, and the var. *infuscans* once on July 25th.

Agrion pulchellum, Van der L.—Extremely abundant at Oxford in May and June, and showing a great tendency in markings in many cases towards the next species.

A. puella, Linn.—A few taken at Oxford in June. It was found in swarms at Burnham Beeches on June 24th, and was generally plentiful at Shenley through July. A few were taken on August 3rd in Sussex. I was greatly surprised to find no trace of the insect in Carnarvonshire, though I diligently searched for it; there is a record of it from Tan-y-Bwlch in Mr. Lucas's 'British Dragonflies' (1899, p. 289); I was unable to find it in that locality.

Enallagma cyathigerum, Charp.—This was the most plentiful dragonfly observed. In June, July, August, and the beginning of September it was very common in Hertfordshire, in June at many lakes in Carnarvonshire and in Sussex it was swarming round the ponds near Tunbridge Wells during August. All the varieties of the male were taken, the one with the spot on segment two of the abdomen resembling that of *Agrion mercuriale* being exceedingly rare, while the opposite variety with the spot reduced was exceptionally common. The blue variety of the female was

observed plentifully, while a blue form with segments 3 and 4 of the abdomen of a normal straw colour was not uncommon in Hertfordshire during July. It is worthy of note that a blue female was taken at Capel Curig, Carnarvonshire, on June 28th, and this specimen was distinctly immature, showing that the blue coloration is not always due to age.

As described for *Lestes sponsa* and *Pyrrhosoma tenellum*, this insect also was attracted by *Somatochlora metallica*, but in no case did the larger insect make an attack on the smaller ones, but showed considerable restlessness.

It is to be hoped that next year observations will be made to carry out several of the few problems mentioned in the course of my paper. Not the least important will be a second record of *S. metallica* from Sussex. It is to be hoped that the latter will not fail, although one would necessarily expect a reaction after this year's good fortune.

A FEW NOTES ON THE DIURNI AT LA BOURBOULE (PUY DE DOME) DURING JUNE, 1909.

BY R. M. PRIDEAUX, F.E.S.

THE butterflies observed in this locality were very scanty, both as to species and specimens; this disappointing condition of things being, no doubt, largely due to the deplorably wet and cold weather that prevailed here (as elsewhere) during the month, and which, to all appearance, in this district had been preceded by nearly as unfavourable conditions earlier in the season.

The writer's time and energies also were considerably restricted by the medical treatment for the benefit of which the place was primarily visited, though it must be admitted that rambles further afield from the small town of hotels, of which la Bourboule consists, on to the hills, bare and wooded, which enclose it were, even when attempted, by no means encouraging.

On the whole, the lush, damp hay-fields bordering or near the river Dordogne, which runs from Mont Doré (where it rises) through la Bourboule, were found to be most prolific in butterfly life, though, compared with a Swiss valley at a similar elevation—about 3800 ft.—these meadows were barren indeed.

The bare, rather closely cropped, steep mountain pastures, on which species of broom were in fine flower during the month, produced few specimens, even of the commonest species.

The following is a list of the species observed:—

Carcharodus alcea, Esp.—One rather worn and diminutive specimen, June 7th, in "la Fenestre," a small park close to the town,

containing some meadows only partially reclaimed and planted, and which afforded a very fair proportion of the species seen in the district.

Hesperia serratula, Rmbr.—The commonest "skipper" in the neighbourhood, being seen in most of the meadows, the specimens being rather larger than those obtained near Bérissal. Guillemot, writing in the "fifties" on the Auvergne Lepidoptera, points out in connection with this species that in fresh specimens the wings are thickly powdered with yellowish scales; this feature is very noticeable in the examples captured, especially in the fore wings of the females.

Nisoniades tages.—Common, but in rather wasted condition, 5th to 19th.

Pamphila sylvanus.—Common after 14th.

Chrysophanus hippothoë.—This species was fairly plentiful in all the meadows round the town, and at considerable elevations above it. All the specimens seen were of the lowland form, varying, as commonly, in the degree of purple suffusion of the males, some of which are very splendid examples. The females varied very considerably, even from the same meadow, in the proportion of orange suffusion over the fore wings. Guillemot mentions the not infrequent occurrence of specimens in which the black dots on the under side are prolonged into dashes. Three specimens were obtained, one male and two females, in which this is well marked; in the two latter cases, however, on one side of the wings only. In another specimen, a male, all the black spots and their encircling pale rings are missing on the left hind wing (under side) with the exception of the marginal row. The females lay pretty freely on stems of sorrel; the resulting larvæ retired with much unanimity while still very small into withered leaves and crevices as early as the end of August, the cool, wet summer perhaps suggesting the near approach of winter, this being in great contrast to some examples in my possession in 1908, some of which fed up rapidly and endeavoured, though fruitlessly, to produce a second brood, two getting as far as pupation.

C. phlæas.—Two specimens, both wasted, June 7th and 21st.

Cupido minima.—One wasted specimen, 19th.

Nomiades semiargus.—Not common from 5th to 21st; very fresh specimens on both dates. Noticed *in cop.*, 14th, the male carrying the female in flight when disturbed.

N. cyllarus.—Two wasted specimens, male and female, 14th; one worn male, 19th.

Polyommatus alexis, Hb.—Common in meadows throughout the month. Very variable in size, and the females in absence or presence of blue coloration; both these factors were noticed by Guillemot from specimens in this district.

P. astrarche.—Not very common, 7th to 19th. The specimens much resemble those captured in Surrey in the size of the red spots.

Callophrys rubi.—One specimen, 14th; two, 21st.

Zephyrus betule.—Larvæ were obtained of this species on the scrubby roadside sloe bushes on the way to St. Sauves, west of

la Bourboule. Contrary to the writer's previous experience of these larvæ (British or Swiss), a large proportion proved to be ichneumonid. This tendency hereabouts Guillemot thinks worth remark in his Catalogue. Oak bushes were examined and tapped in the hopes of finding other Theclid larvæ, but in vain; indeed, the astonishing freedom of this and other foliage from larval attacks of any sort, past or present, was very noticeable, especially when the recent aspect of the Kentish woodland and the ravages of larvæ therein was remembered.

Aporia crataegi.—First specimen, 13th; several seen, 19th.

Pieris brassicæ, *P. rapæ*, and *P. napi*.—All fairly common. No tendency towards the var. *bryoniæ* female of the last-named species was detected.

Euchloë cardamines.—Male, July 8th; one female, 14th. Both in good condition.

Colias hyale.—One specimen only, 8th.

C. edusa.—Not rare throughout the month, usually in poor condition.

Brenthis euphrosyne.—Pretty common though never abundant in the beautiful beech-woods on the south-west side of the town.

B. selene.—Rarer, but in fresher condition, 14th and 21st.

B. ino.—One only, a fresh male, in a damp meadow by the Dordogne, on the way to St. Sauves, 19th.

Melitæa parthenie.—A few very fresh examples on the 8th and 21st.

M. athalia.—Not common and, singularly enough, less fresh in appearance than the last-mentioned species.

M. dictynna.—One male, 19th.

Pyrameis cardui.—One wasted specimen, 8th.

P. atalanta.—One, 21st.

Aglais urticæ.—A few fresh imagines; larvæ plentiful.

Pararge mæra.—Here and there on rocky roads west of the town. The examples taken are slightly under-sized, and the markings inclined towards, though not quite corresponding to, the var. *adrasta*.

Epinephile ianira.—One specimen, 18th.

Erebia stygne.—The only *Erebia* met with, with the exception of one wasted *E. cassiope* from the Charlanne Forest, on the 26th. *E. stygne* was fairly common, especially on the St. Sauves road; only males were observed, all in very fresh condition.

Cænonympha pamphilus.—Common everywhere.

C. arcania.—One specimen, 21st, Charlanne Forest.

The above list could no doubt be largely augmented by an active entomologist in a more favourable season; at the same time the comparative scarcity in numbers of even the commonest species seen during the (all too rare) intervals of really warm sunshine hardly point to the district being a very rich one, though possibly a later period in the summer would prove to be a better time for visiting it.

From the point of view of scenery, the place offers a very charming variety in all directions.

Brasted Chart, Kent.

BUTTERFLIES OF CANTAL AND LOZÈRE.

BY H. ROWLAND-BROWN, M.A., F.E.S.

A correction of mine made in revising this paper for press (vol. xlii. p. 297) was, by some oversight, not included. In the footnote descriptive of the ab. *escherinus* it should have been stated that this form of *Polyommatus escheri*, taken by me at Mende (the male) and at St. Martin-Vésubie (the female), appeared to be transitional to the ab. *subtus-impunctata*, Oberth. ('Études de la Variation chez les Lépidoptères,' livr. xxme., pl. iii. fig. 25). In this form from Barcelona, the whole of the under side black markings have disappeared, and I expect that it is the example "depourvu en dessous des points ocellés" exhibited before the Entomological Society of France, December 9, 1863 (Bull. Ent. Soc. Fr. 1863, lii.). I may add that M. Charles Oberthur (*op. cit.* pl. iii. fig. 39) figures the form of *P. eros*, included in my illustration, as ab. *subtus-radiata*.

CHRYSOPHANUS ALCIPHON, var. GORDIUS, ab. ♀ MIDAS, LOWE.
—I wish also to say that my friend the Rev. F. E. Lowe, the original author of this aberration, has written to me pointing out that in a previous paper of mine, where an under side aberration of the species is described, which also corresponds with the ab. *escherinus* taken at Mende, I have fallen into an error; the ab. *midas* being an aberrational form of the *upper* and not of the *under* side. On reference to the Rev. G. Wheeler's 'Butterflies in Switzerland' (p. 16) I find this to be the case; and, to put the matter straight, I cannot do better than quote the communication which Mr. Lowe has been good enough to make to me. He writes:—

"Mr. Rowland-Brown describing an entomological visit to 'The Basses-Alpes in August' (Entom. xli. p. 262) describes an interesting aberration of the *under side* of *C. alciphron* var. *gordius*, comparing it with the ab. *cinnus* of *P. bellargus*. On p. 296 he says: 'This ab. appears in every respect to correspond with ab. female *midas*, Lowe.' From which it is evident that from a chance misreading he has got a mistaken idea of this aberration. As the same mistake occurs again in 'Butterflies of Cantal and Lozere' (*ante*, vol. xlii. p. 300), it seems better to correct it lest it should become stereotyped.

"Ab. *midas* is not an aberration of the *under* side of *gordius*, but of the *upper*. Its peculiarities consist in the entire absence of black spots on the upper side of the primaries with the exception of the two large discoidal spots. The black border is very broad and entire until just before the anal angle, when it opens out and makes one large blotch. The hind wings have the disc clear with the exception of a black discoidal spot. The ante-marginal band, which usually in *gordius* consists of two or

more rows of irregular spots, is in *midas* formed by the confluence of these spots into wedge-shaped dashes, and is suggestive of the markings of *C. dispar* var. *rutilus*. This row of black wedge marks is reproduced on the under side."—[FRANK E. LOWE.]

DESCRIPTION OF A NEW GENUS AND SPECIES
OF *OXYURA* (HYMENOPTERA) FROM KUCHING,
BORNEO.

BY P. CAMERON.

LACCOMERISTA, gen. nov.

Antennæ thirteen-jointed, placed near the mouth, on a swelling, which is obliquely sloped below them, its edges below each antennæ projecting into a stout tooth, longer than wide; the apex is oblique. Head as long as it is wide at the vertex; the temples obliquely narrowed, wide, the occiput transverse, stoutly margined, as are also the cheeks. Eyes oval, the malar space half their length; a keel runs from their top on the inner side to the antennæ. Ocelli in a curve. Pronotum large, almost twice longer than wide, narrowed towards the base; the latter is narrowed, clearly separated, and bears two broad rounded keels, separated by a distinct furrow. Parapsidal furrows distinct, complete. Scutellum large, almost flat, separated from the mesonotum by a narrow furrow. Metanotum short, its apex with a rather steep, oblique slope. Abdomen oval, shorter than the thorax, roundly convex above, flat below: the second segment very large, much larger than all the rest of the abdomen. Wings with a large, wide stigma, rounded behind; the radial nervure is short, oblique, straight, and issues from the apical fourth of it; there are two distinct basal cellules, the posterior being shorter than the anterior. Legs stout, the calcaria short, slender. Spurs small, simple. Hind tibiæ thickened towards the apex, which above ends in a short spine. Metatarsus stouter than the following two joints united. Tegulæ large, longish. Antennal flagellum stout, longer than the following three joints united, and reaching above the top of the head; the pedicle as wide as long; the following joint clearly longer than the next; all the joints elongated. The form of the mandibles I am unable to make out, and I have not a spare example for dissection; neither can I make out the exact number of abdominal segments, of which I can only detect five. There are two spurs on the four posterior tibiæ. The scutellum is almost square, and is bounded laterally by a furrow.

On the whole this new genus fits best into the Bethyliidæ, but it has not the one-jointed trochanters of that group, so far as I can make out. The neuration is more, in some respects, that of the Scelionidæ, e. g. *Callisceelis*; certainly the form of the radial nervure differs from what it is in the Bethyliidæ, in which it is more or less roundly curved. The form of the head is different

from what it is in the latter, being shorter, not flattened, and lenticular. Characteristic is the form of the prothorax, particularly the stoutly bicarinate basal part. Probably the discovery of the other sex will throw some light on the affinities of the genus.

Lacomerista rufescens, sp. nov.

Rufous, very smooth and shining, bare, the flagellum of antennæ covered with a microscopic white down; wings brownish smoky to shortly beyond the middle, the rest more slightly smoky, especially in front, where there are hyaline streaks, the nervures reddish fuscous; the second (and shorter) basal cellule is rounded at the apex, where it is wider than it is at the base; the wings are highly iridescent; tegulæ smooth and shining; a short oblique nervure runs from the middle of the second basal cellule. Tibiæ and tarsi (and especially the posterior) covered with fuscous pubescence. The apex of the abdomen becomes gradually narrowed. ♀. Length, 3 mm.

Kuching, Borneo (John Hewitt, B.A.).

VARIATION IN *VANESSA URTICÆ*, L.: SEASONAL (CLIMATICAL) AND LOCAL VARIATION IN *V. URTICÆ* AND IN *V. IO*, L., BY WHICH THE TWO SPECIES SHOW A TENDENCY TO MEET IN FACIES.

By T. REUSS.

(Continued from vol. xlii. p. 313.)

FIG. 8, female, perhaps trans. ab. *bolandii*, Lmbln., has narrow wedge-shaped lunules, which move away from the fringe instead of approaching it as in fig. 7.

In fig. 9, male, the first costal lunule disappears, the other costal lunules float yet further away from the fringe, and present an aspect reminding of the disintegrated ocellus in the aberration of *V. io*, which I figured in September (vol. xlii. p. 223), especially as the black basal parts approach the costal lunules, but recede behind the anal lunules.

An extreme case of this latter *io*-form detail, which confines the reddish ground colour (that is, of the same peculiar tint found in light-coloured specimens of *V. io*) to the anal parts of the wing, as in *V. io*, is shown in fig. 10, the hind wing of ab. *ioprotoformis*. Here the chain of lunules is already broken up, the first costal and the anal lunules disappear, so that only the three large costal lunules remain, which are the same that coalesce into an ocellus in *V. io*. Further *io*-form details of this specimen, the description of which I now complete, are: the under side is brown-black, also the median area of the fore

wings being wholly irrorated with dark brown. On the upper side of the fore wings the median puncta, as well as the inner marginal blotch, are obsolete.

The costal blotches are united, as in *V. urticæ* ab. *atrebatensis*, Boisd., or in *extreme* forms of *V. io* ab. *belisaria*, Obth.

Held against the light the wings are much less transparent than in typical *urticæ*, and therefore approach in opaqueness the wings of *V. io*. The *long slender shape* of the wings appears also in aberrations of *V. io*. The antennæ, instead of being chequered with black and white, are uniform brownish in colour, and therefore more like those of *V. io* than of *V. urticæ*.

I had exposed the pupa of this *io-form* aberration, together with some others, during three days after pupation to temperatures occasionally as high as 48° C., in the endeavour to strike at and impair the "fixed" hereditary tendencies before these should have found time to determine the facies on the usual *palæ-form* lines.* Afterwards the pupæ were climatized in almost tropical conditions, so as to further influence any new lines of development which might be in progress, in the hope of *immediately* effecting such a high degree of change in the facies as would by the only other possible method—that of utilizing the hereditary forces—take years to attain.

When the imagines ultimately emerged I found that only two had defied hereditism during pupal development; they were the last to emerge (after ten days), and one was the *io-form* aberration described. On the rest of the pupæ hereditism had in a great measure retained its hold. The specimens were only slightly *io-form*, being more or less transitory in markings and colour to the Corsican variety *ichnusa*, Bon., and to the Asian form *chinensis*, Leech, transitions to the all-brown, irrorated under side of the latter appearing in two of my aberrations of *urticæ*.

* I suggest that the colours in the facies of a butterfly are greatly dependent in their kind and distribution on the manner in which the diffusion of the blood (pigment) into the wings is influenced by the pressure on the blood from the vital process in the pupa. An aberration like that described would have developed under abnormally high blood pressure, following after a temporary interruption of the vital process by extreme temperature. The overflow of black colour along the main ducts of the fore wings is symptomatic of this, and tells of the overthrow of hereditary tendencies, though the phylogenetic value of a specimen *may* in a sense be impaired by such symptomatic details (which, by the way, besides an *only occasional* infertility of the sexes, seem to offer the only and perhaps insufficient excuse for referring aberrations to teratology). I have already, in my description of ab. *ioformis* in the Ent. Record, pt. iv. 1909, tried to show that these details may occur together with and be distinguished from progressive or atavic features of the facies. It is, however, often a very complicated and even impossible matter to separate such features, because when, for instance, an *urticæ*-aberration is facially transitory to *V. io*, such a facial detail as the absence of the median puncta on the fore wings is at once symptomatic, progressive, and atavic.

In speaking of the biological significance which might underlie an *io-form* facies, appearing by saltation in a specimen of *urticæ* reared from wild larvæ, it will be necessary to distinguish whether the present and future only or otherwise the past history of such facial *io-formity* is under consideration.

In the first case I suggest that the *io-form* facies, even if it occurred and were developed to perfection in an isolated group of *urticæ*, would not be followed by physiological changes of *such* a nature as would link the variety also specifically to *V. io*. Unless it should be proved that a certain kind of facies is entirely bound up not only with a certain kind of physiological structure, but also with a certain sexual affinity, there is no reason to assume that *facial io-formity* also entails *specific io-formity*. At present it would appear that every variety which becomes separated from the type will within its own special group be quite free to vary—for instance, in the structural details of the sexual organs *independently of the facies*. Thus, while from a locally isolated group of *urticæ* an entirely new species, *facially resembling V. io*, might be evolved, it would also be thinkable that another isolated group of *urticæ* had remained *typical in facies*, but grew to a greater size, and became specifically distinct from the type by extreme development of otherwise varietal changes in the larval habits,* and especially in the female sexual scent, male ancillary appendages, &c., of the imagines; while yet another (seasonal) group could have become completely changed in facies, *io-form* again, for instance, and yet be *specifically unchanged*.†

* Longer feeding-up time under the influence of cold, or *not* proportionately accelerating the feeding-up time in a temperature higher than normal, is well-known to be conducive to a considerable increase in size (Elwes, Standfuss). This also explains why northern or southern forms of some central European species are *both* often notable for comparatively great size. The climate on mountains sometimes has a similar effect.

† Taken *strictly*, the scientific conception of "species" is based on, and will accept no other evidence than that of, *unlimited fertility* (based in its turn on sexual affinity) among the individuals of one group to mark them "species." The transmittability of any special facies by heredity is not necessarily dependent on any special structural details of the genitalia, &c., nor is the fertility of a specimen with an aberrant facies in any way impaired merely by the possession of that aberrant facies. Every breeder of *facial* varieties by *artificial selection* testifies to this by his success. Also Prof. Standfuss *first* proved in 1897 by pairing aberrant *urticæ* obtained by exposure of the pupæ to low temperatures that the altered facies of a "temperature form," resulting from an experiment with pupæ from wild larvæ, is transmittable by progressive heredity in a small percentage of the brood *even under normal conditions* of temperature. The fertility of the specimens was unimpaired. Therefore the aberrant facies produced by the effects of temperature had (a) become potentially inherent in the spermatozoa and ova, (b) and this without necessitating an alteration in sexual affinity. Moths which breed freely in captivity offer better proofs than the *Rhopalocera*. Thus the best way to start breeding varieties successfully from normal wild specimens—for instance, of *A. gossulariata*—is to produce a few aberrations

It is, for instance, well known, from numerous examples in the field, that imagines almost identical in facies may be specifically distinct (for instance, *V. polychloros-xanthomelas*), while other forms bearing not the slightest outward resemblance to one another facially are representatives of one and the same species. It would perhaps be difficult to find an entomologist to-day who does not know the striking examples of merely facial divergence afforded by extreme cases of seasonal dimorphism. There is, for instance, the orange black-spotted *A. levana* and its summer (heat) form, the black white-banded ab. *prorsa*. I shall not forget the shock I got when, as a boy with primitive notions of entomology and possessed of a wild desire to find as many "different kinds" as possible for my collection, I was for the first time shown the orange *levana* and the black *prorsa* together, and then told that these two flies were of one and the same "species," and lived and paired, the one in May, the other in August! What little entomology I had managed to tuck into my brain got loose then, and when I had also seen several forms of ab. *porrima*, intermediate between *levana* and *prorsa*, my notions about butterflies went scattering to the winds. But I did not give up; I thought it worth trying to understand. So afterwards I went about gathering in the bits again, and then already I made a discovery. I found that I had lost one thing—evidently for ever—and that was my delightfully irresponsible belief in the "constancy" of "species." But, to use a metaphor which was very popular in the biological battles which raged on the Continent only lately, though "the bath with the child had been overturned," I did manage to save the child. I only lost the water, and that was well spilt.

Ever since that time I have taken more delight in collecting "shocks" than butterflies, and I have, for instance, risked the "cabinet quality" of the best aberrations which I reared, in order to study their appearance and flight in the open field. So far I find that I lose or damage very few specimens, but that the harvest in "shocks," even in this one instance, is very great and very calming. At least, when one comes to realize that a single apparently "constant" British species—*Vanessa urticae*, L.—is evidently capable of producing a far greater number of different and beautiful varieties than there are different species of *Rhopalocera* in the whole of England, then one soon begins to take "shocks" naturally; and, after all, it is only "thought fixed by custom" that could prevent one from thus taking any un-

from the wild larvæ (among different broods to prevent later stagnation) by a moderate temperature experiment, and then to breed from these forms, relying on the cumulative effects of hereditism for further variation. In the case of, for instance, var. *varleyata*, it should not be distinguishable whether the specimen was produced by temperature effects or by hereditism. When both factors combine, then the most extreme forms result.

expected but natural phenomena in insect-life. Or else why is one comparatively so little stirred by the marvels of *sexual* dimorphism if it is not because he is accustomed to these phenomena, almost from the very moment that he acquired conscious sight in earliest childhood by the familiar examples in picture-books, pets, and the useful domestic animals? I remember—before I ever had looked into a butterfly book—showing as a “new different” species my first examples of the real “butter-coloured” fly, pinned in a separate box, and then being only mildly astonished and rather ashamed at my ignorance and want of penetration when it was pointed out to me that my beautiful “yellows” were identical as a species with certain greyish-greenish butterflies which I had placed among the “common whites” because of their colour! This my first experience of extreme sexual dimorphism in entomology did not shake me up like my later meeting with *levana* and *prorsa*; it seemed quite “matter of course”!

(To be continued.)

ON THE HYMENOPTEROUS PARASITES OF COCCIDÆ.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

(Continued from vol. xlii. p. 278.)

43. PULVINARIA.

FROM a species of this genus upon Oregon flowering currant Ashmead (p. 387) records *Aphycus oregonensis*, How., and from another, from Iowa, his *A. pulvinariæ* (p. 388).

44. *Pulvinaria vitis*, Linn.

This well-known pest is destroyed by a variety of parasites in Europe and America. First, Curtis records (Brit. Ent. pl. et fol. 395): “For specimens of this insect [his *Encyrtus vitis*] I am indebted to Mr. Samouelle, who bred them from the *Coccus* of the vine. Found on the vine in Lambeth, July 9th and 10th, 1830.” Next, Goureau (Ann. Soc. France, 1863, Bull. p. iv.; quoted by Gaulle, 109) bred *Eulophus scutellaris*, Nees. And in 1875, Dr. Mayr gives *Encyrtus duplicatus*, Nees; *Blastothrix schönherri*, Westw.; † *Aphycus puncticeps*, Dalm., which also

† Quite the most circumstantial account of parasitism upon Coccids I have seen is given by Newstead, who says (Mon. Brit. Coccids, ii. 66):—“When the colony of *Pulvinaria vitis* var. *ribesiæ* under observation was first established, the insects were quite free from internal parasites. But the second generation became infested by chalcidid parasites, which increased in the third generation to such an enormous extent that quite fifty per cent. of the coccids were destroyed by them. The few coccids which now remain are apparently all parasitized. . . . On the 17th of October, 1901, after long and careful watching, I observed one of the chalcidid parasites in the act of laying its eggs in the body of a coccid. When first seen the parasite was running

occurs in the United States; and *Ericydnus paludatus*, Walk. (? *ventralis*, Dalm.) (Verh. z.-b. Ges. pp. 708, 699, 696 et 764); but the commonest enemy is probably *Eucomys swederi* (l. c. p. 741), as quoted by Gaulle, who also mentions Rondani's record hence of *Pachyneuron coccorum*, Linn. (Bull. Soc. Ent. Ital. 1877, p. 181), as well as *Eunotus cretaceus*, Walk., which appears to me to be synonymised by him with *E. obscurus*, Giraud, recorded from this host at Ann. Soc. France, 1877, p. 427.

45. *Pulvinaria carpini*, Linn.*

Four parasites were bred from this species by Dr. Mayr (Verh. z.-b. Ges. 1875): *Microterys cyanocephalus*, Dalm. (p. 707; quoted by Ashm.); *M. lunatus*, Dalm. (*Cedrenus*, Walk.) (p. 706; quoted by Galle); *Aphycus apicalis*, Dalm., and *Eucomys obscura*, Dalm. (pp. 695 et 741; quoted by both). Gaulle also mentions hence *E. scutellata*, Swed. (Cat. 98).

46. *Pulvinaria betulæ*, Linn.*

We appear to have added nothing to our knowledge of this species' parasites since 1820. Nees (Mon. Pterom. 206) says of *Encyrtus sylvius*, Dalm.: "Exclusam e *Coccis Betulæ* albæ Vestrogothiæ feminam abservavit Dalmanus; e *coccis Pruni Frischio* olim prodierunt ejusdem speciei exempla." Ratzeburg, however, is sceptical, adding (Ichn. d. Forst. i. 212): "This is

swiftly from place to place, evidently searching for a suitable host; its antennæ were bent downwards almost at right angles to the long scape forming their basal half, and were moved up and down rapidly and alternately, the tips each time touching the path of the insect as it progressed. Many coccids were examined, and when a suitable one was found the parasite turned its head towards the anterior extremity of the coccid, and, resting with all its feet upon the body of the latter, inserted its ovipositor into the centre of the thoracic area; it then slowly moved its abdomen up and down, and apparently laid its eggs in the puncture; the parasite then withdrew its ovipositor, and, turning round abruptly, feeling its way again with its antennæ, seized with its jaws the lips of the wound made by the ovipositor, and distinctly closed them upon it and apparently pressed the edges together; finally it passed the palpi over the wound, and then left the coccid to its fate. I subsequently saw the process of ovipositing repeated by three different individuals, each one acting precisely the same as the first." Mr. Newstead states (*lib. cit.* p. 252) that Dr. Howard considered this parasite to be "probably *Blastothrix sericea*, Dalman," of which the latter remarks that it "was reared by Kollar from coccids on *Tilia* and *Prunus*, as well as on *Æsculus*, *Acer*, and *Corylus*. Reinhard and Tschek also reared it from bark-lice on plums and on *Carpinus*. Probably all these scale-insects belong to the *Lecanium* group. In this country (U. S. A.) we find *Blastothrix* nearly always coming from *Lecanium*, and this is the same with the comparatively few exotic species. *Blastothrix longipennis*, for example, has become rather widely distributed commercially, and is parasitic upon various species of *Lecanium*." The most remarkable incident in this account is the manner in which the puncture was subsequently dressed, and I can recall nothing quite like it in any work on the Parasitica.—C. M.

supposed to be the species which Frisch (Beschr. v. Ins. Deutschl. Th. ix. p. 37) described as parasite in the brown egg-galls on plum and cherry trees, and which Dalman claims also to have bred from birch *Coccus*." Ashmead, however (1900, p. 393), records *Microterys sylvius*, which occurs both in Europe and United States of America, from both hosts without comment.

47. *Pulvinaria innumerabilis*, Rathv.*

Four parasites are enumerated from this species in America : *Coccophagus flavoscutellum*, Ashm. (How. Revis. 1895, p. 36) ; *C. lecanii* (l. c. 33, described by E. A. Smith, 'American Naturalist,' 1878, p. 661, from the synonymous *Lecanium acericorticis*, Fitch) ; *Aphycus pulvinariæ*, How. (Report Ent. U. S. Agric. 1881, p. 365) ; and *Atropates collinsi*, How. (Ashm. 1900, p. 405), from New York.

48. LECANIUM.

I have no fewer than thirty-seven records of Hymenoptera bred from unidentified examples of this genus. These may be compressed thus:—From Europe are four ; Dalla Torre credits Ratzeburg with breeding *Coccobius annulicornis* from this genus, though at Ichn. d. Forst. iii. 195, the latter simply gives "*Coccus*," but Howard has found the allied *C. ochraceus* to attack it (Revis. 1895, p. 38) ; *Eucomys* (which genus Ashmead says should fall to *Encyrtus*) *lecaniorum*, Först., was raised hence by Dr. Mayr (Verh. z.-b. Ges. 1875, p. 740), together with *Blastothrix erythro-stethus*, Walk. (l. c. p. 699) ; and Gaulle tells us (Cat. 99) that *Cerapterocerus mirabilis* also has been bred from species of this genus. In America much has been done since Howard's 1881 Report Ent. U. S. Agric., where he includes his *Blastothrix adjutabilis* (p. 365), *B. incerta* (p. 366), *Aphycus eruptor* (p. 364), *Chiloneurus albicornis* (p. 363), *Eucomys fusca* and *Astichus minutus*, Comst. In 1885 Ashmead contributed (Trans. Amer. Ent. Soc. Proc. p. xix.) his *Tetrastichus lecanii*, and Howard (Deser. N. Amer. Chal. pp. 25 et 17) his *Coccophagus flavifrons* and *Chiloneurus dubius*, as well as (p. 12) *Encyrtus sublestus*. To this list Ashmead adds in 1900 *Encyrtus fuscus*, How., *Aphycus annulipes* from *Lecanium* on oak, *A. californicus* from *Lecanium* on *Adenostoma fasciculatum*, *A. flaviceps* from Illinois, *A. fuscipennis* from *Lecanium* on *Arctostaphylos pungens*, *A. johnsoni* from *Lecanium* on elm, *A. maculipes* from *Lecanium* on water oak, *A. lecanii* from others on *Pinus insignis*, *Heteromeles arbutifolia*, and *Quercus agrifolia* ; and also instances his *Eusemion longipennis* and *Psilophrys longicornis*, Walk., as attacking members of this genus. Newstead remarks upon his breeding several specimens of an apparently new *Aphycus* (Brit. Coccids, i. 31) from its members.

49. *Lecanium liriodendri*, Gmel.*

From the synonymous *L. tupulifera*, Hill, Howard records *Leucodesmia typica* ('Insect Life,' 1895, p. 404) and *Coccophagus flavoscutellum*, Ashm. (Revis. p. 36).

50. *Lecanium capreae*, Linn.

Eunotus cretaceus, Walk., is recorded from this species by Gaulle (Cat. 103), who also mentions *Chiloneurus elegans*, Dalm., from a *Lecanium* on *Salix* (p. 99). The synonymous *L. tiliae*, Linn., is recorded (*l. c.* 98) as host of *Eucomys obscura*, Dalm., and (p. 99) of *Blastothrix sericea*, Dalm., while Kawall adds (Stett. Ent. Zeit. 1855, p. 231) *Eucomys scutellata* to its parasites, and Newstead has an interesting note "On the Alteration in the Form of the Scales of *Lecanium* caused by Internal Parasites" (Ent. Month. Mag. 1892, p. 267). Both *L. alni*, Modeer, and *L. æsculi*, Kollar, belong here; regarding the former, I am only aware of Gaulle's record (Cat. 99) of *Aphycus punctipes*, Dalm., from it, but the latter is freely parasitized by *Microterys chalcostomus*, Dalm. (Mayr, Verh. z.-b. Ges. 1875, p. 706), *M. sylvius* (*l. c.*) and *Blastothrix schönherri*, Westw. (*l. c.* p. 699), to which Ashmead (1900, p. 390) adds *B. sericea*, Dalm. (*longipennis*, How.), a common species both in Europe and Northern America.

51. *Lecanium hesperidum*, Linn.

Gaulle states (Cat. 99) *Blastothrix sericea*, Dalm., preys upon the "Orange Scale," while in America Howard has recorded *Eucomys bicolor* and *Encyrtus flavus* (Rep. Ent. U. S. Agric. 1881, pp. 362-7), *Perissopterus mexicanus*, *Coccophagus cognatus*, *C. flavoscutellum*, Ashm., and *C. lecanii*, Smith, from it (Revis. 1895, p. 33, &c.). Ashmead (1900, p. 360) adds *Encyrtus bicolor*, How., from America, and *Aphycus alberti*, How., from New South Wales, to the parasites of this species, which is abundant in British greenhouses.

52. *Lecanium aceris*, Behé.*

From the *Coccus* of *Acer platanoides*, Dalla Torre gives *Eucomys scutellata*, Swed. (cf. Kawall, Stett. Ent. Zeit. 1875, p. 231). Ratzeburg records his *Encyrtus atricollis* from moths (Ichn. d. Forst. i. 213), but later (*l. c.* iii. 190) from *Coccus aceris*, whence he also states (*l. c.* ii. 149) that Hr. Bouché bred *Coccobius pallidus*. Rondani is also said by Dalla Torre to have reared *Encyrtus infidus*, Rossi, from it, but without reference; Gaulle adds *Aphelinus insidiator*, Dalm. (*obscurus*, Westw.), *A. scutellaris*, Dalm., *Eucomys scutellatus*, Swed., *Sceptrophorus cyaneus*, Dalm., *Microterys sylvius*, Dalm., and *Pachyneuron coccorum*, Linn.

53. *Lecanium pruni*.*

Nees von Esenbeck writes of *Encyrtus æruginosus*, Dalm.

(Mon. Pterom. 235) : "In *Coccis pruni* gregarium legit Geerus" (cf. De Geer, Ins. ii. 190). Ratzeburg found his *Encyrtus coccophagus* to be the chief parasite of *Coccus pruni* (Ichn. d. Forst. ii. 148). The only species bred from it by Mayr (Verh. z.-b. Ges. 1875, p. 206) was *Microterys sylvius*, Dalm., which has since been also raised in the United States of America. Gaulle adds *M. lunatus*, Dalm., *Eucomys scutellata*, Swed., and, from "Coccids of Prunus," *Ericydnus longicornis*, Dalm.

(To be concluded.)

NOTES AND OBSERVATIONS.

THE TAPS OF THE "DEATH WATCH BEETLE."—Stephens says in his 'Manual' that *Anobium striatum*, Oliv., is to be taken from April to August; and doubtless most coleopterists would be quite willing to accept the statement as correct, because the species is so common that few have troubled to notice its times of occurrence. I have recently been jotting down notes upon the Braconidous parasite of this injurious beetle (*Spathius exarator*, Linn.), and was surprised to note that both host and parasite put in no appearance till July 3rd, when both began to be very common on the posts in my stable here. On referring to the series of this species in my collection—which is not complete—I find that the dates range only from June 21st to July 15th; it would be of interest if coleopterists would give us their experience of the span allotted to perfect *A. domesticum*.

It was, consequently, with some surprise that I heard the familiar tapping of this beetle in an old oak bureau, I had but just acquired, in my study on October 16th last, and, bearing in mind the statement made in a recent popular article on the insect to the effect that only four or five taps were given in succession—it had struck me as incorrect when I read it ('Strand Magazine,' 1909 (Oct.), p. 475; a similar statement is made, if I remember aright, by Darwin in 'Origin of Species')—I drew my watch and awaited a repetition. The first series of taps had occurred at dusk; and I caught the second at 5.23 p.m.; this lasted from seconds 48–57, and was followed by other series of continuous taps at intervals of less than a minute thus:—37–52, 23–33, 5–15; then came over a minute's silence, and after it:—35–44. Next came a longer interval of silence, lasting from 5.28 to 5.32, followed by a last succession of taps:—20–28. No more were heard that night, nor since.

I attempted to count the taps, but they were too numerous; often one is enabled to count such quick successions of sound by simply listening to them in the first place and afterwards counting them by repeating the sound over again more slowly; but this was too quick, and I could do no more than guess the number to be approximately thirty or forty. Everyone is familiar with this portentous hammering of one's coffin nails (they used nails when

they believed in Death-Watches!), and the fact that the successions of taps occupied an average time of almost exactly ten seconds each is ample proof of their multiplicity.—CLAUDE MORLEY.

EMERGENCE OF THE SECOND GENERATION OF EUSTROMA (CIDARIA) SILACEATA.—Two batches of ova of *E. silaccata* deposited by females of Huntingdonshire origin were received in May last. Larvæ from one of these batches commenced hatching out on May 21st, and from the other a week later. On June 16th, the larvæ, about fifty in number, were transferred from boxes to a roomy breeding cage, and pupation began a few days later, but it was not until about July 6th that all the larvæ had spun up.

A female moth emerged on July 2nd, and another example of the same sex appeared on the 4th; between the latter date and August 3rd seventeen specimens in all had emerged. On August 14th, twenty-six pupæ were removed from the breeding cage and placed in a glazed tin box. At this time a few eggs and several eggshells were found fixed to shreds of dried foot-plant (*Epilobium*) at the bottom of the cage. The eggs were placed in a separate box but only one larva hatched therefrom, and this would not feed. Between August 21st and September 14th seven males emerged, and on the 17th an example of each sex appeared in the box (pairing was not observed, but eggs were laid during the nights of the 18th, 19th, and 20th). A male emerged on September 16th, followed by a female the next day. On the date last mentioned there were still about a dozen pupæ but no other moth emerged therefrom until October 9th, when a female appeared. The remaining pupæ did not exhibit any indication of the emergence of moths up to Nov. 7th, but between that date and the morning of Nov. 20th, when they were again looked at, two females had emerged; one was dead but quite limp, the other very much alive and apparently just out.

From the ova deposited September 18th–20th larvæ hatched out September 28th to October 6th, and all but one had pupated by the end of October; the laggard was seen alive on November 3rd, but it was found dead on the earth under a leaf on November 7th.

As will be seen from the above jottings, moths of the second generation have been emerging, one or two at a time, over a period of twenty weeks; and curiously the first two imagines (July 2nd and 4th) and the last two (between November 7th and 20th) were females.—RICHARD SOUTH.

RETARDED EMERGENCE OF VENILIA MACULATA, L.—In 1906 I obtained ova from a wild parent taken in this district, larvæ hatched, fed up, and successfully pupated. Several imagines emerged in 1907, a few in 1908, and just a few more in 1909, the latter having lain over for three years. The breeding-cage in which they were reared contained no other species; it was kept in a cold room and in the same place throughout. I can find no previous record of this species having lain over in the pupa state even for a second year, which makes the fact of some having lain over a third year the more worthy of record.—W. A. ROLLASON; "Lamorna," Truro, Cornwall, December 13th, 1909.

POLIA XANTHOMISTA, Hb. = *NIGROCINCTA*, Tr., IN CORNWALL.—I have previously recorded in the 'Entomologist' (vol. xxxix. p. 292, and vol. xli. p. 273) captures of this insect, and have now to record in addition the breeding of same from wild ova obtained in 1908. Larvæ hatched out during April and May of this year, and were fed indoors, until after second moult, on buds and young leaves of a common plum-tree, after which they were sleeved outdoors in my garden on the plum-tree from which the early buds, &c., were obtained. At the bottom of sleeve I placed a good quantity of moss, in which the larvæ could hide by day and be sheltered from the hot sun, rains, &c. During August I opened the sleeve and found a number of cocoons among the moss from which emerged half a dozen fine insects, two males and four females, between August 31st and September 12th last, all being of the average size of the wild insects I have taken.—W. A. ROLLASON; "Lamorna," Truro, Cornwall, December 13th, 1909.

LATE EMERGENCE OF *PLUSIA GAMMA*.—About the middle of November Mr. F. E. Beddard, F.R.S., Prosector to the Zoological Society, informed me that he had noticed a perfectly fresh and apparently newly emerged specimen of the above moth on the outer wall of the deadhouse in the Society's Gardens in Regent's Park. Beyond noting the fact that the period of emergence appeared to be abnormally late no further notice was taken at the time, but a few days later I had forwarded to me another specimen, also in a very good condition, which had come into a room, attracted by light, in a house in the Marylebone Road on November 24th. The two records taken together seem to point to an abnormal retardation in the development of the species this year, possibly attributable to the prevalence of generally low temperatures throughout the past summer.—R. MELDOLA; 6, Brunswick Square, W.C., December 10th, 1909.

A NEW CATALOGUE OF THE COLEOPTERA OF THE WORLD.—The present number of described species of Coleoptera being about two-thirds greater than it was some thirty years ago, when Gemminger-Harold's 'Catalogus Coleopterorum' was published, the need of a new catalogue must be admitted. We have received a copy of the first part of the 'Coleopterorum Catalogus,' a work produced by Herr W. Junk of Berlin. The editor of this important work is Herr S. Schenkling, and among the contributors we notice the names of several well-known British specialists. The family treated in Part 1 is the Rhysodidæ, and the author Herr R. Gestro. We understand that Parts 2-9 are in the press.

BRITISH SPIDERS.—As the Arachnida are occasionally adverted to in our pages, we may mention that in the 'Transactions' of the Hull Scientific and Field Naturalists' Club, vol. iv. part ii., Mr. T. Stainforth gives a list of East Yorkshire Spiders, Harvestmen, and Pseudoscorpions added to the Hull Municipal Museum Collection in 1908.

BRITISH HOMOPTERA.—Mr. Oscar Whittaker contributes "A Preliminary Catalogue of the Hemiptera-Homoptera of Lancashire and

Cheshire" to the (thirty-second) Annual Report and Proceedings of the Lancashire and Cheshire Entomological Society for 1908.

BRITISH ODONATA.—In the 'Journal of the R.H.S. Garden Club,' No. II., 1909, there is an annotated list of dragonflies found in the county of Surrey, contributed by Mr. W. J. Lucas.

THE ORIBATOIDEA OF ILLINOIS.—In an article bearing this title Mr. Henry E. Ewing discusses the classification of the Oribatoidea, describes thirty-three species (twelve new) from Illinois, and gives a list of all the species known to occur in North America. This article was published in the 'Bulletin' of the Illinois State Laboratory of Natural History, vol. vii. pp. 337-389, plates xxxiii.-xxxv. (September, 1909).

FOSSIL INSECTS.—Prof. T. D. A. Cockerell (Bull. Amer. Mus. Nat. Hist. xxvi. pp. 67-76) describes several new species of Diptera from the Florissant Shales; also a new species of *Raphidia* (Neuroptera), and one of Orthoptera. Photos of five of the new flies are shown on plate xvi.

The same author contributes "A Catalogue of the Generic Names based on American Insects and Arachnids from the Tertiary Rocks, with indications of the Type species" (*l.c.* pp. 77-86).

LEUCANIA FAVICOLOR ON HACKNEY MARSHES.—Among the *L. pallens* in the second portion of Mr. J. A. Clark's collection dispersed at Stevens's last week was a specimen of *L. favicolor*, which evidently escaped the notice of most buyers. This specimen is most interesting as it is labelled "Hackney Marshes 2 vii. 05." Now one looks on *L. favicolor* as a coast species, and one would not expect to find it at Hackney. Of course we know that these marshes in olden times were tidal, and the fact that *Hama* (*Mamestra*) *abjecta* sometimes occurs there makes one wonder if the old salt marsh insects have hung on there in spite of these marshes being no longer of the old character. I am not overlooking the fact that it is not so very far across to the Thames, and that these insects could fly across if they came up the river.—H. M. EDELSTEN; Forty Hill, Enfield, December 14th, 1909.

THE CLARK COLLECTION.—On December 7th and 8th a further portion of the collection of British Lepidoptera, formed by the late Mr. J. A. Clark, was disposed of at Stevens's Auction Rooms. It consisted chiefly of the more recent acquisitions of its late owner, and although perhaps hardly so rich in extreme forms as the older portion, it nevertheless contained a large number of really good varieties and a larger proportion of the specimens were labelled with more or less complete data. The chief interest appeared to centre round some of the more remarkable forms, and, as on the former occasion, some of the Continental collectors were desirous of obtaining a share of them, but whereas then practically the whole of them were secured for one or another of our British collections, some few out of this later portion appear to have been more highly appreciated by our neighbours, and thus to have found their way across the Channel. The first lot to raise any great amount of enthusiasm was

"a curious gynandromorphous specimen" of *Gonepteryx rhamni*, which soon ran up to £4 5s.; then came several nice *Argynnis selene*, among which "a remarkable variety both on upper and under sides" brought £3 5s.; a fine pale variety, £2; a heavily blotched specimen, £4 8s.; "an extraordinary dark variety," £5 10s.; a black-dusted Sutherlandshire specimen, £4; a rayed under side (figured in South's 'Butterflies,' pl. 56, fig. 3), £5; and one with black spots united into a band on both wings (fig. 2 of same plate), £1 1s.; while a very fine dark *A. aglaia*, also figured, pl. 61, fig. 5, of same work, reached just £9. A "silvery-white variety" of *Vanessa urticae* sold for £3, and two with costal blotches broadly confluent realized £2 5s. and £2 10s. respectively; while a fine black *Limenitis sibylla* brought £1 10s., and one equally fine, but with the band not completely obscured on the fore wings, £1. A fine unicolorous *Epinephele ianira* made £1 6s.; "a fine white variety" of *Satyrus semele*, £3 3s.; a fine dark male and one very pale, £2 5s. the two; and two lots of three each of *E. hyperanthes*, in which one had large streaked ocelli, and the other two were var. *arcte*, £2 and £1 15s. per lot. Among the "blues" the more remarkable forms were a leaden-coloured male *Lycæna adonis*, which brought £2 12s. 6d., and under side aberrations of the same species, of which one with the ground colour white sold for £2; one with broad black streaks on fore wing, and an almost spotless male, £2 2s. the two. Ten specimens of *Chrysophanus dispar*, put up singly, realized from £3 7s. 6d. to £1 10s. each; and five specimens of *Lycæna acis*, sold in two lots, brought an average of just over 9s. per specimen; the total realized for the butterflies being within a few shillings of £160.

Among the more interesting lots of moths was a series of ten specimens of *Smerinthus tiliae* (figured in the 'Entomologists' Record,' vol. i. pl. A, and described p. 327), which brought £5 10s., two other series of thirteen each of varied specimens of the same species realizing £2 7s. 6d. and £4 per lot; a series of six specimens of *Sarothripus revayana*, which included Curtis's type-specimen of var. *stonanus*, and five var. *ramulanus*, one of the specimens also being Curtis's type, brought £3 the lot; while for four other lots of the same species, varying in number from sixty-six to eighty-three specimens, each containing many distinct forms, and the whole comprising the material for the revision of the species that Mr. Clark had in hand at the time of his death, prices ranging from £1 7s. to £1 per lot were obtained.

A fine dark variety of *Sphinx ligustri* sold for £3 10s. The four best varieties of *Arctia caia*, put up singly, brought £8 8s., £8 8s., £6, and £4 15s. each respectively; and for half a dozen single specimens of *A. villica*, all being good forms, prices of £2 15s., £2 5s., £2 2s., £1 6s., £1 1s., and £1 1s. each were obtained. A lot of twenty-two *Spilosoma mendica*, which included "a nearly white male but with costa and cilia of fore wings blackish," and one var. *rustica*, realized £2 2s., and a specimen of *S. menthastri* approaching var. *walkeri* with three others £1 1s., while a somewhat similar lot reached only 10s. Three specimens of *Zeuzera æsculi* having the spots large and confluent, each put in a separate lot with others, brought £1 4s., £2, and £3 15s., respectively, per lot; a dark variety

of *Dasychira pulibunda*, with others, £2 10s.; a male *Saturnia carpini*, "with fulvous hind wings and the markings, except ocellus, obsolete, and a very white female," £1 6s. the two; and a lot of five *Phalera bucephala*, including two fine dark specimens, one with and one without silvery lines, and other nice forms, £2 10s. Of a long and varied series of *Angerona prunaria* perhaps the most interesting lot was one of three specimens, which included "an orange male, the fore wings shaded with golden," and two others, which sold for £2 15s. the lot. A dwarf form of *Rumia crategata*, with white hind wings, and a specimen of *Venilia maculata* near var. *quadrimaculata*, with three others, made £2 5s.; a lot comprising one white, one dark, and two very light forms of *R. crategata*, £1 10s.; and a lot of six *Ematurga atomaria*, consisting of "two unicolorous dark-brown males, three black forms, and a light fulvous male," £1 15s.

Two lots of nine and ten specimens of *Nola centonalis* each, with eight *N. albulalis*, realized £1 12s. 6d. per lot; fine specimens of *Laelia canosa* brought round about 17s. per pair; *Noctua subrosea* from 10s. to 22s. per pair; *Xylina conformis*, put up in lots of three, from £1 1s. to £1 10s. per lot; and *Cleora viduaria*, when in good condition, from 10s. to 15s. apiece. The total of the two days' sale, which included two 40-drawer cabinets, falling just short of four hundred and ninety pounds.—R. A.

CAPTURES AND FIELD REPORTS.

MALACOSOMA NEUSTRIA, L., IN KINCARDINESHIRE. — During the second week of June, 1909, when staying with my friend the Rev. J. R. Fraser at Kinneff, Kincardineshire, we paid a visit on the 15th to Fawsyde, the residence of T. L. R. Shand, Esq. His gardener, Mr. Wm. Cormack, had four days previously noted on a young single white weeping standard rose an attack which was completely new to him. Two twigs were affected, each showing a firm belt of lepidopterous eggs beneath a short dense web which extended to the nearest young leaves. On the web were numerous small blackish larvæ. The appearance of the attack suggested at once the lackey moth (*M. neustria*, L.) as its author. As the plant was growing in the open, it was of some importance to ascertain whether the eggs had been deposited on it there, *i. e.* whether this was a case of attack by a species already established in the neighbourhood, or if it were simply an accidental introduction. The latter was clearly proved to be the case. The roses had been imported by a firm of nurserymen from Holland about December, 1908. After remaining in their hands three months, the roses were sent to Fawsyde in the middle of March. There was a very apparent demarcation between the young shoot subsequently (March–June) grown and the wood of the previous year. It was on the latter that the eggs had been deposited. This must have taken place in Holland, for *M. neustria* emerges normally in July or August. However, as their identity was by no means certain at first the larvæ were reared, and the following notes were made.

The first moult occurred on June 20th; immediately after the yellowish dorsal line became apparent. A second moult was in progress on June 28th. A third took place on July 9th, and it was noticeable afterwards that the caterpillars seemed more active and less attached to the web. The fourth change was made on July 21st, and a fifth began on August 7th. Up to the fourth change every fresh batch of food had been regularly webbed over, but after it there was a less pronounced tendency to spin. By August 19th spinning up was in full swing. The first pupa was noticed on August 27th, and the last about September 18th. These dates, so much later than usual, made probable hibernation in the pupa. But on October 7th the fluttering of wings drew attention to the breeding-cages, and one or two imagines were seen to have emerged, probably not earlier than the 5th. They continued to hatch out for about a week. The identification of the species was effected before the imagines were bred. As the larval characters became more pronounced, it was evident they must be *M. neustria*, L., or some closely related Continental form. To settle the matter, some nearly full-fed examples, killed extended by plunging into boiling seventy per cent. alcohol, were submitted to Mr. South, who pronounced them to be undoubtedly *M. neustria*.—JAMES WATERSTON; 9, Woodburn Terrace, Edinburgh.

ICHNEUMONIDÆ IN LONDON DISTRICT.—The *Euonymus* bushes so plentiful in front gardens of this (Herne Hill) and other suburban localities appear every year to be a much-favoured food-plant of *Abraxas grossulariata*, and, speaking of this particular place, the duty of keeping within reasonable bounds the larvæ of this moth appear to be undertaken by five species of Ichneumons, viz. *Casinaria vidua*, Grav., *Mesochorus** *fulgurans*, Curt., *M. olerum*, Curt., *M. basalis*, Curt., and a Braconid (*Apanteles*) of as yet doubtful identity, all of which make their cocoons among the branches of the shrub. The commonest parasite of *Grossulariata*—*Stenichneumon trilineatus*, Gmel.—I have not yet found here. Only single specimens are produced of *Casinaria vidua* and *Mesochorus fulgurans* from a caterpillar, but more of the three other and smaller species from one host. Of other Ichneumons met with here, but not traced to their local hosts, are:—*Cratichneumon coruscator*, Linn., and *C. fabricator*, Fab., *Ichneumon suspiciosus*, Wesm., *I. extensorius*, Linn., *Barichneumon albicinctus*, Grav., *Melanichneumon leucomelas*, Gmel., numbers of this circling round a small piece of bank on sunny mornings probably emerged from Noctuæ. *Amblyteles armatorius*, Forst., the males of which were excessively numerous. *Platylabus pedatorius*, Fab., *Glyphicnemis brevis*, Grav., *Phygadeuon variabilis*, Grav., *Hemeteles areator*, Panz., *Atractodes vestalis*, Hal., *Exetastes cinctipes*, Retz., *E. nigripes*, Grav., *Pimpla examinador*, Fab., *P. turionelle*, Linn., *P. oculatoria*, Fab., *P. alternans*, Grav., *P. detrita*, Holmgr., *P. instigator*, Fab., *P. inanis*, Grav., *P. maculator*, Fab., *Stilbops chrysostoma*, Grav., *Cteniscus succinctus*, Gr., *Bassus letu-*

* All the species of *Mesochorus* are known to be hyperparasitic, not infrequently upon Braconids, and in this case the *Apanteles* was doubtless the host of at least the smaller species.—C. M.

torius, Fab., *B. sulcator*, Grav., *B. gracilis*, Grav., *B. tricinctus*, Gr., *B. dimidiatus*, Schr., *B. tarsatorius*, Panz., *Alomyia debellator*, Fab., typical form and var. *nigra* (male), *Lissonota bellator*, Gr., *L. sulfurifera*, Gr., *L. cylindrator*, Vill., in September, *Glypta lugubrina*, Hlg., and the ubiquitous *Ophion luteus*, Linn., resorting to the street lamps when lighted. I must also mention the capture on Wimbledon Common of a single female of *Scolobates auriculatus*, Fab., during August last. I am indebted to Mr. Claude Morley, F.Z.S., for kindly identifying the above.—RUPERT STENTON; Herne Hill, December 9th, 1909.

PÆCilocampa populi, ab.—On Nov. 29th last, whilst working for moths under a very powerful electric arc lamp outside my office in the New Explosive Works here, I was surprised to see what I at first took to be a late *Pistacina*, but much to my surprise I found it to be a curious aberration of *P. populi*. It was equally as active on the wing as two or three normal specimens which were flying around, although it had the tip of the right fore wing slightly crumpled (this I drew out in the setting). The specimen is of a golden brown colour throughout, except the antennæ, which are of the usual colour. It shows traces of the pale oblique transverse bars of the fore wings, but the pale colour is absent and replaced by the colour as above. During the past three years I have had some hundreds of these moths through my hands, the night men sometimes having as many as four dozen for me in the morning, the result of one night's catching, but never before have I observed one worth recording even as a slight variety.—HERBERT WM. BAKER; 73, Limetree Place, Stowmarket, Suffolk, November 14th, 1909.

PÆCilocampa populi AT CHESTER.—I took a fine male specimen off the globe of a Chester electric lamp, where it was resting, at half past eight on the evening of November 19th. The capture is interesting, as the November of this year was exceptionally cold.—J. ARKLE; Chester.

APOROPHYLA AUSTRALIS, Bdo.: A CORRECTION.—I regret to find that, by an oversight, I incorrectly recorded in 'The Entomologist,' vol. xxxviii. p. 93, the capture of a specimen of this insect in Cornwall.—W. A. ROLLASON; "Lamorna," Truro, Cornwall, December 13th, 1909.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, November 3rd, 1909.*—Dr. F. A. Dixey, M.A., M.D., President, in the chair.—Mr. C. Turner Clark, F.Z.S., of 90, The Mall, Newport, Isle of Wight; Mr. Reginald Leigh Leigh-Clare, c/o Messrs. Allen and Gledhill, Singapore; Mr. Thomas Dobson, of Park Avenue, The Park, Sharples, Bolton; Mr. Frank James Evans, of the Botanical Department, Trinidad, British West Indies; Dr. T. P. Lucas, Wakefield's Buildings, Adelaide Street, Brisbane, Australia; and Dr. Gilbert William Nicholson, M.A., M.D., of the Cancer Hospital,

London, S.W., were elected Fellows of the Society.—Mr. C. O. Waterhouse exhibited a living Buprestid beetle of the *Chrysobothris*, found in an orchid-house in the north of London. It was probably Brazilian, but there was nothing quite like it in the Natural History Museum.—Mr. A. E. Gibbs brought for exhibition a case containing a series of *Parnassius apollo* taken by him this year in the Vallée de Joux, Swiss Juras, at 3300 feet, and at Eclépens. He pointed out that the species in the Jura shows a tendency toward the form known as ab. *pseudonomion*, and this is most strongly marked in examples from the lower level at Eclépens.—Mr. W. G. Sheldon showed a series of characteristic butterflies collected by him in June of this year at Herculesbad, South-eastern Hungary. They included examples of *Neptis lucilla*, *N. aceris*, *Melanargia galatea* var. *procida*, *Erebia medusa* var. *psodea*, and *Pararge roxelana* as described by him in the current volume of the 'Entomologist.'—Mr. H. J. Turner exhibited (a) two extremely small *Cupido minimus* taken with normal-sized examples near Winchester on June 12th, 1909, the expanse of wings being 15 mm.; (b) an example of *Anthrocera achillea*, in which the blotches on the fore wings were all fused together, giving at a casual glance the appearance of a small A, captured at Gex, Ain, France, on August 11th, 1909; (c) a white aberration, ab. *alba*, of *Rumicia phlæas*, taken at Brasted, Kent, on August 28th; and (d) examples of *Heodes virgaurea* var. *miegii* taken at Zermatt in early August, a form said to be unusual outside Spain. Var. *zermattensis* was the usual form of the female met with.—Mr. G. C. Champion exhibited specimens of *Melanophila acuminata*, De Geer, *Criocephalus ferus*, Muls., and other Coleoptera found on pines near Woking. He called attention to the numerous interesting forms that had been found on pines during recent years, not only in the south of England, but in Scotland also. The Buprestid had probably not been searched for previously at the right season—during the driest time at the end of the summer and early autumn—at a period when few insects are to be found. He stated that he had met with various other Buprestids, both in Spain and in Tropical America (e.g. *Buprestis sanguinea*, F., and *Actenodes chalybeitaris*, Chev.), in the dry season or when the trees had been scorched by fire.—Mr. Norman H. Joy showed the following new British Coleoptera: *Epipeda nigricans*, Thoms., *Pityogenes trepanatus*, Nordl., both taken at Blair Atholl, Perthshire, September 1909; *Lathrobium dilutum*, Er., captured at Dalwhinnie, Inverness-shire, September 1909; *Cryptophagus pallidus* var. *argentea*, var. nov., differing from the type form in having silvery pubescence; he also exhibited *Philonthus trossulus*, Nordl., from Dalwhinnie; the genitalia of *Gnathoneus nidicola*, Joy, and *G. rotundatus*, Kugel, and of *Anisotoma anglica*, Rye, and *A. cinnamomea*, Er.; and a series of *Sunius lyonessius*, Joy, from the Scilly Isles, pointing out the structural characters by which this species may be distinguished from *S. angustatus*.—Mr. W. J. Lucas exhibited a very fine female example of *Sympetrum fonscolombii*, Selys, exhibited on behalf of Mr. F. W. Edwards, of Cambridge, who took it on September 24th, 1908, at Frensham Ponds, in Surrey. Probably this species is always an immigrant with us, and but few specimens have been recorded.—Professor E. B. Poulton,

F.R.S., exhibited three species of *Planema* (Acræinæ) together with mimetic species of *Pseudacræa* (Nymphalinæ) captured on the same day in a small patch of forest near Entebbe by Mr. C. A. Wiggins, F.E.S. The *Pseudacræas* were of two species, but the sexes of one were entirely different in pattern, mimicking two species of *Planema*.

Wednesday, Nov. 17th, 1909.—Dr. F. A. Dixey, M.A., M.D., President in the chair. Mr. H. Rowland-Brown, one of the Secretaries, announced that the Council had nominated the following Fellows to act as Officers and to serve on the Council of the Society for the Session 1910-11:—President, Dr. Frederick Augustus Dixey, M.A., M.D.; Treasurer, Mr. Albert Hugh Jones; Secretaries, Mr. H. Rowland-Brown, M.A., and Commander James J. Walker, M.A.; Librarian, Mr. George Charles Champion, F.Z.S.; and as other members of the Council, Professor T. Hudson Beare, F.R.S.E., Mr. G. T. Bethune-Baker, F.L.S., Dr. Malcolm Burr, D.Sc., F.L.S., F.Z.S., Mr. H. St. J. Donisthorpe, F.Z.S., Mr. Albert Harrison, F.L.S., F.C.S., Mr. Selwyn Image, M.A., Dr. Karl Jordan, Ph.D., Mr. Hugh Main, B.Sc., Mr. Alfred Sieh, Mr. Henry Jerome Turner, Mr. Rowland E. Turner, and Mr. James W. Tutt.—Mr. Gilbert E. Bryant, of The Grove, Esher, Surrey, and Mr. Alfred Tetley, M.A., of Avenue Road, Scarborough, were elected Fellows of the Society.—The decease of Dr. Gustave Kraatz, of Berlin, was announced, and Dr. Karl Jordan gave a short account of the services rendered to entomological science by the deceased gentleman, who was for many years a Fellow of the Society.—Mr. H. Eltringham exhibited a case of butterflies from African localities, to show that the species described as *Acræa aurivillii* is the female of *A. alciope*, and to illustrate the mimetic relations between the *Acræa* and the two species of *Planema*, and a species of *Mimacræa* included in the exhibit.—The Rev. F. D. Morice brought for exhibition a case of Aculeate Hymenoptera, representing many different groups visiting a solitary tree of *Ochrademus baccatus*, Del., in the neighbourhood of Jericho. They showed a remarkable similarity in points of colour, &c., and neither plant nor insects, in most cases, were to be found elsewhere in the region.—Mr. A. H. Jones exhibited a few butterflies collected during last summer at Formia, near Naples, including *Melanargia arge*, probably the most northerly limit of the species. Fine forms of *Hipparchia semele*, *Satyrus statilinus*, *Melitæa parthenie*, and *Lampides baticus*; also various Lyncnidæ, presenting little if any difference from the types found in the Swiss Alps.—Mr. H. J. Turner, an example of *Melitæa didyma* in which the greater portion of the black pigment had more or less failed to develop, captured at Zermatt on August 3rd, 1909; a specimen of *Brenthis euphrosyne*, taken in the same locality on July 31st, the spots composing the submarginal line well developed, and most of them elongated towards the base; a specimen of *Polyommatus damon*, in which there was no trace of the transverse row of eye-spots on the under side of the fore wings, the discoidal spot only being present, from near Aigle; and two series of *Melitæa parthenie* with var. ? *varia*, the first taken on the Riffelalp on August 1st, and the second up the Valley of the Zmutt, Zermatt, on July 31st.—Mr. A. Sieh, a pair of *Depressaria putridella*, Schiff., bred from larvæ taken

last June at Whitstable, Kent, the first British examples having been taken in the larval state by Mr. E. D. Green in 1906; also a pair of *Coleophora chalcogrammella*, Zell., taken last August in Richmond Park, Surrey, this species formerly occurring near Scarborough, but not apparently taken hitherto in Britain further south than Suffolk.—Mr. H. M. Edelsten, a bred series of *Nonagria neurica*, Hb. (*edelsteni*) from Sussex, including two new aberrations for which he suggested the names *rufescens* and *fusca*. He mentioned that, as far as he was aware, these two forms had not been previously noted on the Continent. He showed, also, ova and pupa *in situ*, with photographs by Mr. Hugh Main to illustrate the life-history of the species.—Mr. W. G. Sheldon brought for exhibition a case containing several series of Pieridæ taken by him this year at Herculesbad. He drew attention to those labelled as *Pieris rapæ*, suggesting that some of them might be *P. ergane* or *P. manni*, to which respectively they bear a remarkable resemblance superficially. He also exhibited the two "fireflies," *Luciola mingrelica* from Herculesbad, and *Phausis splendidulus*, male and female, from Hohe Tatra.—Mr. W. J. Lucas exhibited two imagines and a larva of the finest of our Neuroptera, *Osmylus chrysops*; the exhibit was made on account of the larva which was taken by Dr. D. Sharp, F.R.S., near Queen's Bower in the New Forest. It pierces and sucks dry some small animals, but its life-history is not well known.—Dr. G. B. Longstaff showed a teratological specimen of a Carabid beetle from Ceylon (*Omphra*, Latr., sp.). The middle femur of the right side was dilated at the distal end, bearing at its anterior angle two supplementary tibiæ coherent at the base; the rudimentary tarsi were also adherent.—Mr. A. W. Bacot showed two boxes containing pupal cases of *Aglais urticae* collected by Mr. Hugh Main in one locality. Those taken from the food-plant were yellowish white; those taken from the cage in which the larvæ pupated quite black; thus demonstrating the effect of surroundings upon the pupal coloration.—Dr. T. A. Chapman, M.D., F.Z.S., read a paper "*Callophrys avis*," a Palearctic butterfly new to Science.

Wednesday, December 1st, 1909.—Dr. F. A. Dixey, M.A., M.D., President, in the chair.—The Secretary again read out the list of nominations published at the previous meeting.—Mr. W. C. Crawley, of Tollerton Hall, Nottingham, and Mr. G. H. Grosvenor, M.A., of New College and 3, Blackhall Road, Oxford, were elected Fellows of the Society.—The President announced that the Society would hold a *Conversazione* in the month of May, 1910, and invited the co-operation and assistance of Fellows.—Commander J. J. Walker exhibited one hundred and twenty-eight species of Coleoptera, belonging to sixty-eight genera, which he had taken, by sweeping only, at Wytham Park, Berks, between 12.30 and 3.30 p.m. on November 5th, 1909. Several local and uncommon species were included among these, such as *Homalota puberula*, Sharp, *Anisotoma cinnamomea*, Panz. (both sexes), *A. punctulata*, Gyll., *Hydnobius punctatissimus*, Steph., *Cryptophagus pubescens*, Sturm, *Phlæophilus edwardsi*, Steph., *Mantura matthewsi*, Curt., *Salpingus castaneus*, Panz., *Apion filirostre*, Kirby, &c.—The Rev. C. R. N. Burrows sent for exhibition examples of an unidentified species of *Luperina* taken during the past season

on the Lancashire coast, and discussed by Mr. South in the 'Entomologist,' 1889, p. 271, where he expresses the opinion that it may be a form of *Luperina testacea* intermediate between *L. gueneei* and *L. nickerlii*, and later on (*op. cit.*, 1909). The exhibit also included three specimens of what are taken to be authentic *L. nickerlii*, the first two obtained from a Vienna collection, said to be Nickerl's own collecting, and over fifty years old; the third belonging to Mr. South, and labelled "Bohemia"; a series of undoubted *L. testacea*, mostly labelled from about the same Lancashire district, with four specimens of the doubtful insects, and several specimens of undoubted *L. testacea* of the palest form, taken mostly at Rainham, and named, more for convenience than from conviction, *L. gueneei*. Mr. Burrows pointed out that the form of the fore wings in the Lancashire insect is much narrower than in either *L. testacea* or (reputed) *L. nickerlii*, and said that with respect to the possible connection of these Lancashire specimens with *L. gueneei*, he had consulted what he believed to be Henry Doubleday's original description in the 'Entomologists' Annual,' for 1864, p. 123, but that he was not acquainted with the "three round white dots on the costa near the apex," in our common species, and did not see them in the (reputed) *L. nickerlii*.—In the absence of Mr. J. W. Tutt, who was indisposed, Dr. T. A. Chapman opened a discussion on the affinities of *Agrïades thetis* (*bellargus*) and *A. coridon*, and exhibited a number of photographs upon the screen to illustrate his views, being details of species included in the Plebiid group. These included slides of the ova of *thetis* and *coridon* by Mr. F. Noad Clark and Mr. A. E. Tonge, and of the first instar of larvæ of *P. argus*, L., *P. argyrognomon*, *A. coridon*, and *A. thetis*; a photograph of the larvæ of *A. thetis*, by Mr. Hugh Main, showing the "fan" structures remarkably well; also many slides illustrating the differences in the genital armature of the two species under review, and their allies.—The Rev. G. Wheeler, Mr. G. Bethune-Baker, and other Fellows continued the discussion, which was eventually adjourned until the February meeting.—Mr. C. P. Pickett, Mr. A. E. Gibbs, Mr. J. W. Tutt, and Dr. Chapman, also submitted series of *A. coridon* and *A. thetis* with varietal forms and aberrations.—Mr. T. Bainbrigge Fletcher, R.N., communicated a paper "On the genus *Deuterocopus*, Zeller."—Mr. H. St. J. Donisthorpe, F.Z.S., communicated a paper on "Some Experiments with Ants' Nests."—H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Oct. 28th, 1909.—The President in the chair.—Mr. Percy Bright, of Bournemouth, and Mr. G. Bowen, B.A., of Kingston-on-Thames, were elected members.—Mr. Tonge exhibited living larvæ of *Pharetra rumicis* from Hatfield, feeding on sallow.—Mr. South, a series of *Hylophila prasinana*, bred, from Scarborough, in some of which a brilliant red markings had developed.—Mr. West (Greenwich), specimens of the Homopteron, *Idiocerus aurentulus*, from Blackheath. It had only once before been taken in Britain.—Mr. Newman, series of *Agrotis cinerea* from Kent, Lewes, and Brighton; the Sussex races were much the smaller.—Mr. R. Adkin, a female of *Ocneria dispar* taken at rest on an elm-trunk at Eastbourne, and read notes on the

unusual occurrence. He also showed a series of *Scopula decrepitalis* taken near Rannoch in June last. — Mr. Buckstone mentioned the finding of *Noctua xanthographa*, male, and *Luperina testacea*, female, *in cop.*, on Sept. 27th. — Mr. Edwards, a number of Cicadidæ from South America. — Mr. Sich, for Mr. Green, the new British species recently recorded, *Depressaria putridella*. — Mr. Step communicated the Report of the Field Meeting held at Oxshott on Oct. 9th. — Mr. R. Adkin read a Report of the Meeting of the Delegates of Societies affiliated to the British Association. — Mr. Andrews read a paper on "Diptera."

Nov. 11th.—The President in the chair.—Mr. Ashdown exhibited examples of the species of Lepidoptera taken by him during July in Switzerland, including *Euanessa antiopa*, *Loweia alciphron* var. *gordius*, *L. dorilis* var. *montana*, *Polyommatus meleager*, *P. icarus* ab. *icarinus*, *Papilio podalirius*, *Syntomis phegea*, *Anthrocera ephialtes*, &c.—Mr. West (Greenwich), the very rare Homopteron, *Ulopa trivialis*, from Chipstead; and *Limotettix stactogala* from Deal, on tamarisk.—Mr. Barret, male and female bred specimens of Lepidoptera from Messina, and specimens of *Nonagria arundineta* and its allies.—Dr. Chapman, a living bred example of *Agriades thetis* (*bellargus*).—Mr. Tonge exhibited a fine bred series of *Aplecta herbida*, and also some capital photographs of Lepidoptera at rest.—Mr. Andrews, British Syrphidæ showing how the general appearance of the insects is "broken up" by the darkened portion of the wings and the light area at the base of the abdomen.—Mr. Kaye, series of *Spilosoma menthastri* illustrative of local races, and including some aberrant forms.—Dr. Hodgson, specimens of *Agriades corydon* with white submarginal wedges and partial absence of spots on the under side of the hind wings, and also examples of *A. thetis* (*bellargus*) without discoidals. — Mr. Newman, nearly full-fed larvæ of *Pyrameis atalanta* from ova laid in August.—Lantern-slides were exhibited, among others, by Mr. Main, life-history of *Chrysopa* and *Eristalis*; Mr. Adkin, life-history of *Nola albulalis*; Mr. Tonge, insects in resting positions.

November 25th.—Annual Exhibition of Varieties.—The President in the chair.—Nearly a hundred members and friends were present, about forty of whom brought exhibits.—Mr. R. Adkin exhibited a long series of *Amphidasys betularia* and var. *doubledayaria* reared from ova obtained from a pair taken *in cop.* at Lewisham, male the var., female darkly speckled, and read notes on the brood. He also showed an *Abraxas grossulariata*, fore wings practically all black to beyond the yellow line, with the yellow line almost absent, and a rich specimen of var. *lacticolor*.—Mr. South, aberrations of *Polyommatus* (*Lycæna*) *icarus* (female), Chipstead and Oxted, and commented on the forms. He also showed *Luperina testacea* and var. *nickerlii*, and commented on the two forms and their genitalia; *Melitæa aurinia* from Ireland and the western side of England; *Epinephele jurina*, showing variation in apical spot, amount of fulvous colour, and in the tone of fulvous in female; also the male type of *Luperina gueneei* var. *buxteri*.—Mr. W. J. Kaye, a remarkable series of the South American *Heliconius dorus*, including a number of the named forms and races, and commented on its geographical range and dimorphism.—Mr. H.

Moore, a series of under sides of the widely distributed *Melanitis leda* of both the wet and dry seasonal forms.—Mr. T. W. Hall, varieties of *Agriades thetis* (*bellargus*), including a male under side, left lower wing almost devoid of spots, and the right normal.—Mr. A. E. Gibbs, fine series of the same species, including ab. *puncta* and ab. *ceronus* (female) from the Swiss Jura, and a series of *A. corydon* with ab. *syngrapha* (female) from Wiltshire, and large very light males from Caux.—Mr. H. J. Turner, *Rumicia phlæas* ab. *alba* from Brasted; minute specimens of *Cupido minimus* from Winchester and Aigle; a male *Polyommatus damon*, with fore wing under side devoid of eye-spots, from Aigle; *Lycæna arion* var. *obscura* from Zermatt; *Chrysophanus virgaureæ* var. *miegii* and var. *zermattensis* from Zermatt; *Melitæa aurinia* var. *merope* from the Riffelalp; a series of *Anthrocera carniolica* and var. *hedysari* from Gex; a confluent *A. achilleæ* from Gex, &c.—Mr. Leeds, a *Pieris brassicæ* with under side of hind wings of a very distinct blue, and a dusky variety of *Saturnia carpini*.—Mr. Newman, long and varied series of the various species obtained in the Shetlands, including a series of *Noctua conflua* bred in S. England from northern ova, which were decidedly not of the northern type. He also showed a *Leucania*, which had been named in turn *pallens*, *favicolor*, and *straminea*; the genital indications were indefinite.—Mr. Grosvenor, long series of the forms of *Cænonympha typhon* from its various British localities.—Messrs. Harrison and Main, series of *Boarmia gemmaria* bred and captured, and of *Melitæa aurinia* from N. Wales, both showing much variation, some of the latter resembling the Kentish form.—Mr. Harrison, for Mr. March, a *Pararge megæra* with large and much emphasised ocelli on the under side, especially on the fore wings.—Mr. Hemming, a striated form of *Polyommatus icarus* under side; a partially gynandromorphous *Euchloë cardamines*; melanic aberrations of several Argynnids; and *P. icarus* of the colour of *A. thetis* (*bellargus*), &c.—Mr. Percy Bright, many of the magnificent and unique varieties of British Lepidoptera recently acquired from the collections of the late J. A. Clark, including *Brenthis euphrosyne* with white ground; *Melitæa athalia* with white ground; *Rumicia phlæas* with extraordinary rayed under side; *Aglais urticæ* with white ground; black var. of *Limenitis sibylla*; gynandrous *Celastrina argiolus* and *Polyommatus icarus*; *Anthrocera filipendulæ* with five wings; *Nemeophila russula* devoid of markings on hind wings; nearly unicolorous *Venilia maculata* and *Saturnia carpini*, a unique, strongly melanic specimen captured by J. A. Clark, and two gynandromorphs, &c.—Mr. Buckstone, dwarf specimens of *Melanargia galatæa*, *E. jurtina*, *Pieris rapæ*, *P. napi*, and *Spilosoma fuliginosa*; *R. phlæas* var. *schmidtii*, *Bithys quercus* var. *bella*, yellow ab. of *Arctia caia*, *Aphantopus hyperanthus* ab. *cæca*, &c.—Mr. W. West, of Greenwich, exhibited the Society's collection of Anthribidæ and Curculionidæ, which he had recently rearranged.—Mr. Tonge, numerous stereographs of Lepidoptera at rest.—Mr. Edelsten, a bred series of *Nonagria neurica* (*edelsteni*) with ab. *rufescens* and ab. *fusca*, and ova and pupa *in situ*.—Mr. St. Aubyn, a *Melanippe sociata* with the band on the fore wing completely severed.—Dr. Hodgson, a long series of many forms of *Cænonympha typhon*, and a specimen of *Pieris rapæ* with a blackish

spot in the distal area of the hind wing.—Mr. Edwards, specimens of *Caligo atreus* and *C. beltras* from South America.—Mr. Gadge, *Spilosoma lubricipeda*, with dashes in place of spots; a *Melanippe fluctuata* with whole of central area light gray; an *Agrotis exclamatoris* which has a very long claw to the left hind leg; a series of *Porthesia chrysorrhæa* with aberrant spotting.—Dr. Chapman, *Callophrys avis*, with specimens of *C. rubi* var. *fervida* and *Thestor ballus* for comparison, and some fine Spanish *Agriades corydon*.—Mr. E. Sharp, a specimen of *Leucania l-album* taken on ivy bloom at Eastbourne on October 14th; bred *Nonagria neurica*, and a nice series of forms of *Dianthæcia carpophaga*.—Mr. Barnett, a confluent pink form of *Anthrocera trifolii*; *Strenia clathrata* with asymmetrical markings, a very light specimen, owing to irregular suppression of transverse lines.—Mr. Payne, a melanic example of *Argynnis aglaia*, and a specimen of *Agriades corydon* var. *syngrapha*.—Mr. E. Bedwell, specimens of *Odontosecalis dorsalis*, a species of Hemiptera new to the British fauna, from Lowestoft; the rare *Anchomenes gracilipes*; and two specimens of the myrmecophilous beetle *Hetarius ferrugineum*, not taken since 1853 till this year.—Mr. Baumann, bred *Polia chi* var. *olivacea*; *Gnophos obscurata* var. *mundata*; a very dark, obscurely marked ab. of *Cuspidia megacephala*; and a fine banded *Angerona prunaria*.—Mr. Platt Barrett, a case containing species of butterflies from near Messina, Sicily, including *Euchloë turritis*, *Melanargia iapygia*, *Epinephele jurtina* var. *fortunata*, a very large *Pararge megæra*, the yellow southern *P. egeria*, and large and bright *Hipparchia semele* with British representatives or allies for comparison.—Mr. Andrews, the Diptera *Chorisops tibialis*, light and dark forms; and *Microclingsa polita*, a bronze var. from Darn.—Mr. Lucas, a box containing the commoner species of European *Ascalaphi*; the larva of a *Chrysops*; and a *Pieris napi* (female), in which the apex, two blotches, and inner marginal streak were united.—Mr. Sich, a bred series of the new British *Depressara*, *D. putridella*.—Mr. Tarbat, an extremely aberrant form of *Apamea luteolenta* taken at electric light at Fareham.—Mr. Pickett, his fine series of practically all the known forms of *Angerona prunaria*, the results of some eleven years' crossing and interbreeding; and also a very nice set of *Pieris napi* from various localities, bred and captured.—Mr. Sperring, a long series of *Orrhodia vaccinii*, taken this autumn, containing all the forms hitherto noted in this country.—Mr. Colthrup also exhibited varieties of British Lepidoptera.—HY. J. TURNER, *Hon. Rep. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The first meeting of the Session 1909–1910 was held at the Royal Institution, Liverpool, on Monday, Oct. 18th, Mr. C. E. Stott, Vice-President, in the chair.—This being the annual exhibition meeting there was a very good attendance, including a number of visitors.—Mr. B. H. Crabtree, F.E.S., Manchester, exhibited Lepidoptera, including the following species: *Teniocampa incerta*, *T. miniosa*, *T. munda*, and *Pachnobia leucographa*, from Lakeside, Windermere; a varied series of *Odonestis potatoria*, from Berkshire; a series of *Arctia caia*, showing the usual range of minor variation, *Vanessa urtica* approaching var. *ichnusa*, and *Endromis versicolor*, from Aviemore; *Dianthæcia*

carpophaga, pale forms, from Brighton; *Acronycta aceris*, from Sandown, Isle of Wight; *Cucullia asteris*, from the London district; and *Phorodesma smaragdaria*, from Essex.—Major Woodforde, of Market Drayton, brought *Zonosoma pendularia* var. *subroseata*, and a new variety of the same species like *subroseata*, but with the pink area ochreous, which he had bred this year for the first time.—Mr. George Arnold, F.E.S., showed a number of species of Hymenoptera, among them being *Crabro aphidum*, *Formica nitidus*, and *F. zenus*, the two last out of nests of *F. rufa* from the New Forest.—Mr. F. N. Pierce, F.E.S., exhibited, on behalf of Mr. T. Baxter, of St. Anne's, the *Luperina*, allied to *L. testacea*. This species, only two specimens of which have been previously taken in Lancashire, both by Mr. Baxter, of St. Anne's, has occurred again this year, about a dozen specimens having been captured. Mr. Pierce also exhibited microscope-slides of the genitalia, showing the characters he relied upon for differentiating the new moth from *testacea*. The same member also had *Abraxas grossulariata* var. *flavo-fasciata*, from Wallasey; *Orgyia gonostigma* and *Lycæna argiolus*, from Essex; *Triphæna comes*, from Isle of Eig, and other local species.—Mr. W. Mansbridge, F.E.S., showed a long series of *Boarmia repandata* var. *nigra*, from Knowsley; *Melitea aurinia*, from Barmouth; and a series of *Eupithecia valerianata*, from Delamere Forest, this being the first record for Cheshire.—Mr. C. E. Raven exhibited a box of Lepidoptera from Rye, Kent, including a varied series of *Mesotype virgata*; *Aplecta nebulosa* var. *robsoni*, from Delamere; and *Gnophos obscuraria* var. *fasciata*, from Folkestone.—Dr. Tinne exhibited a box of Ichneumonidæ.—Mr. H. S. Leigh, of Manchester, a box of Tachinidæ, and contributed notes on the exhibit.—Mr. Robert Tait, Jun., brought two drawers of Lepidoptera, the result of the season's work, which included *Aplecta nebulosa* var. *robsoni*, from Delamere; *Polia chi* var. *olivacea*, from Huddersfield; *Agrotis agathina*, from North Wales; *A. ashworthii*, very light and very dark forms, from North Wales; *Cucullia verbasci*, bred from larvæ found 1907; *Cynatophora ridens*, from New Forest larvæ; *Eupithecia pumilata*, from North Wales; and various species from the South of England, among them *Moma orion*, from Abbott's Wood.—H. R. SWEETING and WM. MANSBRIDGE, *Hon. Secs.*

RECENT LITERATURE.

A Descriptive Catalogue of the Dobree Collection of European Noctuæ.
Compiled by HORACE B. BROWNE, M.A. Pp. i.-xv., and 1-156,
medium 8vo. Hull and London: A. Brown & Sons, Ltd. 1909.
Price 1s. net.

THE late Henry Doubleday amassed, in addition to his historical collection of British moths and butterflies, a very comprehensive collection of European Lepidoptera. Both of these are now in the Bethnal Green Museum.

At the present time the interest of many British students of Lepidoptera is extended—chiefly perhaps as regards butterflies—

to that larger field for observation and investigation, the Continent of Europe. So far, however, the moths do not seem to receive very close attention.

The late Nicholas Frank Dobree, who formed his collection of European Noctuidæ between the years 1871 and 1888, may be regarded not only as a pioneer in specialization, but as the first advocate for breaking away from what has been termed the "insular prejudice" of the British entomologist. In gathering together the material for this collection Mr. Dobree obtained chiefly specimens of such species as were found in our islands, or of their allies, from various European countries and from other parts of the Palearctic region. As an example of this, the first entry in the Catalogue—*Habrosyne (Gnophora) deraea*, Linn.—may be taken. In the series of this species there are twelve specimens, of which two are from Germany and five from Amurland; the others are British. Justly appreciating the educational value of such a collection, Mr. Dobree (*E. M. M.* xiv. p. 41) endeavoured to impress upon British students the advantage of a knowledge of the European species and forms when dealing with the lepidopterous productions of their own country.

To-day there is far less difficulty in obtaining natural history specimens from the Continent than was the case during the period covered by Mr. Dobree's activities. Although but few species of Lepidoptera can be claimed as peculiar to Britain, still there are a large number of our forms that should be of interest to entomologists on the Continent.

In addition to the six hundred and fifty-four species, and more than three hundred named varieties in the Dobree collection, there are seven hundred and twenty larvæ which had been preserved by Mr. Dobree. The collection is now in the Museum at Hull, to the Corporation of which city it was formally transferred at the close of 1902, and the Catalogue thereof, which has been so ably prepared by Mr. Browne, is a model of what such catalogues should be. It is quite in accordance with its title, and is up-to-date in the matter of nomenclature. An alphabetical index to the species greatly facilitates reference to the Catalogue, and also to the collection, especially when one wishes to learn the position of any particular species in either.

Transactions of the South-Eastern Union of Societies for 1909.
Pp. i.-lxviii. and 1-69. Plates i.-xxv.

AMONG other excellent papers on organic and inorganic Nature there is one of special interest to the entomologist. This is by Mr. A. Sich, F.E.S., and is entitled "Lepidopterous Leaf-miners" (pp. xlvi. and 30-37). It is illustrated by a plate showing life-history details of *Nepticula acetosæ*. Plate i., forming the frontispiece of the volume, is a reproduction of a photograph of the members of the Congress of the South-Eastern Union of Scientific Societies, taken at Wolvesey, June, 1909. Among the numerous portraits in the group we recognize those of several Fellows of the Entomological Society and Members of the South London Entomological and Natural History Society.

The Agricultural Journal of India. Pp. 408. Calcutta and London: Thacker & Co. Vol. iv. 1909.

AMONG the contents is a most interesting article entitled "Eri or Castor Silk," by H. Maxwell-Lefroy, the Imperial Entomologist; this is accompanied by ten fine coloured plates showing larvæ and both sexes of the Eri Silk Moth (*Attacus ricini*); there are also six plates of reproductions of photographs illustrating methods of rearing the larvæ; the interior and exterior of the house in which the rearing is conducted; and spinning. An article on the cultivation of shellac as an agricultural product, by the above-named author, is included in part iii. (July, 1909) of the same volume; this also is liberally illustrated.

Proceedings of the Hawaiian Entomological Society for August, 1908-June, 1909. With two plates and three text-figures. Honolulu, Hawaii.

THIS constitutes No. 2 of volume ii. of the Proceedings, and was published in September, 1909.

Among the various items, all of which are of interest, the following papers may be mentioned:—"Generic Synopsis of Hawaiian Macro-Lepidoptera," by Otto H. Swezey; "A Revision of the Hemipterous Family Nabidæ found in the Hawaiian Islands," by G. W. Kirkaldy (with plate); and "A Conspectus of the Fulgoridæ of the Hawaiian Hemiptera," by G. W. Kirkaldy.

The Thorax of Insects and the Articulation of the Wings. By ROBERT EVANS SNODGRASS. No. 1687. From the Proceedings of the United States National Museum, vol. xxxvi. pp. 511-595, with plates 40-69. Published June 18th, 1909.

THE author endeavours to show the unity of thoracic structure that prevails throughout all orders of insects.

OBITUARY.

WE regret to announce the death, on December 21st last, of The Rev. HENRY CHARLES LANG, M.D., Vicar of All Saints, Southend.

HAVING studied at King's College, London, he obtained his M.R.C.S. in 1873; three years later L.R.C.P., and L.S.A., and in 1877 the Brussels degree of M.D. Subsequently, however, he entered Holy Orders, being ordained deacon in 1885, and priest in 1886. After holding curacies at Reading, Plymouth, and elsewhere, he was, in 1892, nominated to the vicarage of All Saints.

To entomologists Dr. Lang was well known as an authority on the Butterflies of Europe, and he published a work, in two volumes, upon this subject (1881-84). In June, 1899, he commenced a series of articles, with illustrations, entitled "Butterflies of the Palearctic Region," in 'Science Gossip' (New Series). These were continued monthly until publication of that journal ceased in 1902. Dr. Lang was elected a Fellow of the Entomological Society of London in 1900.

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Rubiginata, Ocellata, Albicillata, Hastata, Tristata, Procellata, Unangulata, Rivata, Subtristata, Badiata, Testata, Fulvata, Lineolata, Spartiata. *Desiderata*.—Offers asked.—*John H. Tilly*; *Kenilworth, Grosvenor Road, Chiswick*.

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Duplicates.—*Pap. xuthus*, *Pap. bianor*, *I. latifasciata*, *Cal. davidis*, *Argy. gong.* *Mel. bellona*, *Th. bieti*, *Chr. li*, *Lim. venata*, *Ap. bieti*, and other Chinese butterflies. *Desiderata*.—*Palaearctic Lycænidæ*, and European *Noctuidæ*.—*Richard South*; 96, *Drakefield Road, Upper Tooting, S.W.*

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Vol. XLIII.]

FEBRUARY, 1910.

[No. 561.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.

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THE ENTOMOLOGIST

VOL. XLIII.]

FEBRUARY, 1910.

[No. 561

IN THE FRENCH JURA.

BY A. E. GIBBS, F.L.S.

THE Department of the Jura possesses many charms. It is a land of mountain and valley, of rushing torrents and picturesque gorges, of vineyards and woodlands, of heaths and meadows. It is studded with old-world villages and delightful little towns which contain many ancient buildings, and boast a history of which they are justly proud. Although so easily accessible it is not often visited by English people, who, for the most part, are content with a passing glimpse of such of its beauties as can be seen from the windows of the railway train as they pass through the northern part of it when travelling to Switzerland by way of Pontarlier. The Jura Mountains consist of a number of parallel chains, running roughly from north-east to south-west. They are composed of limestone, and geological students are familiar with the fact that they give the name Jurassic to an important series of beds of the Mesozoic period. These chains of mountains form the retaining walls, so to speak, of three great plateaux, which are very characteristic features of Jura scenery, and being of different heights, rising one above the other, they present very interesting faunal and floral differences.

On the afternoon of Monday, July 11th, 1909, I alighted from the Pontarlier express at Mouchard, a little place of 800 inhabitants, but of some importance to travellers as being the junction with the line which runs north-eastwards to Besançon, chief town of the Doubs, and south-westwards to Lons-le-Saunier, the capital of the Jura. The country appeared to be inviting from an entomological point of view. Walking through the village towards the forest I found a likely-looking grassy spot by the side of the railway, but it only yielded a few *Melanargia galatea*, *Polyommatus astrarche*, *Epinephele jurtina*, and one *Cænonympha arcania*, not a very promising start. In the forest one or two *Brenthis dia* were flying. The heavens were overcast, and although I spent the remainder of the working-day exploring the neighbourhood, nothing more was to be got except one or two specimens of *Leptosia sinapis*. The next morning

looked a little more hopeful, and I started in good time to work among the vine-clad hills on the north of the railway. Here *Pieris rapæ*, *Hipparchia semele*, *Issoria lathonia*, *B. dia*, and *L. sinapis* were met with. A large clump of the hemp-agrimony (*Eupatorium cannabinum*) in the hedgerow proved a bait for *Thecla spini*, of which a short series was obtained; but the insect was getting past its best, and required careful selection. Away across the valley, on a wooded hill-top, were to be seen the ruins of a castle, and I determined to make for them. In the low-lying meadows which bordered the high road a single specimen of *Everes argiades* was taken, the other Lycænids noted being *Polyommatus astrarche* and *Cupido minimus*. In the village of Pagnoz a lane was found which led up the hill-side in the direction of the ruins, which I subsequently discovered to be those of the old château of Vaulgrenans. When nearing the top of the hill a fine male *Apatura iris* settled on the footpath, but he was too quick for me. A stern chase down the steep pathway left me the victor, and I am able to record the capture of the only specimen of the genus I took during my summer holiday. The next butterfly secured was an insect which puzzled me when I boxed it, but it turned out to be a worn male *Polyommatus icarus* with a decided approach to *bellargus* coloration. I suppose it would be var. *clara*, Tutt, of which I got a brighter and better example at Poligny a few days later. Among the females of this species, taken at Mouchard, is one in which the lower spots of the central row on the under sides of the fore wings coalesce, and form a streak running towards the anal angle. *Aphantopus hyperanthus* was rather abundant, *ab. vidua* being not uncommon. The key of the castle grounds is kept at a farmhouse some distance below the ruins, and the girl who acted as custodian found on arrival at the gate that the lock had been changed and her key would not fit, so I had to wait while she returned to the house. When she came back she explained that she could not find the missing key, but she quickly solved the difficulty by pulling up the fence. In the grassy enclosure at the foot of the keep quite a little collection of species was to be found. *Acontia luctuosa* was in company with *P. icarus*, *C. arcania*, *C. pamphilus*, *E. jurtina*, *Thymelicus lineola*, *Pamphila sylvanus*, and, most common of all, *Melanargia galatea*. The morning's catch also included *Aglais urticae* and *Vanessa io*, while *Argynnis adippe* was seen. A walk in the afternoon along a road which led to the forest in a more westerly direction yielded no fresh species. Zygænids taken near Mouchard were *Z. achillæ*, *Z. transalpina*, and *Z. pilosellæ*.

Poligny is an ancient little town lying at the entrance to one of the picturesque eroded valleys so frequently found in the Jura. Dominating the town is a lofty wooded hill surmounted by a huge cross and the rather steep declivity formed a very good

hunting ground. By the side of the path which led to the summit *Melitæa athalia* and a few *M. parthenie* were sporting, and a larger insect, which proved to be *Satyrus hermione*, was flying among the rocks in a quite inaccessible spot, but after the exercise of a little patience it ultimately came within reach of the net. A couple of *Thecla spini* next fell victims. In a bushy place on the summit *A. hyperanthus* was much in evidence, and a nice ab. *cæca* and one or two ab. *vidua* were added to the morning's bag. A variety of this insect was caught here, which was curiously marked beneath, the one side being spotted as in the type, while the other side was ab. *vidua*, that is to say, it had three ocellated spots on the left fore wing and only two on the right. Strange to say, I took a similar specimen the next day at Lons. Two *Cænonympha iphis* were also secured, and a few bright specimens of *C. arcania* were selected from the numbers which were flying on all sides. After an hour's ramble on the plateau, which yielded only common species, a very rough and precipitous track led me down to the pretty little village of Vaux, a mile or two from Poligny. In the afternoon the slopes on the west side of the valley were visited. The early morning had been bright, but towards noon the sky clouded over, and little was to be got after lunch. On a patch of greensward just above the vineyards a single male specimen of *P. hylas* was flying with the more numerous *P. icarus* and *C. minimus*; other butterflies seen during the ramble being *P. napi*, *P. rapæ*, *L. sinapis*, *V. io*, *P. atalanta*, *A. urticæ*, *P. c-album*, *M. athalia*, *A. hyperanthus*, *C. pamphilus*, *E. jurtina*, and *P. sylvanus*.

In the evening I went on to Lons-le-Saunier, where I hoped to find some interesting insects, but on the morning of the 15th the meteorological conditions were far from satisfactory. Nothing was flying in the park, nor was anything to be seen on the banks of the little river Vallière until a sawmill was reached, where, flying by the wayside, I took a couple of specimens of *Everes argiades*. Leaving the water meadows and seeking higher ground I crossed the road and tramway track and found a path which led to the village of Perrigny, where on a railway bank with a sunny aspect I captured *Argynnis aglaia*, *M. athalia* and *P. icarus*, one large male of the latter species measuring 34 mm. in expanse.

Friday, July 16th, was spent at Champagnole, a pleasant town on the second plateau, at an altitude of 545 metres. The day was bright but very windy, and it was not until a steep bank by the side of the river was discovered, where shelter was obtained from the breeze, that any butterflies were found. But in this sunny spot they appeared to be all crowded together. *Brenthis ino*, *B. dia*, *I. lathonia*, *M. dictynna*, *M. athalia*, and *A. adippe*, among the fritillaries; *P. hylas*, *P. icarus*, and *P. astrarche*, among the "blues"; and *C. arcania*, *C. iphis*, *C. pamphilus*,

and *A. hyperanthus*, among the Satyrids, were taken. In the afternoon a hillside near the Pontarlier road, which looked promising, was visited, but the wind was too strong for any self-respecting insect to venture on flight, and consequently the walk, so far as butterflies were concerned, proved a failure.

Although the few days spent in the French Jura did not result in the acquisition of a great many specimens, the visit was a most enjoyable one, and I returned to Switzerland with the impression that, given better weather than we experienced in this most depressing summer, the district would prove a happy hunting ground for the entomologist. The following is a list of the species captured or seen :—

- Pamphila sylvanus*.—Mouchard, July 13th; Poligny, July 14th; Lons-le-Saunier, July 15th; Champagnole, July 16th.
Thymelicus lineola.—Mouchard, July 13th; Lons, July 15th.
T. thaumas.—Champagnole, July 16th.
Cupido minimus.—Mouchard, July 13th; Poligny, July 14th; Champagnole, July 16th.
Nomiades semiargus.—Lons, July 15th.
Polyommatus hylas.—Poligny, July 14th; Champagnole, July 16th.
P. icarus.—Mouchard, July 12th, 13th; Poligny, July 14th; Lons, July 15th; Champagnole, July 16th.
P. astrarche.—Champagnole, July 16th.
Everes argiades.—Mouchard, July 13th; Lons, July 15th.
Thecla ilicis.—Poligny, July 14th.
T. spini.—Mouchard, July 13th; Poligny, July 14th.
Aporia crataegi.—Poligny, July 14th; Champagnole, July 16th.
Pieris rapæ.—Mouchard, July 13th; Poligny, July 14th; Lons, July 15th; Champagnole, July 16th.
P. napi.—Poligny, July 14th; Lons, July 15th.
Leptosia sinapis.—Mouchard, July 12th, 13th; Lons, July 15th; Champagnole, July 16th.
Argynnis aglaia.—Lons, July 15th.
A. adippe.—Mouchard, July 13th; Champagnole, July 16th.
Issoria lathonia.—Mouchard, July 13th; Champagnole, July 16th.
Brenthis ino.—Champagnole, July 16th.
B. dia.—Mouchard, July 12th, 13th; Champagnole, July 16th.
Melitæa parthenie.—Poligny, July 14th.
M. athalia.—Poligny, July 14th; Champagnole, July 16th.
M. dictynna.—Champagnole, July 16th.
Vanessa io.—Mouchard, July 13th; Poligny, July 14th.
Pyrameis atalanta.—Poligny, July 14th; Champagnole, July 16th.
Aglais urticæ.—Mouchard, July 13th; Lons, July 15th.
Polygonia c-album.—Lons, July 15th.
Apatura iris.—Mouchard, July 13th.
Pararge mæra.—Poligny, July 14th.
Satyrus hermione.—Poligny, July 14th.
Hipparchia semele.—Mouchard, July 13th.
Epinephele jurtina.—Mouchard, July 12th, 13th; Poligny, July 14th; Champagnole, July 16th.

Aphantopus hyperanthus.—Mouchard, July 13th; Poligny, July 14th; Lons, July 15th. *Ab. cæca*—Poligny, July 14th. *Ab. vidua*.—Mouchard, July 13th; Poligny, July 14th.

Canonynpha iphis.—Poligny, July 14th; Champagnole, July 16th.

C. arcana.—Mouchard, July 12th, 13th; Poligny, July 14th; Champagnole, July 16th.

C. pamphilus.—Mouchard, July 13th; Poligny, July 14th; Lons, July 15th; Champagnole, July 16th.

Melanargia galatea.—Mouchard, July 12th, 13th; Champagnole, July 16th.

A FEW ICHNEUMONS TAKEN IN CORNWALL, 1909.

BY W. A. ROLLASON, F.E.S.

THE weather for the year has been on the whole cold, wet, windy, and unsettled, and generally speaking unfavourable for entomology. I have, however, taken a fair number of insects, a list of which may be of interest. All the specimens have been determined by Mr. Claude Morley, F.E.S., F.Z.S., to whom I tender most grateful thanks for the valuable assistance so generously given. Of the returns sent me to date I have to record forty-six species as follows:—

EIGHTEEN SPECIES NEW TO CORNWALL.

Cælichneumon cyaniventris, Wesm. — Three males, near Truro, August.

C. derasus, Wesm.—Two males, near Truro, August.

Stenichneumon trilineatus, Gmel.—One female, Malpas, May.

Cratichneumon dissimilis, Grav.—Two males, near Truro and Devoran, August.

Microcryptus abductor, Grav.—Six males, Callestock, June; Malpas, July.

Acanthocrypus quadrispinosus, Grav.—One female, Truro, October.

Idiolispa analis, Grav.—Two females, Perranporth, July; Penweathers, August.

Pimpla robusta, Morl.—Two males, Calenick, August.

P. brunea, Brisch.—Two males, near Falmouth, September.

P. inanis, Scop.—One male, Calenick, August.

Glypta lugubrina, Holmgr.—One female, Penweathers, August.

Stilbops chrysostoma, Grav.—One male, Nansavallan Wood, May.

Exetastes cinctipes, Retz.—Truro district and Port Isaac, July and August, numerous.

Bassus tarsatorius, Panz.—One male, Malpas, July.

Megastylus borealis, Holmgr.—One male, Calenick, May.

Exochilum circumflexum, Linn.—One, Truro, August.

Microdus tumidus, Nees.—One male, Malpas, May; two females, Calenick, May.

Proctotrypes gravidator, Linn.—One female, Truro, October. This insect sharply stung my little daughter, causing a raised white

lump, a quarter of an inch in diameter, which remained for about four hours.

The following list of twenty-eight species gives my further captures, which species, although having been previously recorded, have not in some instances been reported with data for many years:—

Protichneumon fuscipennis, Wesm.—One female, Perranporth, August.

Cælichneumon consimilis, Wesm.—Two females, Callestock, June; Perranporth, July.

Melanichneumon saturatorius, Linn.—Two males, Truro, July and August.

Barichneumon vestigator, Wesm.—One male, Pencalenick, August.

B. albicinctus, Grav.—One male, Penweathers, July.

Ichneumon latrator, Fab.—Five males, Penweathers, August.

I. sarcitorius, Linn.—One male, Truro, July.

I. extensorius, Linn.—One female, Truro, May.

Amblyteles palliatorius, Grav.—One male and one female, Perranporth, August.

A. oratorius, Fab.—One male, Calenick, May.

Platylabus dimidiatus, Grav.—One male, Perranporth, August.

Phygadeuon dumetorum, Grav.—One male, Falmouth district, September.

P. rugulosus, Grav.—Two males, Malpas, May; Calenick, June.

P. variabilis, Grav.—One male, Calenick, May.

Glyphicnemis profligator, Fab.—One female, Penweathers, July.

Cryptus torsoleucus, Schr.—One female, Calenick, August.

C. obscurus, Grav.—Malpas, May; Calenick, May and June; Callestock, June, numerous.

Pimpla examiner, Fab.—Two males, Truro and Calenick, August.

P. brevicornis, Grav.—Six males, Calenick and Pencalenick, August; three females, Malpas, May; Perranporth and Penweathers, July.

P. instigator, Fab.—Two males, Calenick and Old Kea, May; two females, Callestock, June; and Truro, September.

P. turionella, Linn.—Six males, Calenick, May.

Lissonota cylindrator, Vill.—Three males, Perranporth and Pencalenick, August.

L. sulphurifera, Grav.—Three males, near Truro, September; one female, near Falmouth, September.

L. bellator, Grav.—One male, Truro, August; two females, Penweathers, August; and near Falmouth, September.

Banchus pictus, Fab.—One female, Truro, July.

Exetastes nigripes, Grav.—One female, Calenick, August.

Bassus lætatorius, Fab.—One female, Truro, August.

Ophion luteus, Linn.—One female, Porthtowan, May; one male, Truro, September.

“Lanorna,” Truro: December 14th, 1909.

VARIATION IN *VANESSA URTICÆ*, L.: SEASONAL (CLIMATICAL) AND LOCAL VARIATION IN *V. URTICÆ* AND IN *V. IO*, L., BY WHICH THE TWO SPECIES SHOW A TENDENCY TO MEET IN FACIES.

By T. REUSS.

(Concluded from p. 27.)

Now, I believe that an entomologist who has digested some cases of extreme seasonal dimorphism would also find it nourishing to think that *V. urticæ* would be capable of producing, under suitable conditions, an extreme seasonal form which would exhibit a perfect *ocelliform* facies like *V. io*.



V. urticæ ab. *ioformis*, male (cf. 'Ent. Record,' pt. iv. 1909).

The pigmentation of the left pair of wings is depicted as it appears when the specimen is held up against the light. This shows the brightly transparent white dots at the apex of the fore wing, which are placed in the same way (both on the upper and under side, where they are yellowish), and are of the same kind of transparency as similar spots in normal *V. io* (compare also *V. io* ab. *fischeri*, Stdfss., figured vol. xlii. p. 311). In the hind wing the density of the pigmentation and its distribution is very unlike that of *urticæ*, and much more like that of *io*, or abs. of *io*. The right wing pair in the figure shows the aspect of the markings under the usual conditions for comparison. The ground colour of the hind wings is a warm red-brown, as in *io*; the fore wings are orange-brown in colour.

I bred this specimen—which might pass as a hybrid between *urticæ*, female, and *io*, male, just as *V. io* ab. *fischeri*, Stdfss., looks much like a possible hybrid of *io*, female, and *urticæ*, male—from wild Continental larvæ. The pupa was exposed to the sun's direct rays, the heat of which like artificial cold or heat is capable of overthrowing hereditary tendencies, and of thus enabling the inherent *io-formity* to develop afterwards under stimulating temperature conditions, representing exaggerated seasonal influence. The "mechanism" of such aberrative development seems again to consist in alterations of the blood, and blood pressure, regulating the diffusion of the pigment in the wings, of a kind evidently for which *V. urticæ* is predisposed (inherent *io-formity*). Prof. Stéphane Léduc, Nantes, has shown that even "non-vital" chemical substances, if allowed to diffuse in a suitable medium,

will form beautiful ornamental patterns of different kinds, according to the conditions under which they diffuse.

The facially *io-form* aberrations which develop in a saltatory manner in wild pupæ of *V. urticæ* when they are climatized in tropical conditions or exposed to *contrasts of temperature* offer at least sufficient excuse for that thought. This becomes especially clear when it is remembered that *V. urticæ* actually indulges in a slight degree in seasonal variation, the variety of the hot season often showing the *io-form* tendency. Cold weather brings the facies nearer to the northern local variety *polaris*, while a hot season will produce specimens very like those found in the hot valleys of Spain, and even approaching var. *ichnusa*, Bon., of Corsica and Sardinia (a local heat form), and var. *chinensis*, Leech, of Asia, *both of which latter varieties are io-form*: *ichnusa* by its ground colour, the absence of the two puncta on the fore wings (and in the *hot season* even of the inner marginal blotch), *chinensis* by its large size and all-brown, irrorated under side. Thus it appears that the *facial variation of V. urticæ, induced by seasonal conditions of light and temperature, is in the hot season slightly io-form, and moreover tends to cover the amount of facial variation in local groups.**

By a simple experiment every one can easily prove for himself that the facial variation of *urticæ* is bound up with the seasonal amount of light and temperature, and not with any mere time of the year as such, nor necessarily with any particular generation. Let any two broods of *urticæ* develop simultaneously, the one in a warm, sunny room, and the other in a cold, sunless (darkened) room open to the night air; then, in the first case, the resulting imagines will be more or less transitory to the *io-form* var. *ichnusa*, in the second to var. *polaris*,† and very likely there will be one or two beautiful aberrations extra in both groups.

Now, the degree of regular variation in *V. urticæ* is slight as

* Local forms tend more or less, besides indulging in facial variation, to become sexually alien from their type; they are often "species in the making." They are first induced by temperature, *according to the local climate*, then they are developed and "fixed" gradually by hereditism under the protection of "local isolation" from the type, which would otherwise invade the district and swamp the varietal tendency before *sexual alienation had time to take place* and prevent this (compare the effects of *regular migratory* habits in butterflies). How necessary a factor for *physiological divergence* "local isolation" is, becomes apparent when it is remembered that nowhere on the mainland of Europe does a fairly constant and distinct variety of *urticæ* exist, while on the Isles of Corsica and Sardinia "insular isolation" has triumphantly produced var. *ichnusa*.

† "On the Effect of Rearing Larvæ of *V. urticæ* in Darkness," *Entom. antea*, 1909, p. 39, recorded by Col. N. Manders. Twenty-one of fifty-five butterflies were var. *polaris*, trans. An exaggeration in the sense of var. *polaris* would bring the facies near *V. milberti* of North America. Even *V. io* sometimes indulges in a black median fascia like that of *V. urticæ* var. *polaris*, trans. I reared several such specimens last season.

compared with that in *A. levana*—*prorsa*, but when the behaviour of these latter extreme forms is similarly tested they prove themselves to be just as susceptible to the effects of light and temperature as *V. urticæ*. When July and August belie their reputation for warmth and sunlight, then the summer form var. *prorsa* tends to drop out entirely; the pupæ, instead of emerging in August, hibernate and come out in the next spring as typical *levana*;* but in the summer following, if the season is favourable (normal), these will produce var. *prorsa* as usual, though it is not unlikely that (the tendency being at once atavic and protective) a small percentage of the pupæ hibernate even under normal conditions. On the other hand, if the season is exceptionally hot, and also otherwise suitable to the insects, then var. *prorsa* will generate twice, and thus tend to drop *levana*, though this seems to happen rarely, because var. *prorsa* is the progressive form, and is therefore not supported in such a case by hereditary tendencies. If two (perhaps never full) successive broods of *prorsa* are to emerge, then already the first brood must, in perhaps all its stages, have been influenced by abnormally stimulating conditions.

The inferences are obvious:—1 (a) Facial variation is mostly bound up with the conditions of light and temperature; (b) changes in facies, even of the most extreme kind, need not disturb specific identity.

2. On the other hand, specific divergence appears to be dependent on an effective isolation of any one group from the type. The facies of the new species—which begins as a local variety (*cf.* the evidence successfully adduced by Prof. Standfuss)—may either remain almost typical, or may be an exaggeration of one

* The following record by Mr. St. Quintin, F.E.S., in the Ent. Rec. pt. ii. 1909, p. 45, adduces excellent evidence of the effect of a cool English season on a brood of *A. levana*. Mr. Quintin writes:—"In July, 1907, I divided with a friend the ova laid in a cage by a Swiss female *A. levana*. When we returned to England my larvæ were kept in an unheated greenhouse, and pupated, duly emerging in the spring of last year as the form *levana*. My friend kept his larvæ in a warmer house than I did mine, and they pupated quite a fortnight earlier, and all emerged in September as the form *prorsa*, with the exception of one individual, which passed the winter in the chrysalis, and emerged in the March following as typical *levana*." Indian butterflies adduce conclusive proof that one species may be dimorph—in the extreme sense—in one locality and monomorph in another, dropping one of its forms. Thus, according to the communication of Dr. Seitz (*cf.* Ent. Zeitschr. Stettin, 1893, pp. 290–307), there flies on the Indian mainland *Junonia asterie* among the rich vegetation of the wet season; *asterie* is marked with beautiful "eyes," which are said to represent dewdrops. Later, when the dry season of withered leaves and bare trees comes round, there flies *Junonia asterie* again, but now the fly is dark-veined and without "eyes." It resembles a dry leaf in adaptation to the seasonal conditions, and bears the name *almana*. Off the Indian mainland, now, there lies the evergreen Isle of Ceylon, and there *Junonia asterie* flourishes also, but only as the dewdrop-form. Again, in adaptation, it has dropped its "dry-leaf form" *almana*.

of the seasonal dresses of the type according to the local climate. Also the facies of an aberration like f. inst. *V. urticæ* ab. *luna* (cf. Entom. vol. xlii., p. 223) is no doubt "climatic," and could be thought to appear in an isolated local group as the characteristic feature.

3. An exaggeration of the regular seasonal variation of *V. urticæ* points to *V. milberti* in one direction (var. *polaris*), and to *V. io* in the other (var. *ichnusa*, *chinensis*).*

4. Though *ocelliformity* in *urticæ* appears to be bound up with the markings and colours peculiar to *V. io*, such *facial io-formity* in *urticæ* could not guarantee also *specific io-formity*, inasmuch as a particular kind of sexual affinity seems not to be necessarily bound up with any particular kind of facies.† Therefore—in this sense—*io-form* aberrations, local (climatic) and seasonal forms of the present day, need not be otherwise than *facially* transitory to *V. io*, and the same holds good as regards their possible future development.

Quite a different view spreads before us, however, if the significance of *facial io-formity* in *urticæ* is considered in reference to the *past* history of the species. In that case all existing facts induce the acceptance of Prof. Standfuss's theory put forward in his 'Handbook of Palearctic Butterflies,' that *V. io* branched off from the ancestors of *V. urticæ* under the influence of a climatological rise in temperature.

Prof. Standfuss's reasoning is based on analogies in the life-histories of the two species, on comparison of the male ancillary appendages, and on the fact that by exposing the pupæ of *V. io*

* If these two already *io-form* varieties were available for temperature experiments in the pupal stage, the results in facial transition to *V. io* might naturally be expected to be more complete than with pupæ of typical *urticæ*.

† It might be supposed that the sexes of a brilliantly-coloured day-flying species are attracted to each other mainly by the sense of sight, when sexual affinity would be dependent on, or be at least much influenced by, a special facies. But *V. io*, which, with its peculiar colour and markings that distinguish it perfectly from every other butterfly-species, offers the best excuse for such a supposition is just one of those *Vanessidæ* which, being yearly single-brooded—except, perhaps, in Northern Italy—does not pair till *after hibernation* in the spring of the year following its emergence, when, having enjoyed life all the previous summer and autumn since July, it is naturally in a very sad condition *facially*, being often even in rags. *V. urticæ* shares the same habit in its autumn broods, which, emerging as late as October, have less chance than *V. io* to get rid of their beauty before the next spring; but, mostly, *urticæ* also is badly damaged *facially* at the very time of its life when it must provide anew for the future of the species. With all the other *Vanessidæ*—which are among our most richly-coloured flies—the case is similar. This perhaps is conclusive proof that the colours and markings of the facies can have little influence on sexual affinity in these butterflies. I even believe that if a female *V. io* were artificially painted white or yellow, she would still be sought out by the males of the species.

In the case of moths it is perhaps well known that the wings of the females may generally be entirely cut off without lessening their marvellous attractive powers for the males or their fertility.

to low temperatures he was able, in *V. io* ab. *fischeri*, Stdfss., to produce strong facial transition to *V. urticæ*, which, at least in the fore wings, was very great, especially if the local ("climatic" and seasonal) form of *V. urticæ* var. *ichnusa* is taken for comparison. Normal British *V. io*, induced by the cool, contrastless climate, are more or less transitory in facies to this *urticæ*-form aberration, ab. *fischeri*, Stdfss. On the other hand, *V. urticæ* preserves its facial *io*-form tendency, and exhibits it also in seasonal variation, extreme aberrations, for instance, ab. *ioprotoformis*, ab. *ioformis*, and in existing local (climatic) varieties. In this sense *V. io* appears as a palæ-entomological variety of *V. urticæ*, which became a "species" by losing its sexual affinity to the type.

SIZE-VARIATION OF MELITÆA ATHALIA.

BY REV. FRANK E. LOWE, M.A., F.E.S.

WHILE preparing notes of some of my captures last summer, the January issue of the 'Entomologist' came to hand, in which Mr. Wheeler refers to specimens of *Melitæa athalia* taken by me at Reazzino (*antea*, p. 10). There can be no doubt that he is right in saying that at present "with very few exceptions it seems hopeless to give characteristics for local races of this species, for three reasons," which he enumerates. Against the asserted tendency to a decrease in size south of the Alps, *teste* Rühl and others, he adduces many exceptions from his own experience. To me it appears that this decrease in size may be true when you get well away from the Alps, perhaps in the plains of which I know nothing, but not in the mountainous districts themselves. For instance, at Orta and in the Val Strona, Iselle and its neighbourhood, *athalia* is often above the average in size and brilliancy of colour as compared with specimens from the Rhone Valley or Caux. In South France again, to my surprise, all specimens which I have taken at Digne or Gavarnie were small of a poor form. But, as Mr. Wheeler says, "in many localities such different forms are found together" that it is difficult often to find anything characteristic of a locality, especially in the matter of size. This may be exemplified from my Reazzino specimens, all of which I did not send to Mr. Wheeler. Some of these are decidedly small (he is right in supposing that they were taken on the same ground as the "*britomartis*"), one female measures only 31 mm., while, as instances in the other direction, some measure 43 mm., and males 40 mm. Again, some of my largest specimens are from Orta, males often reaching an expanse of 41. From the Tyrol, *i.e.*, the Mendel, Brenner, and Trafoi, specimens appear to be uniformly smaller than those from the Swiss mountains.

Again, as analogous with Mr. Wheeler's instances of bright coloration in the lower Misox Valley, last year I took three examples in the Val Maggia which are so fine that on showing them to Mr. Jones, when we met at Digne, he exclaimed, "Why, they are almost as good as *mehadiensis*." These are not only as strongly marked and as brilliant in colouring, especially on the under side, as var. *mehadiensis*, but they are also large. The smallest race of *athalia* that I have noticed is a series I took at the beginning of August, 1904, on Monte Bré. Does this indicate a partial second brood? Here we have males and females averaging 33 and 39 mm. respectively. Many from Ecclepens, Bex and Caux run decidedly small, all of which seems to show, for I have not quoted isolated individuals, that the species varies in size equally on both sides of the Alps.

THE FOSSIL CRABRONIDÆ.

By T. D. A. COCKERELL.

It is evident that the fossorial wasps are of great antiquity. *Crabro*, with its curiously reduced venation, cannot be regarded as a primitive member of the series, and yet we have positive evidence that it has remained unchanged, save for the development of minor groups, and of course species, since the middle of the Tertiary period at least. The oldest known species come from Baltic amber, of Lower Oligocene age. I have recently (Mitt. Geol.-Pal. Inst. Univ. Königsberg, 1909) described two of these amber species, *C. succinalis*, about 5 mm. long, and *C. torquisti*, about twice as large. It cannot be said that they present any feature which would be considered remarkable in a living species. From the Miocene shales of Florissant, Colorado, I have described *C. (Tracheliodes) mortuellus* (Bull. Mus. Comp. Zool., 1906), a species about 7 mm. long, of quite ordinary type. A second Florissant species may be described as follows:—

Crabro longævus, n. sp.

About 10 mm. long, or a little less (head and thorax about $4\frac{1}{2}$, abdomen about 5), robust, black, the tegument of abdomen nearly all destroyed, so that it cannot be determined whether there were pale spots; thorax densely and minutely punctured; abdomen sessile, the first segment convex, the suture between it and the second depressed; wings slightly reddened; venation normal; the following measurements are in microns: length of marginal cell 1649, its depth at middle 425, its truncate end 187; depth of stigma 204; submarginal cell on marginal 816; end of submarginal cell to end of marginal (lower corner of truncation) 850; upper end of basal nervure to base of marginal cell 900; basal nervure on submarginal cell 170, on discoidal 1020; basal nervure meeting transverso-medial, or almost doing so.

Compared with *C. megerlei* (as figured by Kohl) it differs thus:—

(1) Stigma more tapering at both ends; angle formed by stigma and marginal nervure smaller.

(2) Transverse cubital joins marginal cell much nearer middle.

(3) Basal nervure is more remote from stigma, and its upper section is much shorter in proportion to the lower.

(4) Basal nervure almost exactly meets transverso-medial.

In all these particulars the insect agrees excellently with *C. sayi* nov. nom. (*C. sexmaculatus*, Say, 1824, not Olivier, 1791), although in *C. sayi* the stigma is smaller. The reddish wings and the punctate groove crossing the pleura are also as in *C. sayi*. *C. sayi* occurs to-day at Boulder, Colorado.

Hab.—Miocene shales of Florissant, Station 14 (*W. P. Cockerell*).

The genus *Crabro* is very abundant to-day at Florissant. The recent species have been studied by Mr. S. A. Rohwer, who has described six new ones from that locality.

ON THE HYMENOPTEROUS PARASITES OF COCCIDÆ.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

(Continued from p. 31.)

54. *Lecanium persicæ*, Geoff.

Dr. Mayr raised *Phenodiscus* (*Encyrtus*) *æneus*, Dalm., from the "Peach Scale" in Austria (Verh. z.-b. Ges. 1875, p. 758). *Coccophagus cognatus*, How. (Revis. 1895, p. 35), *C. lecanii*, Smith (*l. c.* p. 33), and *C. fuscipes*, How. (Report Ent. U. S. Agric. 1881, p. 359) have been bred in America. From the synonymous *L. rosarum*, Voll., Gaulle (Cat. 106 et 99) records *Aphelinus scutellaris*, Dalm., and *Blastothrix sericea*, Dalm. Dalla Torre says Ratzeburg (Ichn. d. Forst. iii. 106) records *Coccobius notatus* from *Coccus rosæ*, which Mr. Newstead regards as belonging here, though it is more likely referable to *Diaspis*, since I see it is bracketed "*Aspidiotus*."

55. *Lecanium inulæ*.*

From a Coccid so named in his Catalogue (p. 102), Gaulle records *Pteromalus hemipterus*, Walk. (Ent. Mag. 1836, p. 196).

56. *Lecanium pruinosum*, Coquil.* 57. *L. quercitronis*, Fitch.*

The omnivorous *Coccophagus lecanii*, Smith, is said by Howard (Revis. 1895, p. 33) to attack these species in Northern America.

58. *Lecanium viride*, Green.*

This species is said (Proc. U. S. Nat. Museum, 1896, p. 633) to be destroyed by *Coccophagus orientalis* in Ceylon.

59. *Lecanium hemisphæricum*, Targ.

Gaule gives three parasites upon this species: *Aphelinus scutellaris*, Dalm., *Phænodiscus æneus*, Dalm., and *Cerapterocerus pilicornis*, Thoms.

60. *Lecanium robiniarum*, Dougl.*

From this species *Aphelinus scutellaris*, Dalm. (*pulchellatus*, Westw.) is also instanced by Gaule (Cat. 106).

61. *Lecanium quercus*, Linn.

The host of Ratzeburg's *Eulophus leptoneuros* seems dubious. He says: "I bred seven males and two females from *Coccus quercus* on oak, in company with several *E. pachyneuros*" (Ichn. d. Forst. i. 169; with four females of the latter species, *cf.* i. 167); later he adds that the former was bred "by Hr. Nördlinger from beech-leaf galls. Hr. Wissmann bred it from *Cynips fœcundatrix*" (*l. c.* ii. 170), and (*l. c.* iii. 214) "again from *fœcundatrix*, and then from *eglanteriæ*." Mayr bred (Verh. z.-b. Ges. 1875, p. 706) *Microterys chalcostomus*, Dalm., from this species in Austria. And Gaule (Cat. pp. 97-99) says *Erycydnus longicornis*, Dalm., and *Chiloneurus elegans*, Dalm., have both emerged from *Lecanium* on oak. Nees (ii. 434) quotes Fonscolombe (Ann. Soc. France, 1832, p. 334) in saying that *Encyrtus scutellaris*, Dalm., emerged "E cocco tinctorio *Quercus cocciferæ*, Junio," but Gaule (Cat. 97) gives *Eucomys obscura*, Dalm., as attacking Coccids on *Quercus tinctoria*.

62. *Lecanium eriophorum*.*

Aphycus apicalis, Dalm., is said by Gaule (Cat. 99) to have been bred from a species, which he designates as above.

63. *Lecanium coryli*, Linn.

Nees says of *Encyrtus scutellaris*, Dalm. [= *E. infidus*, Rossi] (Mon. Pterom. 223): "Habitat in Coccis, præsertim *Coryli Avelanæ*"; quoted by Curtis (Brit. Ent. fol. 395). *Chiloneurus formosus*, Boh., is recorded from *Coccus coryli* by Thomson (Hym. Scand. iv. 149). Mayr (Verh. z.-b. Ges. 1875, p. 706) also bred *Microterys sylvius*, Dalm., from *Lecanium coryli*, in Austria, and is quoted by Gaule and Ashmead. From the var. *L. corni*, Bché., Mayr also records (*l. c.* 696) *Aphycus punctipes*, Dalm.

64. *Lecanium piperis*, Green.*

This species is said to be attacked by *Encyrtus flavus*, Howard (Rep. Ent. U. S. Agric. 1881, p. 367).

65. *Saissetia oleæ*, Bern.

Lecanium oleæ is the host of *Tomocera californica*, Comst. (Rep. Ent. U. S. Agric. 1881, p. 368) in America, and of *Apycus lounsburyi*, How. (Ashm. 1900, p. 387) in South Africa.

66. *Saissetia hemisphæricum*, Targ.

Motschulsky has described his *Encyrtus adustipennis* (Bull. Soc. Nat. Moscou, 1863, p. 55) from the synonymous *Lecanium coffeæ*, which he evidently thought distinct from *Pseudococcus coffeæ*, since from the latter he also brings forward (Étud. Entom. 1859, pp. 170-78) both *Encyrtus nietneri* and *Chartocerus musciformis*; but all are from Ceylon. *L. coffeæ*, Sign., is attacked by *Cirrospilus coccivorus*, Mots. (Bull. Mosc. 1863, p. 68), *Cocophagus flavescens*, How. (Proc. U. S. Nat. Mus. 1896, p. 634), *C. orientalis* from Ceylon (*l. c.* p. 633), by the Torymid *Marietta leopardina*, Mots. (Bull. Mosc. 1863, p. 52), by *Thoracantha cyanea*, Mots. (Étud. Entom. 1859, p. 172) and by *Cephaleta purpureiventris*, Mots. (*l. c.* p. 173).

67. *Physokermes abietis*, Geoff.

Most of our knowledge respecting the enemies of this species still comes from Ratzeburg, who says (Lehn. d. Forst. iii. 194), among the species bred by Hr. Reissig from *Coccus racemosus* I recently found *Encyrtus cephalotes*; of *E. duplicatus*, Nees (ii. 145), I have actually bred this pretty insect from *Coccus racemosus* several times, and (iii. 188) again from *Coccus racemosus*—all the more striking, therefore, is the anomalous breeding of Hr. Reissig, in which several specimens emerged from a wax-yellow *Syrphus* larva, which had been close to the *Coccus racemosus*; I had already bred a specimen of *E. parasema* (ii. 149) with damaged antennæ in the year 1845 from *C. racemosus*, with *E. mucronatus*; then came a well-preserved specimen from Nördlinger, also from this host; Bouché bred several *E. tenuis* (ii. 149), but only males, from *C. racemosus*—also bred by me from male of this host from Neustadt; *E. testaceipes* (ii. 146) was bred, together with *E. atricollis*, by Hr. Reissig from *C. racemosus*; one male *Eulophus coccorum* (ii. 157) bred from a male pupa of *C. racemosus*; I bred several *Pteromalus racemosi* from my *C. racemosus* (ii. 200, *cf.* i. 201) in August, 1842—in the open in the beginning of August the *Coccus* swellings full of eggs were surrounded by these *Pteromali* (Giraud also bred it from this host, *cf.* Ann. Soc. France, 1877, p. 430); Hr. Reissig bred many *Encyrtus mucronatus* (ii. 148) from *C. racemosus*, with many *testaceus* and *testaceipes*; and again (iii. 193) *E. mucronatus* is the female of *E. parasema*; formerly I received one female of *Pteromalus coccorum* (ii. 197) without abdomen, bred with *Encyrtus æneus* from *Coccus*—later came a male which I consider belongs to it and which I bred from *Chermes piceæ*. Subsequent authors have done little but quote the above observations; but Mayr records (Verh. z.-b. Ges. 1875, pp. 691 et 706) *Encyrtus testaceus*, Ratz., and *Microterys lunatus*, Ratz., from *Coccus racemosus*, Linn., and *M. fuscipennis*, Dalm., from *Lecanium racemosus*, which Ashmead evidently regarded as distinct from

Physokermes abietis, since he gives it under both host-names (1900, p. 391). Giraud (Ann. Soc. France, 1877, p. 433) also bred *Tetrastichus melanopus*, Först.; but that Ratzeburg also raised *Entedon turionum*, Htg., appears doubtful, for, though given under this species in the host-table, only Lepidoptera are specified in the text, of the significant genus *Coccyx*. So abundant are its parasites that fifty per cent. of this species are said to be destroyed in Delamere Forest by *Encyrtus scaurus*, Walk., though Newstead had not met with it elsewhere (Brit. Cocc. i. 31). I suspect *Microterys tessellatus*, Dalm., of preying largely upon it—though not yet bred thence—since it is an abundant species on the spruce trees about Brandon, Suffolk, in May.

(To be continued.)

NOTES AND OBSERVATIONS.

THE TAPPING OF THE "DEATH WATCH BEETLE."—I never could believe that these beetles struck up their sexual dirge by hammering their heads on the deal boards, and in my collection I find an



Anobium striatum spread out so as to show a small horny plate, *a*, at the extremity of the body, which I believed, as I still believe, is the plectrum that sounds the monitory music when the beetle takes it into its head to scrape it over a ridge, *b*, at the extremity of the wing-cases. I used to believe the *striæ* in the hollow beyond the ridge, as previously suggested (Westring), were the origin of the sound, but I now recognize it is the ridge; the best imitation of the tapping has always been made with the finger-nail.

When not in use, the horny plate is folded back. In *Anobium tessellatum*, which is larger, these structures are better seen.—A. H. SWINTON.

PUPATION OF XANTHORHOË (MELANIPPE) FLUCTUATA.—With reference to your note in the 'Entomologist' (vol. xlii. p. 317), perhaps the following may be of interest. On November 29th I obtained from wallflowers in my garden two full-grown larvæ of *M. fluctuata*, one light-coloured with the usual markings, the other dark and slightly larger. These were kept under observation in a small glass jar containing a little earth, the jar being covered with lino. The dark larva spun a cocoon on December 10th, the other on December 11th. On December 23rd the dark larva moved to one side of the cocoon, pupating during the evening; on December 26th the light one pupated in the evening. The pupa at first was light green with a cream abdomen, and has since changed to the normal brown colour. I might add that I tried forcing pupæ of this species last year, but was unsuccessful.—S. W. GADGE; 59, Frankfurt Road, Herne Hill, S.E., January 6th, 1910.

MICROSCOPES AND ACCESSORIES.—We have received from "Leitz," the well-known opticians, of Wetzlar (also 9-15, Oxford Street, W.),

two of their Catalogues—"Microscopes" and "Microscope Accessories." To entomologists the most important of the contents of the former is a new microscope specially designed for their use, of which an illustration appears on the cover of our December number. In the second catalogue, perhaps the most interesting things from an ordinary working entomologist's point of view are the drawing and measuring appliances.

EMERGENCE OF *EUSTROMA SILACEATA*.—I took a worn female, third week in August, 1909, at Folkestone. She laid about three dozen ova. The larvæ fed up on willow herb (*Epilobium*), pupated, and instead of lying over till May, 1910, the imagines began to come out the second week in October, the last emerging by mid-November. A mating, and some three dozen more ova were obtained. For the larvæ of these there was difficulty in obtaining food supplies, as all but odd bits of *Epilobium* had by this time perished; but with the help of some old-fashioned fuchsia this brood also was got into pupa state. They were put in a north porch, but on December 31st an imago appeared, with another on January 1st, 1910, and others followed on by twos and threes. By January 15th, 1910, I had another forty ova. Larvæ from these began to hatch out on the 20th. I think I shall be able to feed them upon young growths at the base of the small willow herb growing in the garden.—(Rev.) ARCHIBALD DAY; Malvern Link.

PAPILIO NIREUS FOURTEEN MONTHS IN PUPAL STATE.—On September 28th and 29th, 1908, five larvæ of *Papilio nireus* pupated, and one attained the pupal state on October 18th; the other four all went over until August, 1909. On July 24th, 1909, I left Durban by the 'Durham Castle' for England, and three of the butterflies emerged during the passage on August 11th and 12th; the remaining pupa I put in a chip-box, and had it with me all the time I was in London (seven weeks). I returned by the 'Dunluce Castle' on October 9th, and arrived here with the pupa on November 5th. On November 25th, this pupa produced a small female specimen. Thus, all but three days, it has been fourteen months in the pupal state, during which time it has travelled 14,000 miles, and crossed the Equator twice. This is, I think, very unusual, and I cannot account for the butterfly not emerging, at any rate upon either of the occasions when in the Tropics. I may mention that I brought with me twenty-seven pupæ of *P. cenea* that had pupated in July, 1909, and from all of these butterflies emerged on the way home before we got to Teneriffe.—G. F. LEIGH; Durban, Natal.

CAPTURES AND FIELD REPORTS.

LUPERINA GUENEI AT SOUTHPORT.—It may be of interest to report that I have in my cabinet a specimen of *L. guenei* from Southport (captured by the late Mr. T. Davies, of Birkdale). It exactly corresponds with fig. 3, pl. vii. (Entom. vol. xlii.). Although somewhat worn, it is easily recognizable, and I have compared it with Mr. Baxter's insects; it most resembles his early captures,

having the ochreous tint, and he agrees with me that there is no doubt as to its identity.—W. G. CLUTTEN; 132, Coal Clough Lane, Burnley.

EPIONE APICIARIA IN OCTOBER.—I think the following dates for this species are unusual. I took one on September 13th, 1907, another on October 4th, 1908, and two in 1909 on September 18th and 19th. These are the only specimens of *E. apiciaria* that I have obtained here, although I collect all through the summer over the same ground.—F. W. J. JACKSON; Woodcote End House, Epsom.

EARLY OCCURRENCE OF AGROTIS PUTA.—In 1905 I obtained a female specimen on May 29th, in 1907 a female was found on May 16th, and this year—1909—a male on May 18th. These dates would seem to point to the species being either occasionally or perhaps regularly double-brooded in this locality.—F. W. J. JACKSON.

A RARE BEETLE.—I beg to record the capture of a fine male specimen of *Acanthocinus adilis*, Linn., in Truro, which was taken about a quarter of a mile from a riverside timber-yard, to which a large quantity of foreign timber is imported, and the probability of its having been imported therewith is confirmed in Fowler's 'Coleoptera of the British Islands.' The date of capture was September 28th, 1909.—W. A. ROLLASON; "Lamorna," Truro, Cornwall, January 19th, 1910.

VANESSIDÆ IN CORNWALL.—With reference to recent reports in the 'Entomologist' as to scarcity and otherwise of this family, I have found *atalanta*, *io*, and *urtice* to have been unusually plentiful in the Truro and Falmouth districts, but *cardui* scarcer than usual.—W. A. ROLLASON; "Lamorna, Truro," Cornwall.

GONEPTERYX RHAMNI IN EARLY JANUARY.—It may be of interest to state that about mid-day on January 10th I saw a male specimen of *Gonepteryx rhamni* on the wing in some meadows near Godalming, Surrey. The butterfly, which was evidently by no means a fresh specimen, was flying rapidly, and the sun was shining almost for the first time since the beginning of the new year.—MISS M. E. FOUNTAINE.

Mr. J. Challenor-Smith writes me that about 12.30 on January 2nd, a bright sunny day, he noticed a specimen of this butterfly on the wing on Silchester Common, Hants.—H. ROWLAND-BROWN.

ICHNEUMONIDÆ IN LONDON DISTRICT.—I am able to supplement the list of Ichneumonidæ met with in this locality—Herne Hill—given in the January number of this Journal, with ten species, kindly identified since its publication by Mr. Claude Morley, F.Z.S. Two of these, *Lissonota deversor*, Gr., and *Bassus graculus*, Panz., of which a male of the former and a female of the latter were taken, appear to have been so far of uncommon occurrence in this country. The remaining eight are *Lissonota variabilis*, Hlg., *Phygadeuon fumator*, Grav., *Perithous varius*, Grav., *Pimpla brevicornis*, Gr., *Bassus biguttatus*, *Prometheus sulcator*, *Exolytus lævigatus*, Grav., *Microcryptus sperator*, Müll. Also, I may mention that the var. *iridipennis* was found with the normal form of *Platylabus pedatorius*, Fab.—RUPERT STENTON; January 6th, 1910.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — The Annual General Meeting was held on Wednesday evening, January 19th, in the rooms of this Society at 11, Chandos Street, Cavendish Square. The following were elected as officers and members of the Council for the Session 1910–11:—President, Dr. F. A. Dixey, M.A., M.D.; Treasurer, Mr. A. H. Jones; Secretaries, Mr. H. Rowland-Brown, M.A., and Commander J. J. Walker, M.A., R.N., F.L.S.; Librarian, Mr. G. C. Champion, F.Z.S. Other members of the Council:—Professor T. Hudson-Beare, B.Sc., F.R.S.E., Mr. G. T. Bethune-Baker, F.L.S., Dr. M. Burr, D.Sc., F.L.S., Mr. H. St. J. Donisthorpe, F.Z.S., Mr. A. Harrison, F.L.S., F.C.S., Mr. Selwyn Image, M.A., Dr. K. Jordan, Ph.D., Mr. H. Main, B.Sc., Mr. A. Sich, Mr. Henry J. Turner, Mr. Rowland E. Turner, and Mr. J. W. Tutt.—The President, in his Address, after congratulating the Society on its continued prosperity, and paying a tribute to the memory of distinguished entomologists who had died during the past year, referred to the appointment by the Colonial Office of a Committee for Entomological Research, which, he hoped, might be taken as evidence of increased recognition by public authorities of the value of scientific advice and co-operation. The recent Darwin commemoration at Cambridge and the approaching International Congress of Entomology at Brussels were then noticed; and the Address proceeded to deal with the special subject of the plume-scales of the Pierinæ, or “white butterflies.” The President advocated the interpretation of these structures as a scent-distributing apparatus, and gave a detailed account of their structure and distribution, pointing out their diagnostic and taxonomic value, and indicating their bearing on questions of bionomic importance. Mr. C. O. Waterhouse and Professor R. Meldola, F.R.S., having proposed a vote of thanks to the President for his Address and his services, which was carried unanimously, Mr. W. E. Sharp, seconded by Mr. Hamilton H. Druce, proposed a similar vote of thanks to the other officers of the Society. This also was carried *nem. con.*, the Treasurer and the Secretaries replying. — H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. — December 9th, 1909. — Mr. A. Sich, F.E.S., President, in the chair. — Captain Cardew, R.A., of Wimbledon, and Mr. P. A. Tautz, of North Audley Street, W., were elected members.—Mr. Sich exhibited specimens of *Gelechia hermannella* in illustration of his paper.—Mr. Turner, male and female specimens of the rare tailed moth, *Eudæmonia brachyura*, from Sierra Leone. — Mr. Edwards, a box of exotic Hemiptera, among which was the remarkable Heteropteron, *Macroceræa grandis*, from Tennasserim.—Mr. J. Platt Barrett, pupæ of *Hyles euphorbiæ*, found by him in Sicily, and an immature form of a mole-cricket from Messina.—Dr. Hodgson, the most striking forms of *Anthroceræ*, taken or bred by him this year, including dwarf *A. trifolii* and curiously marked examples of *A. hippocrepidis* and *A. filipendulæ*. — Mr. Barnett, dark forms of *Hybernia boreata* and of *Oporabia dilutaria* from West Wickham and Wimbledon respectively. — Mr. Robert Adkin, series of *Agriades corydon*, females, from East-

bourne, showing eight or nine lines of variation. He also showed a bred series of *Polia chi* from Huddersfield ova.—Mr. Sich read a paper entitled “Notes on *Gelechia hermannella*.”—H. J. TURNER, *Hon. Rep. Sec.*

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—The first autumn meeting was held in the Manchester Museum, Owens College, on Wednesday, October 6th, 1909, the President, Mr. C. F. Johnson, in the chair. The following exhibits were made:—Mr. R. Tait, Jr., series of *Phibalapteryx tersata*, *P. vitalbata*, *Melanippe procellata*, and *Chærocampa porcellus*, taken at Wilmington, Sussex, in June, 1909; series of *Melanippe hastata*, *Diphthera orion*, and *Cidaria truncata* (the last showing beautiful variation), taken at Abbotswood, Sussex in June, 1909; *Teniocampa leucographa*, from Lakeside, April, 1909; a series of *Eupithecia pumilata*, taken in July, 1909, at Penmaenmawr; several *Aplecta nebulosa* var. *robsoni*, from Delamere, and a good series of *Agrotis agathina* bred from Welsh larvæ, 1909; *Cymatophora rideus*, bred from New Forest larvæ; *Cucullia verbasci*, from larvæ taken in South Wales in July, 1907; a series of *Agrotis ashworthii*, showing the most extreme light and dark forms, and *Polia chi* var. *olivacea*, from Huddersfield.—Mr. A. E. Wright showed series of the following insects, all taken or bred at St. Anne's-on-Sea in 1908 and 1909:—*Agrotis exclamationis*, *A. præcox*, *A. cursoria*, *A. ripæ*, *A. valligera*, *A. tritici*, *A. segetum*, *Acronycta rumicis*, *Teniocampa gracilis*, *Leucania littoralis*, *Rusina tenebrosa*, *Dasychira fascelina*, and *Apamea basilinea*; also a living *Dasypolia templi*, taken at light at Burnley.—Mr. B. H. Crabtree, F.E.S., bred series of *Odonestis potatoaria*, from larvæ taken this year at Compton, Berkshire, showing considerable variation, and including two very light males from Wisbech; a bred series of *Arctia caia*, from larvæ taken near Altrincham, showing some nice varieties; *Acronycta aceris*, bred, from Sandown (Isle of Wight); light forms of *Dianthæcia carpophaga*, bred, from Brighton; *Cucullia asteris* and *Geometra smaragdaria*, from the south-east coast; varieties of *Vanessa urtica*, from Compton, Berkshire, bred from a large number of larvæ taken there this year; a varied series of *Teniocampa stabilis*, taken at shallows, Lakeside (Windermere) this spring, and a short bred series of *Endromis versicolor* (Scotch).—Mr. W. Buckley showed bred series of *Chærocampa elpenor*, *Saturnia carpini*, *Liparis salicis*, and *Hemerophila abruptaria*, and also series of *Nyssia zonaria*, &c.—Mr. W. P. Stocks exhibited a series of *Odontopera bidentata*, bred from a Manchester melanic female. He also showed specimens of a number of species taken at Trefriw, North Wales, which included:—*Euthemonia russula*, *Thyatira batis*, *Acronycta rumicis*, *Axylia putris*, *Miana literosa*, *Dianthæcia capsicola*, *Aplecta nebulosa*, *A. tincta*, *Cucullia umbratica*, *Pericallia syringaria*, *Tephrosia biundularia*, *Venusia cambrica*, *Boarmia repandata* (one a fine dark form), and *Emmelesia affinitata*.—Mr. W. B. Lees, a variable series of *Polyommatus phlæas*, *Xanthia citrargo*, and a pupa of *Acronycta albi*, August, 1909, from Great Budworth, Cheshire, and *Tapinostola fulva* from Hough End, Clough.—Mr. W. Raeper showed, among other species, series of “*Bombyx*” *quercus*, bred, from Wilmslow larvæ, and *Heliothis marginatus*, bred,

from Wallasey; a series of *Aplecta nebulosa* (including var. *robsoni* and intermediates), all taken at rest on tree-trunks in Delamere; *Cloantha solidaginis* and *Polia chi* (including var. *olivacea*) taken in Cheshire; a specimen of *Eurymene dolobraria* taken at Wilmslow.—Mr. L. Nathan, insects taken and bred, 1909, including *Cymatophora flavicornis*, bred, from Wincle, and several finely marked bred *Pieris brassicæ* (female, Manchester).—Mr. G. Storey exhibited *Argynnis aglaia* (female), *Acherontia atropos*, *Triphæna comes* (*orbona*) approaching var. *curtisii*, *Dianthæcia cæsia*, and *D. capsophila*, *Boarmia repandata*, all from the Isle of Man; series of *Nola cuculatella*, from Brooklands, Cheshire, and of *Nyssia zonaria*, from Blackpool; several *Aplecta nebulosa* var. *robsoni*, from Delamere, and a specimen of *Charocampa celerio* taken at Ashton-on-Mersey, Cheshire, several years ago.—Mr. N. H. Davison showed a varied series of *Lasiocampa quercus* var. *callunæ*, from Wilmslow.—Mr. G. Bradburn showed *Nola cuculatella*, *Agrotis nigricans*, and *Oporabia autumnata*, from Brooklands, Cheshire; *Eupithecia laricata*, from Derbyshire; *Agrotis lunigera*, *A. lucerneæ*, *Stilbia anomala*, and *Orthosia upsilon*, from Penmaenmawr.—Mr. C. F. Johnson, F.E.S., exhibited light forms of *Dianthæcia carpophaga*, from Brighton pupæ, *Oporabia filigrammaria*, *Macaria notata*, *Cymatophora flavicornis* (Scotch), *Agrotis lucerneæ* (Witherslack), and *Numeria pulveraria*, bred from North Devon larvæ.—Mr. A. W. Boyd showed a bred series of *Agrotis ashworthii*, from North Wales; *Acronycta rumicis* var. *salicis*, bred from Delamere ova; a series of *Emmelesia blandiata* and a few *Venilia macularia*, from Cumberland; series of *Aspilates strigillaria* (Delamere), of *Nudaria mundana* (Grasmere), and of *Venusia cambrica* (Cheshire and Westmorland); bred *Triphæna fimbria* (Delamere and Rudheath), *Aplecta nebulosa* var. *robsoni*, and *Boarmia repandata*, black variety (Delamere); several *Lasiocampa quercus*, from North Wales larvæ, including a semi-transparent example with dark fringes; *Cænonympha typhon* var. *phyloxenus*, taken in Delamere; a specimen of *Bomolocha fontis*, taken on July 6th, in South Cheshire, the second record for the county. All the above taken and bred in 1909.—Mr. J. E. Cope showed the following Coleoptera, taken on Ashton Moss in September, 1909:—*Carabus catenulatus*, *C. nemo-ralis*, *C. granulatus*, and *C. violaceus*.

November 3rd. — Mr. C. F. Johnson, F.E.S., President, in the chair.—An exhibition of and discussion on *Abraxas grossulariata* and *A. sylvata* and their varieties was opened by Mr. Crabtree, F.E.S. Of *A. grossulariata* he showed long series, including vars. *varleyata*, *lacticolor*, *lutea*, *chalcizona*, *sub-* and *semi-violacea*, *nigrosarsata*, *hazleleighensis*, *flavofasciata*, and *melanozona*. His *A. sylvata* showed very extensive variation, including banded and light forms, and many of the Yorkshire leaden form, which were also exhibited by Mr. R. Tait, Mr. A. Wright, and Mr. C. F. Johnson. Mr. C. F. Johnson's *grossulariata* included two extremely dark forms, the wings being entirely suffused with dark colour, through which the ordinary markings could be seen. Mr. A. Wright showed a most remarkable black and yellow aberration of *grossulariata* from Burnley. Other exhibits: Mr. Petrie, *Heliothis marginatus* (Wallasey), *Odezia atrata* (Chapellen-le-Frith), *Pelurga comitata*, *Dyschorista suspecta*, and *Cloantha*

solidaginis (North Cheshire), *Acidalia aversata* and *Ephyra punctaria* (Delamere).—Mr. Bradburn showed *Miselia oxyacanthæ* var. *capucina*, *Agrotis saucia*, and *Calocampa vetusta*, taken at sugar last October in Cheshire, and *Clostera anachoreta*, third brood, from Bournemouth.

December 1st. — Mr. C. F. Johnson, F.E.S., in the chair. — Mr. H. S. Leigh read a paper on the "Colour of Insects," and Mr. W. P. Stocks a paper entitled "Some Remarks on the Weather as affecting the Appearance of Lepidoptera."—Mr. R. Tait exhibited *Boarmia repandata*, bred during 1909, including series from North Wales, some of which were of the dark variety, from South Wales var. *conversaria*, and from Delamere.—Mr. C. F. Johnson showed butterflies taken at Digne and in Switzerland in July.—A. W. BOYD, B.A., *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Liverpool, November 15th, 1909. Mr. C. E. Stott, Vice-President, occupied the chair.—Mr. H. S. Leigh, of Manchester, delivered a lecture entitled "Leaf Insects." Mr. Leigh described the life-history and development of the insect *Phyllium crurifolium*, Serv., from the Seychelle Islands, which he had bred in captivity for the last three years. An exhibit of the living animals emphasised the truly remarkable resemblance they bear, both in shape and colour, to the foliage among which they live. A discussion ensued in which most of the members present took part.—Mr. F. N. Pierce exhibited the "stick" insect *Bacillus rossi*, alive.—Mr. W. A. Tyerman exhibited *Lasiocampa trifolii*; a fine series bred from larvæ found on the sandhills.—Mr. W. Mansbridge showed the Micro-Lepidoptera taken on the occasion of the Society's Field Meeting at Silverdale, N. Lancs, June 26th, 1909; these included:—*Argyrotoxa comcayana*, *Spilonota incarnatana* (larvæ), *Ephippiphora pflugiana*, *Retinia pinivorana*, *Dicrorampha plumbana*, *Lampronia prælatella*, and *Hyponomeuta irrorellus* (pupæ).

The Annual Meeting of this Society was held at the Royal Institution, Colquitt Street, Liverpool, on Monday, December 20th, 1909, Dr. H. H. Corbett, of Doncaster, Vice-President, in the chair.—The following gentlemen were elected officers and Council of the Society for the ensuing year, *viz.*:—President, S. J. Capper, F.E.S.; Vice-Presidents, E. R. Bankes, M.A., F.E.S., Robert Newstead, M.Sc., F.E.S., W. J. Lucas, B.A., F.E.S., C. E. Stott, Claude Morley, F.E.S., P. F. Tinne, M.A., M.B.; Hon. Treasurer, J. Cotton, M.R.C.S.; Hon. Secretaries, H. R. Sweeting, M.A., Wm. Mansbridge, F.E.S.; Hon. Librarian, F. N. Pierce, F.E.S.; Council, E. G. Bayford, F.E.S., W. D. Harrison, W. A. Tyerman, E. J. B. Sopp, F.R.Met.S., Wm. Webster, M.R.S.A.I., Geo. Arnold, F.E.S., Wm. Mallinson, W. T. Mellows, L. H. Lister, G. M. Taylor, M.A., J. H. Leyland.—An Address was delivered by Dr. H. H. Corbett, the retiring Vice-President, who took for his subject "The Evolution of the Natural Order Insecta." The lecturer, by means of lantern-slides and diagrams, described how possibly the great family of insects had arisen. Beginning with the simplest animal organisms, and proceeding to others more and more complex, Dr. Corbett constructed a tree showing the probable genealogy of moths, butterflies, and beetles. The Address was greatly appreciated by those present, and,

at the close, a vote of thanks was proposed by Mr. R. Newstead, which was carried with acclamation. — Mr. C. B. Williams exhibited a box of Lancashire Micro-Lepidoptera, including *Scoparia ambigualis* from various localities, and *S. angustea* from Silverdale. — Mr. A. W. Boyd, a box of Cheshire Lepidoptera, the most interesting being: *Scoparia dubitalis*, Durham Park; *Boarmia repandata* var. *nigra*, Delamere; a curious dull form of *Venusia cambricaria*, and *Bomolocha fontis*, from Peckforton. — H. R. SWEETING and W. M. MANSBRIDGE, *Hon. Secs.*

RECENT LITERATURE.

Indian Insect Life; a Manual of the Insects of the Plains (Tropical India). By H. MAXWELL-LEFROY, M.A., F.E.S., F.Z.S., &c. Assisted by F. M. HOWLETT, B.A., F.E.S. 4to, pp. i-xii and 1-786, plates 84. Calcutta and Simla: Thacker, Spink & Co. London: W. Thacker & Co. 1909.

THIS beautifully illustrated volume emanates from the Agricultural Research Institute, Pusa, and is published under the authority of the Indian Government.

As a general introduction to the insect fauna of a country it stands pre-eminent, and all who are in any way interested in the insect life of India are fortunate in having such a guide at their command.

In his treatment of the subject, the author has so judiciously blended entomological science with popular entomology that the work must commend itself to student and nature lover alike. Some idea of the comprehensive scope of the book will be gathered from the following summary of pages and illustrations devoted to the orders:—Aptera, pp. 43-46, text-figs. 1-4. Orthoptera, pp. 47-107, text-figs. 5-42; plates 6 col., 1 plain. Neuroptera, pp. 108-160, text-figs. 43-83; plates 1 plain. Hymenoptera, pp. 161-233, text-figs. 84-135; plates 4 col., 1 plain. Coleoptera, pp. 234-396, text-figs. 135(*bis*)-272; plates 10 col., 4 plain. Lepidoptera, pp. 397-541, text-figs. 273-346; plates 27 col., 3 plain. Thysanoptera, pp. 542-544, text-fig. 347. Diptera, pp. 545-664, text-figs. 348-434; plates 10 col., 4 plain (1. Siphonaptera). Rhynchota (Hemiptera), pp. 665-764, text-figs. 435-536; plates 11 col., 2 plain. Index, pp. 764-786.

Smithsonian Institution, United States National Museum. Bulletin 67: "Directions for Collecting and Preserving Insects." By NATHAN BANKS. 1909.

AN excellent and instructive manual, that not only describes in some detail the most approved methods of obtaining various kinds of insects, but is also a concise introduction to systematic entomology. It should be almost as useful to the British collector as to his American confrère.

The author recognizes fifteen orders of Insecta, and each of these he discusses and illustrates by admirable figures of one or more species belonging thereto. The methods of collecting, rearing, and the subsequent treatment of specimens are also fully illustrated.

Altogether there are 188 text-figures; and including bibliography and index, 135 pages.

1. *Annals of Scottish Natural History, 1909:*

THOUGH not mainly devoted to entomology, this well got-up periodical contains the following papers and notes on insects:—“Aquatic Coleoptera of the Solway District,” a rather lengthy paper by F. Balfour Browne; “Coleoptera from Moles’ Nests in the South-east of Scotland,” by T. Hudson Beare and W. Evans; “On Some Scottish Diptera—Stratiomyidæ to Asilidæ,” by A. E. J. Carter and J. Waterston; “Notes on Lepidoptera in the North-east Highlands,” by D. Jackson; “*Hystrihopsylla talpæ* in Forth and Tweed,” by W. Evans; “*Nemotelus uliginosus* in Forth,” by W. Evans; “On Some Scottish Siphonaptera.—II.,” by J. Waterston; “*Cryptocephalus aureolus* in Strathspey,” by E. C. Maitland-Dougall; “Two New British Diptera,” by P. H. Grimshaw.

2. *The House Mosquito—a City, Town, and Village Problem.* By J. B. SMITH, Sc.D. (New Jersey, Agr. Exper. Stations, Bull. 216). Nov. 24, 1908.

THIS is our familiar mosquito (*Culex pipiens*), which, though often common and troublesome enough out of doors, seldom becomes with us a household nuisance. Those who are waging war against the house fly should examine this well-illustrated paper, although of course the life-history of the mosquito is very different from that of the house-fly.

3. *Dragonflies of Mississippi Valley, collected July and August, 1907.* By C. B. WILSON. (Proc. U.S. Nat. Mus. xxxvi. pp. 653-671.) Washington, 1909.4. *On Brazilian Grasshoppers of the Subfamilies Pyrgomorphinæ and Locustinæ (Acridinæ of authors).* By J. A. G. REHN. (Proc. U.S. Nat. Mus. xxxvi. pp. 109-163). Washington, 1909.

A well-illustrated systematic paper.

5. *The North American Dragonflies (Odonata) of the Genus Macromia.* By E. B. WILLIAMSON. (Proc. U.S. Nat. Mus. xxxvii. pp. 359-398, pl. 35-36). Washington, 1909.

More than a simple systematic list.

W. J. I.

Memoirs of the Department of Agriculture in India. (Entomological Series.) Vol. ii., No. 7. Pp. 111-137, plates x., xi., and xii. December, 1908.

IN this number Mr. Maxwell-Lefroy discusses Indian scale insects (Coccidæ). On the coloured plates are depicted various stages in the life-history of some of the species referred to.

Hawaiian Sugar Planters' Association. Division of Entomology. Bulletin No. 6. The Hawaiian Sugar Cane Bud Moth (*Ereunetis flavistriata*), with an Account of some Allied Species and Natural Enemies. By OTTO H. SWEZEY. Pp. 34, plates i.-iv. Honolulu. October 25th, 1909.

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Vol. XLIII.]

MARCH, 1910.

[No. 562.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.
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*Yours sincerely
G. W. Kirkaldy*

THE ENTOMOLOGIST

VOL. XLIII.]

MARCH, 1910.

[No. 562

GEORGE WILLIS KIRKALDY, F.E.S.

WE are deeply grieved to announce the death, on February 2nd last, of our highly esteemed colleague, whose name has been a familiar one in the pages of this Journal for several years past. Mr. G. W. Kirkaldy was the youngest son of the late Mr. W. H. Kirkaldy, of Wimbledon, and was born at Clapham in 1873. A love of Natural History was evinced at a very early age, and later it became a passion with him. He was educated at the City of London School, and whilst there was appointed Curator of the School Museum. Joining a Debating Society at the Presbyterian Church, he, although only a young lad, read some excellent papers, notably one on the "Coloration of Insects."

After entering upon City life he devoted his evenings to Entomology either in the field or the study. Always a great reader, and possessing an excellent memory, he rapidly equipped himself for the work he proposed to undertake when he could devote the whole of his time to a scientific career.

The offer of a post, under the U. S. Government, on the entomological staff of the Department of Agriculture and Forestry at Honolulu (subsequently transferred to the Hawaiian Sugar Planters' Association), was readily accepted, and in 1903 he went out to Hawaii to take up the appointment. Here he seems to have been quite in his element, with plenty of work of the quality he most desired awaiting his able investigation. Soon after settling down in Honolulu, however, he met with the unfortunate riding accident that proved a trouble to him during the remainder of his life. The bone of the injured leg, which had been fractured in five places, did not unite properly, and although he submitted to two separate operations later on, he was not satisfied with the result. When on a holiday visit to San Francisco at the beginning of the present year he appears to have been persuaded to undergo still another operation, but he only survived it five days.

In 1897 Mr. Kirkaldy published in the 'Entomologist' "Notes on the Genus *Sigara*" (September), and "Synonymic Notes on Aquatic Rhynchota" (October). He commenced "A Guide to the Study of British Waterbugs (Aquatic Rhynchota)" in 1898 (Entom. xxxi. p. 177). This was continued at intervals extending over eight years, but was practically concluded in 1906 (Entom. xxxix. p. 154), when it comprised sixty-six pages, together with two plates of structural details.

His contributions to the literature of Hemiptera are chiefly concerned with the nomenclature and bibliography of the Order, but he also wrote articles and notes on other phases of the subject, among which may be mentioned, in addition to the "Guide," already referred to, "The Stridulatory Organs of Waterbugs" (Journ. Quekett Microsc. Club, April, 1901), "Hemiptera" (1902, 'Fauna Hawaiianis,' vol. iii.), and "Upon Maternal Solicitude in Rhynchota and Other Non-Social Insects" (1903, Entom. xxxvi. pp. 113-120; and 1904, Ann. Rep. Smith Inst., pp. 577-585).

It is true perhaps that the "rule of priority" is recognized by most systematists, but few, seemingly, regard the rule as being unalterable. Kirkaldy in Hemiptera (as also Prout in Lepidoptera) believing that anything approaching stability in nomenclature was only to be secured by the acceptance of names as these were written by their respective authors, rigidly objected to orthographic emendation being admitted on any plea whatever. Strict priority without exception of any kind was the predominant note in all his nomenclatorial work. His researches into the intricate subject of generic synonymy occasionally brought him into conflict with co-workers who held opinions opposed to his own. He was, however, ever ready to admit error, and was always thankful to those who put him right when he went astray. His sole object was to obtain an approximately definite adjustment of questions affecting generic nomenclature upon which his 'Catalogue of the Hemiptera' might be based. The first volume of this monumental work, estimated to run to six or perhaps seven volumes, was published in 1909, and embraces the Cimicidæ. Volume ii., dealing with Thyreocoridæ, Urolabididæ, Aradidæ, and Coreidæ, we understand, is in the press. Volume iii., treating of Pyrrhocoridæ, Mydochidæ, and Tingidæ, was in preparation.

Mr. Kirkaldy was elected a Fellow of the Entomological Society of London in 1893. In 1901 he joined the Reference Committee of the 'Entomologist.'

He leaves a widow and one daughter; his little son died about twelve months ago.

NOTES ON *LUPERINA GUENÉEII*, DBLD.

BY EUSTACE R. BANKES, M.A., F.E.S.

IN the course of his interesting paper on "*Luperina guenéii*, Dbl., and var. *baxteri*, var. nov.," published in Entom. xlii., 289-292 (1909), Mr. Richard South says, p. 290, that the National Collection includes "a female type" of *guenéii*, and that "a co-type" of it passed from the Mason collection into mine. Seeing, however, that Doubleday's original description in Ent. Ann., 1864, pp. 123-124, was made from these two individuals, *one being of each sex*, it follows by the 'Merton Rules,' p. 13, Rule 38 (1896), that together they constitute the "type," my example being the type male, while that in the National Collection is the type female. The term "co-type" is reserved by the authors of these Rules for use in cases where the description has been made either from two individuals, both of which represent the same sex, or from more than two units. At the dispersal of the Burney collection in 1893, the type male, as well as the type female, was purchased by Mr. O. E. Janson, who, in answer to my inquiries, informs me that he sent the former to the late Mr. P. B. Mason, and the latter to the Trustees of the British Museum, on whose behalf it had been secured. Barrett is, therefore, in error in stating [Lep. Brit. Isl., iv. 335 (1897)] that, after the death of the Rev. H. Burney, both specimens passed into the collection of "Dr. P. B. Mason,"* and that the latter gentleman deposited one of them in the National Collection. I have carefully compared these individuals with one another, and also with several of those taken in Lancashire, during the past season, by Messrs. T. Baxter and W. Yates, and all are certainly conspecific.

Since Mr. South (*loc. cit.*) reproduces Hodgkinson's note [Entom. xviii., 54 (1885)], in which the writer gives the date of his purchase—and, by implication, of the capture—of the two *guenéii* that went into the Burney collection, as "1860 or 1861," it may be as well to mention that the precise year in which these, and the other original specimen, that was sent to Miss Sullivan, were secured, is somewhat uncertain. In Ent. Ann., 1864, p. 123, Doubleday definitely states that they were taken "in the autumn of 1862," and Barrett, in Lep. Brit. Isl., iv., 335 (1897), follows him as regards the year, though he informs us that they were captured "in August," which is not one of the autumn months. Miss Sullivan, however, writing recently to Sir George F. Hampson, says that her collection still

* Mr. P. B. Mason, M.R.C.S., although no less distinguished as a physician than as a surgeon, and popularly known as "Dr. Mason," did not receive the degree of "M.D.," and consequently never assumed the title of "Doctor."—E. R. B.

contains the example of *guenéei** received from Hodgkinson, and that the label belonging to it reads:—"Taken by Porter and Stephenson of Bolton, at Rhyl, Aust. 12th, 1860": the year specified practically agrees with Hodgkinson's "1860 or 1861," and it seems most probable that the moths were really captured in 1860, and that the "1862" of Doubleday and Barrett is not accurate. Although I have examined, in my own and other collections, some extraordinarily pale aberrations of *L. testacea*, not one of them at all reminds me of the true *guenéei*, and ever since the acquisition, and careful comparison, of the type male of the latter in 1905, I have been unable to accept the opinion of Barrett and others that it is only a form of *testacea*, and regard it as highly satisfactory that Doubleday's action in separating it has at last been proved, by the evidence of the genitalia, to have been fully justified. It would be of great interest if Mr. Sydney Webb would inform us whether the two reputed *guenéei* in the Bond collection are really referable to Doubleday's species. In Lep. Brit. Isl., iv., 335 (1897), Barrett says that they do not fully agree with "this variety of *L. testacea*," that is, with *L. guenéei*, Dbl'd., which he has just stated to be, in his opinion, only an extreme form of its close ally.

Besides the differences in colour, *L. guenéei* seems to be, on the whole, a rather smaller species than *testacea*. I have examined eight British examples of the former and scores of the latter, and although both insects vary considerably in size, the *guenéei* are, on an average, certainly smaller than the *testacea*; they are, in addition, narrower in the fore wing, although strikingly narrow-winged examples of the latter are very occasionally met with. From Entom., xliii., 42 (1910), we learn that the Rev. C. R. N. Burrows is not acquainted with the "three round white dots on the costa near the apex," which are stated by Doubleday (Ent. Ann., 1864, p. 124) to be "so distinct" in *testacea* but absent in *guenéei*. In my experience, however, the three pale dots, to which Doubleday obviously refers, are, in nearly every instance, visible in the former, though they are not always equally distinct, and more frequently exhibit some shade of buff than of white. Three similar white dots, in precisely the same positions, are sometimes present in *guenéei*, and I can (*pacc* Doubleday) even distinguish them with certainty on the left fore wing of the type male, though on the right fore wing they are not discernible. But seeing that Doubleday (*tom. cit.*, p. 123), after alluding to "a pale patch on the costa near the apex," specially says, "On the costa near the apex are two oblique white spots,"

* Hodgkinson appears to be responsible for this identification, which, although not yet confirmed by any authority, is presumably correct. In any case, no question of importance rests upon it, and the value of the evidence afforded by the label, in considering the question of the date of capture of the type specimens, would in no way be affected, even if Hodgkinson's determination were proved to be incorrect.—E. R. B.

and that the type male* shows no white spots or dots in such a position with the exception of the three just mentioned, one is forced to the conclusion that Doubleday only noticed the two posterior dots, and did not realize that they correspond exactly to the two outer dots of the series of three that he knew so well in *testacea*.

Mr. South (*tom. cit.*, p. 292) says that the question whether *L. nickerlii* is, or is not, a form of *testacea* must await the result of further examination of the genitalia. But while fully realizing the immense value of the evidence afforded, in numerous instances, by these appendages, I am quite unable to subscribe to the idea that any two forms that appear, on other grounds, to be distinct species, must be considered conspecific unless the genitalia show marked differences. The eight specimens of *nickerlii* in the National European Collection differ so noticeably from *testacea* in the ground-colour, which is much darker, in the stigmata, which are white and consequently far more conspicuous, and in the hind wings, which are, like those of *guenéei*, decidedly whiter, that its specific status seems to me in no way jeopardised by the possibility of the genitalia yielding no proof of its distinctness.

I greatly regret to find that the explanation at the foot of the plate accompanying Mr. South's paper in *Entom.*, xlii., pp. 289-292 (1909) is incomplete, and consequently very misleading. It tells us that the figures represent "*Luperina nickerlii* and *L. guenéei baxteri*." This is true of the imagines figured, but anyone, with the plate alone before him, could only conclude that figure 5 shows the genitalia of *nickerlii* (this being the species named first in the explanation), and that figure 6 represents those of *guenéei* var. *baxteri*. Both conclusions would be erroneous, for, on turning to p. 292, we learn incidentally that the appendages exhibited in figure 5 are those of the "new species," while those seen in figure 6 belong to *testacea*! The "new species" of Mr. Pierce's report, written before he became aware of the fact, is, of course, *L. guenéei*, Dbl.

The opinion has been expressed to me that, in equally fresh individuals, there would be no distinction at all between typical *guenéei* and var. *baxteri*, South, and that the apparent difference is merely due to the pale grey ground-colour having, in the course of time, assumed a somewhat ochreous tinge. On first placing fine examples of var. *baxteri* beside the type male of *guenéei*, which, in its present condition, only differs from them in that it is distinctly luteous instead of distinctly grey, this same idea occurred to me, and I doubt whether anyone, with these individuals alone before him, would have ventured to bestow a varietal name upon the former. A comparison, however, of var. *baxteri*

* The point in question had not arisen when the opportunity of examining the type female occurred.—E. R. B.

with the type female of *guenéei* made it at once evident that the browner tone of the latter was not due to discoloration, and the fact that, in the original description, made within some three years of the capture of the type specimens, the ground-colour of *guenéei* is stated to be "pale testaceous," which epithet is not applicable to that of var. *baxteri*, affords additional proof of this. The type male of *guenéei*, which is also somewhat larger and more robust in appearance, is a shade paler than the type female, but the former, although absolutely free from any suspicion of grease, is in less good condition, being rather worn. My firm belief, based upon careful study, is that neither has changed colour since the date of capture, and that Doubleday, holding, as I do, that the male, when fine, resembled the female more closely in colour, abstained from mentioning the difference between them, and deliberately chose the term "pale testaceous" to describe the hue which, in his opinion, had prevailed in both when equally fresh. Certain of my paler *testacea* would, apparently, if similarly worn, be precisely concolorous with the type male of *guenéei*. Furthermore, Mr. South informs me (*in litt.*, 26, xi., 1909) that some of the specimens of *guenéei* taken by Mr. Baxter during the past season, as well as the solitary individuals secured by him in 1889 and 1891, "might be described as testaceous, and have an ochreous brown tinge," and adds, "The form I have named *baxteri* lacks this tint, and is of a paler grey colour than the B. M. type [*i. e.*, the type female of *guenéei*.—E. R. B.]" I may mention that Mr. South's decision to describe *baxteri* as var. nov. was based on a comparison of it with the type female with *guenéei*; he has not seen the type male since it passed into my possession in 1905, for there was no opportunity of showing it him when I took it to London, last December, in order to compare it with the type female.

Norden, Corfe Castle : February 8th, 1910.

[Mr. Sidney Webb has kindly sent the two specimens of *Luperina* that stood as *L. guenéei* in the Bond Collection. Barrett was of opinion that these were only light forms of *L. testacea*, and there is no doubt whatever that this is so. The specimens have been submitted to Mr. E. R. Bankes, and he also refers them to *L. testacea*.—R. S.]

THE *ATHALIA* GROUP OF THE GENUS *MELITÆA*.

BY Rev. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 11.)

THE specimens of *athalia* from Wiesbaden in Mr. Prideaux's collection approach more nearly to *deione* than any others I have seen; even the *x*-mark of the marginal blotch, up. s., is

exactly reproduced in one specimen, and in another the black lunules of the un. s. h. w. appear, whilst the contrast between the two divisions of the central band on the same wing is much slighter than usual. They are smaller and lighter than is usual in Switzerland, and approach nearer to average English specimens; those, however, from the Salève (Haute Savoie) are also somewhat small and light. The only approach made by specimens of *athalia* towards *parthenie* appears to me to consist in the partial or entire absence of the extra line up. s. h. w., which certainly gives a superficial resemblance to the latter species, but I have never yet come across a specimen with this peculiarity, in which the f. w. and the palpi did not at once suffice to determine the species. There certainly does exist, however, some confusion in the minds of various authors between these two species, the climax of which seems to be reached in Giard's paper in the 'Feuille des Jeunes Naturalistes,' xxxiii. p. 44 (1905), on the Argynnides of Northern France, in which the whole account of *athalia* obviously refers to *parthenie* and *vice versa*, whilst the names are used with absolute correctness by Dupont in his paper on p. 80 of the same volume on the Argynnides of Normandy. Oberthür's paper in the Ent. Rec. xv. p. 313 really ought to dispose of any difficulty in separating the species, in Northern France at any rate. An occasional broadening of the black edging of the nervures in small specimens occasionally produces some resemblance to *aurelia*, but the lunules of the outer band in un. s. h. w., and often also the shape of the wings, which as a rule are more elongated in the latter species, will suffice to prevent mistakes. I have never seen any near approach to *dictynna* on the part of *athalia* except from Bukowina, though the converse occurs, and the same fact may be stated with regard to *britomartis*, though of course a glance at the under side in either of these cases would at once settle the question. I have already mentioned the resemblance between *athalia* and *dictynnoides* in Bukowina; the specimens given under the latter name from the Ural in the National Collection are, in my opinion, probably *athalia* approaching even more closely to *dictynnoides*, but in the absence of exact data it is impossible to pronounce definitely on the subject. This species never approaches either *varia* or *asteria*.

The extent of variation in the bands of the ground colour on the up. s. is sometimes very remarkable in the female. There are in the National Collection several specimens from Germany with a distinctly pink tint in some of these bands; in one from the Elwes collection, taken at Kruznach, and another with no distinctive label, this peculiarity is so pronounced as to remind one of *maturna* var. *wolfensbergeri*. A similar specimen, in company with a fairly ordinary female, both coming from the Leech collection, are labelled "hybr. *Mel. Phæbe* and *Athalia*"! with-

out a shadow of excuse. In 'Iris,' xviii. p. 12, another similar aberration is mentioned, and illustrated on pl. i. fig. 5; this again approaches somewhat closely to var. *wolfensbergeri*; it was bred in 1905 from a larva found at Werdau, in Saxony, so that there ought to be no doubt as to the species to which it belongs. Specimens showing a melanic tendency, without reaching even approximately the *navarina*-form, are by no means uncommon; it will suffice to refer to the specimens taken at Martigny, and more particularly at Luan, by Mr. Sloper, mentioned in Ent. xxxviii. p. 27, and those described by Aigner-Abafi in his paper in the 'Annals of the Hungarian National Museum for 1905,' pp. 496 *et seq.*

Oberthür, in his 'Études de Lépidoptérologie comparée,' speaks of *M. deione* as a very constant species; yet its limits of variation hardly seem less than those of others of this group. On p. 11 of this work he speaks of a melanic specimen of the *berisalensis*-form, taken by Wulschlegel at Martigny, which the illustration, pl. i. fig. 7, shows to be of a somewhat extreme character; but, apart from extreme aberrations, it varies in detail in all the same directions as *athalia* and others. Its variation in size, especially between the first and second broods, has already been mentioned, and the female exhibits a greater degree in difference of tint between the different bands of the up. s. than does any other of the group. Reference has also been made to its racial distinctions (vol. xlii. p. 149), but it will be better to speak somewhat more fully as to these at this point. The darkest race of all is the form of *berisalensis* found at Sierre and at Ormona, above Sion, these examples being considerably darker than those of Martigny. The lighter specimens from the latter locality are very close to those from Granada, especially the males; the South Spanish females are, however, more variegated on the up. s. than even the most variegated of the Swiss. The lightest I have seen have come from the French Pyrenees; almost as light as these are those from Digne and the Riviera. The Spanish forms seem mostly to be darker than the type, with the exception of the light race from the Sierra Nevada. A new locality has lately been discovered for the species at La Grave, in the north of the Hautes Alpes, the specimens from which are large and lightish, the un. s. of those I have seen being specially light. So far the expressions light and dark have referred to the ground colour, but there is also a very great difference in the breadth and intensity of the black markings on the up. s., and on the f. w. of the un. s.; occasionally also the two portions of the central band are of slightly different shades, which brings the insect somewhat closer to *parthenie*. In the North of Spain the two insects become indeed very difficult to distinguish, but this is mostly due to the variation of *parthenie*, and will be treated of under that insect. The only other species

of the group to which *deione* now seems to approach is *athalia*, and this only in the darker and more heavily marked forms of the former, and only on the up. s., the un. s. always affording abundant distinction.

Few as are the varietal or aberrational names to which *parthenie* has given rise, it is a very variable insect. In Central France it reaches a large size, and is brightly coloured, belonging frequently to Caradja's form *beata*—more distinctly so, indeed, than many of the specimens from the French Pyrenees themselves. In the Eastern French Alps, on the contrary, they are inclined to be small, though perhaps somewhat larger than those from Switzerland, except at a height (about 3000 ft.) where the species begins to be single-brooded. In Central Italy the ground colour becomes very light, the markings also being generally slighter than in other races; this is even more noticeable on the un. s., the broad and scarcely divided central band being often very remarkable, especially in the females. This race is not specially small, and occasional specimens have the markings quite up to the average, but in all I have seen the ground colour remains light. An extreme contrast to this form is afforded by the Spanish race, whose dark ground colour and heavy markings and variegated females bring them very near to the dark *berisalsensis*-like form of *deione*, which is found in the same localities. These characters are apparently common to the species from Northern Spain to Andalusia. I am entirely at a loss what to say as to German specimens of *parthenie*, as nothing I happen to have seen from Germany purporting to be this species has any near resemblance to it. It must occur, one would think, in the west and south-west, but the writings of German authors on the subject leave one in considerable doubt. This doubt begins to arise when serious comparisons are made between *parthenie* and *aurelia*, two of the most widely different species of the whole group; unless, indeed, these comparisons are intended to include *varia*, a species much more closely connected, in my opinion, with *aurelia* than with *parthenie*, but which can hardly occur except in the very highest elevations in Germany, though the earliest descriptions and illustrations of *parthenie* seem rather to represent a light form of *varia*. This is one of the many points which still requires careful investigation; the material at present at my disposal is wholly insufficient for the purpose, but I hope at some future time to be able to clear up this (and some few other points) satisfactorily. With regard to aberrational, as distinct from racial, forms, *parthenie* is quite as rich as *athalia*, though only two—*jordisi*, Rühl, and *aphæa*, Freyer—have been named, and even the latter name was given, so to speak, accidentally. Yet every form of *athalia*, whether of the *navarina* or the *corythalia* group, has its counterpart in this species also. Melanic forms are given by Aigner-Abafi in his paper above

mentioned, and by Oberthür in the 'Bulletin de la Société Entomologique Française,' vol. v. pl. i. (1900), and in this latter place is also illustrated one of a precisely opposite character, almost the whole of the wings being covered with the ground colour; and of the seven under sides illustrated the author says that four, *viz.* three males and one female, have the up. s. similar to this latter. All these four have the un. s. f. w. very slightly marked except for the lunules, and all have the outer two-thirds of the h. w. albinistic, the outer dark band being represented in the four specimens by (1) indistinct dots, (2) a dark edging to the lunules of the terminal band, (3) a row of very indistinct, and (4) slightly more distinct lunules respectively; the basal third is in all cases dark, the spots showing but little. It will be seen that all these belong to the *jordisi* group of aberrations, but carried considerably farther on the up. s. than the specimen described by Rühl, and less marked on the un. s. f. w. Of the other three un. s. specimens illustrated, one has the un. s. left h. w. of the same form, but less markedly so, whilst in the right h. w. the outer band is unusually dark, and invades the lunules of the terminal band; the greater part of the right f. w. un. s. is also dark. The other two under sides are melanistic. The minor variations—tint of ground colour, variegation in the up. s. of the female, breadth of dark lines up. s. and of bands un. s.—have quite as wide a range as in *athalia*. With regard to the approach of *parthenie* to *varia*, I know how fatally easy it is to be misled by a superficial resemblance in the males, especially when one only has one or the other species before one. In the early days of my Swiss collecting I fell into this error myself, and the statement made in the 'Entomologist's Record,' vol. xiii. p. 118, remains as a constant reminder of my mistake; but I am soothed by the reflection that I erred in the company of the nearly infallible Kane, who says (Entom. xix. p. 145) that the "oromorphic form of *parthenie* graduates insensibly into *varia*," whereas in truth the oromorphic form of *parthenie* does nothing of the kind except with regard to size. The same observation is made by Bath (Ent. xxix. p. 11) with regard to specimens from Randa, near Zermatt, and (Ent. xxx. p. 210) from Gavarnie, at a height of from 5000 to 6500 ft. Now these two localities probably represent the extreme height to which *parthenie* ever mounts in the Valaisian Alps and the Pyrenees respectively, and I have seen specimens from both ranges. The superficial resemblance to *varia* is at first sight marked, but a comparison made between them and the *varia* of the high Alps on the one hand, and the ordinary Swiss forms of *parthenie* (especially the subalpine forms) on the other, will serve to place the matter beyond dispute. The table given in vol. xli. pp. 304-307 will be found helpful in this matter. The very small specimens of *parthenie* in the National Collection, brought by Mrs. Nicholl

from the Piz Europa, serve to bring out very strongly the differences between the two species; though they are as small as the smallest *varia*, it would be almost impossible to confuse them. The only females I have ever seen about which any uncertainty could arise are the very light specimens taken by Mr. A. H. Jones at Campfer, in the Engadine.

(To be continued.)

VARIATION OF *V. URTICÆ*, L.

By T. REUSS.



SINCE I began, in 1906, to pay some attention to the facial changes possible in the Vanessidæ, I have taken particular interest in any variation exhibited by the normally dusky, plain-hued under sides of *urticæ*, *io*, *polychloros*, and others. As is well known, the under sides of these imagines are undoubtedly under certain conditions of protective value to their possessors, by causing them to resemble bits of wood, dry clay, &c. Any new departure in facial development, tending to paint bright decorative colours into such under sides and thus to deprive them of, or to lessen, their protective value, would naturally be worth while to observe.

Now though I have reared over twelve thousand larvæ of *V. urticæ* and *io*,* only three or four perfect individuals have come to my notice, which plainly showed the tendency to develop an under side facies with conspicuous colours in it.

On September 13th last I bred the above aberration of *V. urticæ* from wild Hertforshire larvæ, which is remarkable for the chain of light bluish-grey lunules on the under side of the wings. Groups of shining white scales in the lunules brighten them and, in the live insect, the lunules looked very conspicuous and

* A specimen of *V. io* (a heat-form) developed a few brilliant metallic blue and green scales at the apex of the fore wings, just underneath one of the white spots in the ocellus, and in the same place where such metallic scales are to be found in the under side of *Polygonia (Vanessa) c-album*.

decorative. I therefore suggest the descriptive name of *ab. subtus-ornata* for this form. I took the specimen out into the garden, soon after the wings were fully developed, and, placing it on tree-trunks, logs of woods, &c., I noted its appearance when resting with closed wings on these objects. In every case the decorative chain of lunules caused the insect to look "ornamental," and quite unlike a bit of bark, rotten wood, or any of the other things which the normal under side of *urticæ* seems to imitate. The under side of the aberration was evidently, therefore, much less protective than that of the normal form. The hind wings, and especially the central and basal area of the primaries, were suffused with a rich purplish brown (the colour of the well-known pigment "burnt sienna"), and the broad black bands looked rich and glossy in the sunshine. Soon, however, the wings of the insect began to vibrate in the manner common with butterflies when they prepare for flight; they raise the vitality (and temperature) in their bodies by these vibrations, expand their air-receptacles, and then suddenly fly off—which was precisely what the aberration did, or tried to do, thus putting an end to my observations. I succeeded in re-capturing it with the net, but not before it had made a beautiful display of its dark, fiery upper side, which showed a purplish gloss on the dark wing parts and on the white spotted margin, and reminded one of *P. atalanta* in many respects. Prof. Standfuss recorded on p. 54, Hdbk. of Pal. Butt., 1896: "Bruand saw in the collection of Mr. Peythieu, in Locle, a hybrid of *atalanta* and *urticæ*, which had been captured three times in fifteen years, near Locle. A record of this is found in the Ann. Soc. Entom. de France, ser. 2, 1844, t. ii. Bull. p. vi." If the three specimens in question were really the offspring of *natural fertile pairings* between the two species, then such a fact would, I think, suffice to show that *atalanta* and *urticæ* were much more closely related than one had otherwise suspected, *fertile pairings* being the best of proofs in this sense—and might give signs of their affinity also by occasional "parallel" variation in facies.

But even if the account of fertile pairings of *urticæ* and *atalanta* were based on an error, I should yet think "parallel" variation to be possible, and even capable of producing imagines that might be mistaken for hybrids of the two species, as, for instance, is certainly the case with *urticæ* and *io*.

THE TAPS OF THE "DEATH-WATCH BEETLE."

By C. J. GAHAN, M.A.

IN Mr. Claude Morley's communication on this subject in the January number, p. 31, there are two statements of fact which more than suggest that the "Death Watch" concerned was not

an *Anobium* at all. The tapping was heard in the month of October, and the number of taps given in succession without a break was thirty at least, according to his own computation, and therefore considerably in excess of the highest number ever attributed to *Anobium*. Both facts point to the "Lesser Death Watch" (*Atropos divinatoria*) as the source of the noise.* It appears that the ticking of *Anobium* is generally heard in the spring; and in none of the accounts that I have read has a ticking, when heard late in the year, been definitely traced to the action of an *Anobium*. On the other hand, it is during the summer months, from July onwards, that one is most likely to hear the ticking of the Lesser Death Watch. I have myself heard it in the month of October and again at the beginning of December, 1891, under circumstances which are to be found reported in the 'Proceedings' of the Entomological Society for that year (p. xxxiii). Westwood gives an account of a ticking noise which he heard going on in the wooden mantelpiece of his study throughout nearly every month of the year, including October. The mantelpiece was inhabited by *Anobium striatum*, and he attributed the noise to the action of the larvæ in gnawing the wood, thinking it very unlikely to be due to the perfect insects. But I strongly suspect that a good deal of the ticking in that case also was the work of the Lesser Death Watch.

The Rev. W. Derham, who, a little more than two hundred years ago, gave one of the fullest and most accurate accounts we have of the ticking of the death-watches, both "the greater" and "the lesser," pointed it out as a distinction between the two that, whereas the one "beats only about seven or eight strokes at a time and quicker," the other "beat some hours without intermission, and his strokes are more leisurely, and like the beats of a watch."† This "most accurate and minute observer," as Dr. Sharp describes him, has explained in full detail exactly how the *Anobium* or Greater Death Watch makes its ticking noise, and his account has since been abundantly confirmed by other acute observers. Entomologists from time to time have shown a reluctance to accept all his statements as true, but gradually the unbelievers have been converted, and now, so far as I know, there is only one left.

Mr. Swinton cannot believe that *Anobium* makes its ticking sound by hammering its head against the wood on which it

* The very late date at which I heard these taps was, as I showed (*loc. cit.*), what primarily led me to draw attention to the subject. At the time I was so sceptical—or ignorant!—of the tapping of *Atropos* that it did not even occur to me. Mr. Gahan tells me that he once heard a tapping, and traced it to a box on the mantelpiece, which contained nothing whatever but *Atropos*: this is very conclusive. No doubt can remain that the multi-taps of the insect I heard are referable to the same species.—C. M.

† This is both curious and interesting; for, as I was at some pains to show, the taps were incalculably frequent in my case.—C. M.

stands, and this in spite of the evidence of such highly reputable authorities as Latreille, H. Doubleday, F. Smith, and the Rev. L. Jenyns, to mention only some of those who have been actual witnesses of the performance. His own suggestion in the February number (p. 64) as to the manner in which the sound is produced will scarcely stand the test of investigation. I have examined afresh both *Anobium striatum* and *A. tessellatum*; but in neither of these species have I been able to find the special structures he has figured and described. The apical area on the under side of the elytron which is represented in his figure as being crossed by oblique lines or ridges is, as a matter of fact, covered by a delicate pubescence having a silvery appearance, and is not crossed by a single ridge. This suggests to my mind that there has been a mistake in the identification of the species, for it is true, as pointed out in my paper on the "Stridulating Organs in Coleoptera" (Trans. Ent. Soc. 1900, p. 439), that certain species of *Anobium* show a series of ridges somewhat in the position indicated in Mr. Swinton's figure, but it has never been shown that any of these species tick like the death-watches.

Although unable to agree with Mr. Swinton, I gladly recognize his very praiseworthy spirit of enquiry, and should like now to offer him a suggestion.

Spring will very soon be here. April and May* are, I find, the months in which the plaintive notes of the Anobiids (*A. tessellatum*,† in particular) have been most often heard, and their amours displayed before the eyes of prying enquirers. If Mr. Swinton will endeavour to obtain some lively specimens during one of those months, and keep them by him on a table, either in a little box or under a glass, as others have done, he may meet with a like success, and be able to satisfy himself as to how exactly the sound is made. As I have never witnessed the tapping of *Anobium*, I shall be glad to have the chance of trying a similar experiment, and I hope that other readers of the 'Entomologist' may be induced to do likewise and let us know the result.

There are one or two small points that might be settled,‡

* Is the imago of *A. domesticum* = *striatum* emerged by April or even May?—*cf.* my notes (*loc. cit.*).—C. M.

† Perhaps *A. tessellatum* is a household insect, though not (if I correctly recollect) given by Mr. E. A. Butler as such. Indoors, I have it only from an eight-hundred-year-old beam of Ely Cathedral. At all events, such as I have found came from paludose willows in early May; and it does not occur in my old house at Monk Soham, where I have heard (this time *really*) *A. domesticum* tapping in the "watches" of a toothache night, as it *should* tap, four-to-eighty.—C. M.

‡ Another is the association, parasitism or inquilinism, of *Corynetes cæruleus* on this beetle. Both are abundant in my house, but I never saw the former alive till I went there in 1904. It is common on ceilings and windows, always a little before the time of appearance of *A. domesticum* in

since there is a slight discrepancy in the accounts (most of which apply to *A. tessellatum*). First, as to the number of taps given in succession without a break:—Derham, as we have seen, states it to be seven or eight, while F. Smith gives it as “four to five, usually five,” and Doubleday as “generally about five or six.” And, secondly, as to how the tapping is done. According to some, the beetle strikes with its mandibles against the wood; but Derham, who seems to be on the whole the most reliable authority, is very explicit on this point, and says that it strikes with its “forehead,” not with the lower part of the face, or upper lip, as it was said to do by Allen who, a few years before, had started the discussion of the subject in a paper sent to the Royal Society.

EFFECTS OF TROPICAL TEMPERATURE ON BRITISH
PUPE OF *MANDUCA ATROPOS*, AND STRIKING
SPECTACLE AFFORDED BY THE MOVABLE
“DEATH'S-HEAD” ON THE THORAX OF THE
MOTHS.

By T. REUSS.

DURING the first days in October, 1908, four large larvæ of *M. atropos* were brought to me from a potato-field here in the vicinity (Ware, Herts), but two of these proved to be injured by rough handling. The other two were fine full-grown specimens, and they began to lose their beautiful green, bluish, and yellow colours in exchange for a brownish yellow already on the day following their capture. Soon they were preparing for pupation by burrowing energetically in the loose sand at the bottom of the breeding-cage in search of a suitable hiding-place.

After four days, observing that all movement in the sand had ceased, I searched for the larvæ, and found them each lying in a separate cave with firm walls, which they had made in the sand. Intending to climatize the pupæ in tropical temperature, I removed the larvæ to a suitable box, and there they pupated on the evening of October 8th in a temperature of 30° C. in artificial glass-topped sand caves. I did not allow the mercury to fall below 23° C., and under these conditions the pupæ emerged on October 31st in the evening, almost simultaneously,

June, continuing for hardly a month. Another small point that might (inhumanely) be settled is De Geer's affirmation that “You may maim, pull limb from limb, or roast over a slow fire this pertinacious creature (*Anobium pertinax*), and not a joint will move in token that it suffers,” which appears contrary to the fundamental laws of self-preservation. One of the best figures of *A. domesticum* is given (*bis*) in that somewhat neglected, because unindexed, but most delightful book, ‘Episodes of Insect Life,’ by “*Acheta Domestica*, M. E. S.” (Miss Budgen), iii. 1851, 126.—C. M.

after only twenty-three days of pupal development. The temperatures were measured by thermometers sunk in the sand.

The moths ran about after emergence for several minutes before their wings began to expand, thus indicating as usual that in the natural state the species was accustomed to encounter and overcome some difficulties on first leaving the pupal shell, which would be fatal if the wings expanded at once.

One of the moths—the larger one—appeared to be normal in facies; when, however, I first saw the other—smaller specimen—in an uncertain light, I thought that the “skull” markings on the thorax were absent. Looking closely, however, it became evident that the usual markings were there, but that they were so dark in colour—of a dusky brownish tint instead of bright yellowish white—as to have become comparatively inconspicuous; otherwise the specimen did not appear to differ from the type.

I observed these interesting moths for some time alive, and the larger one, with the normal and very conspicuous “Death’s-head” on the thorax, gave me a surprise. Soon after the freshly emerged insects had dried their wings and settled themselves into the position common to most moths when at rest, I approached the cage, which stood in an obscure corner, with the intention of studying the appearance of the specimens. The larger one was resting against the side of the cage, a dusky inconspicuous shape; the smaller moth was hanging on to the roof with its head towards me, and its very large eyes glowed like live coals in the half-light.

Looking closer at the grey uncertain form on the side wall of the cage, I was struck with its likeness to the hooded, long-robed figure of a mediæval monk, but with a naked, bleached skull grinning out from the hood. With my head inside the breeding-cage, I inadvertently disturbed the moth on the roof, whereupon it uttered a series of sobbing squeaks, and then it suddenly seemed to me as if the white “skull”-cap in the dark form on the side of the cage just before my face had become alive, and *was nodding out at me*. The impression in the gloom was so weird and startling that I turned my head towards the light to see if my eyes were at fault, but nothing evidently was the matter with them. Looking back at the moth, I again saw the “skull” nodding horribly, and both moths were now emitting the plaintive squeaks for which they are well known.

Nothing remained but to fetch the lamp, and to bring its light to bear on these twentieth-century spectres. Immediately, then, it became plain that the white “skull”-like disc on the thorax was movable, and now palpitating up and down rapidly,*

* Evidently pumping the air necessary to cause the squeaking sounds into the proboscis.

thus being under the above conditions capable of causing the impression of a head nodding out from a dark cowl. *M. atropos* is well known as a migratory insect not indigenous in the north; and as the moths emerged in a temperature like that of their southern home, this perhaps helps to account for the remarkable exhibition they made.

NOTE ON THE EARLY STAGES OF *OXYPTILUS PILOSELLÆ*.

BY WILLIAM PURDEY.



Oxyptilus pilosella, $\times 2$; and cocoon-like pupal tenements, $\times 2$.

ALTHOUGH repeatedly foiled in consequence of the larvæ being so extensively ichneumoned, I have, after some years, succeeded in rearing British specimens of *O. pilosella*. The ovum is deposited on the under side of a leaf of *Hieracium pilosella* about the end of July, and is large for the size of the moth. The general colour is pale lemon, and the larvæ, which hatches out in about ten days from the time that the egg is laid, is at first a miner, and eats down the midrib of the leaf. It probably hibernates quite small, but from its obscure habits I doubt if it could then be obtained in a state of nature. Neither can it be detected after hibernation until quite late in the spring, and even then only with difficulty, as it feeds in the heart of the plant

among the bases of the young leaves. When approaching maturity it is a trifle over half an inch in length, of a creamy colour, with pure white hairs of an equal length with the diameter of the body, and its head is slightly tinged with brown.

At this time, about the beginning of June, the larvæ were apparently feeding, or lying dormant, preparing for the pupal change, on the under side of the leaves, and in the heart of the plant. Each larva formed a wool-like nidus, wherein it ultimately pupated about the end of June. The imagines emerged about the end of July.

There was no difference in the appearance of these bred moths and the newly caught wild specimens.

Folkestone: February, 1910.

NEW AMERICAN BEES.—IX.

BY T. D. A. COCKERELL.

Hoplitis mescalerium, sp. nov.

♀. Length about 9 mm., black, head and thorax with dull white hair, abdomen with conspicuous white marginal hair bands, failing more or less in the middle; ventral scopa white; clypeus very densely punctured, broadly truncate at apex, and with a median smooth line; punctures of vertex well separated; antennæ wholly dark; cheeks broad and rounded, densely punctured; under side of head with long curled hairs; mandibles tridentate, but the inner tooth very feebly developed, little more than a prominent rounded angle; maxillary palpi five jointed, joints measuring in μ (1) 68, (2) 153, (3) 136, (4) 102, (5) 76; blade of maxilla very long and slender, length about 2635 μ , but breadth near base only 100; tongue reaching to small joints of labial palpi; labial palpi with first joint about 1105 μ , second 1428, the second measured to beginning of third joint, not counting the hyaline process (170 μ) extending beyond; mesothorax shining, with the strong punctures well separated; scutellum not especially swollen; area of metathorax dull, minutely granular; pleura densely punctured; tegulæ shining black; wings strongly infuscated; second r. n. reaching second s. m. very near its end; apical spine on anterior tibia long; hair on inner side of hind basitarsus pale yellow; tibial spurs light ferruginous (black in *H. sambuci*); abdomen with distinct but sparse punctures.

Hab. Mescalero, New Mexico, July 12, two females (*C. M. Barber*). Named after the Mescalero Apaches, in whose territory it is found. It is closely related to *H. truncata*, Cresson, and *H. sambuci*, Titus, but separated by the dark wings, the colour of the spurs, and the measurements of the palpi. *H. adunca* of Europe, the type of *Hoplitis*, has the tongue much longer, the first joint of labial palpi much shorter in proportion to second, and the blade of maxilla not so slender.

Triepeolus denverensis, sp. nov.

♂. Length about 13 mm., black, with the *legs entirely bright ferruginous*, but the spurs of middle and hind legs black; light markings pale ochreous, as in allied species; wings only slightly darkened. Head broad; eyes (dry) pale reddish-grey; face with dense appressed white hair; labrum black; mandibles black except a little red about the middle; antennæ black; front and vertex coarsely and densely punctured; ocelli large, deep reddish; *mesothorax rather thinly covered all over with ochreous hair*, the usual two bands very faintly suggested by a greater density of the hair; *pleura densely punctured, covered with hair*, which becomes thinner below; *scutellum very strongly bigibbous*, lateral teeth strong, black, sharp, slightly curved inwards; tegulæ light ferruginous; second s. m. much narrowed above, and receiving the first r. n. in the middle; abdomen with six broad entire ochreous apical bands; black band on first segment transverse, rounded laterally, shorter than in *T. occidentalis*, connected with base of segment by a narrow band; band on second segment with a large rounded anterior lobe on each side. Related to *T. helianthi*, Robertson, but easily separated by the characters italicised.

Hab. Denver, Colorado, at flowers of *Peritoma serrulatum*, Aug. 11, 1908 (Mrs. C. Bennett). At the same flowers, at the same time and place, Mrs. Bennett took *Andrena argemonis*, Ckll. (both sexes), *Megachile grindeliarum*, Ckll., one female; *M. perihirta*, Ckll., three males; *Melissodes obliqua*, Say, one male (a variety with green eyes, which has also been taken at Boulder by Mr. S. A. Rohwer); and *M. agilis*, Cresson, var. b., Ckll. (Univ. of Colorado Studies, 1907, p. 255).

Megachile perihirta has a large tubercle on the inner side of the middle basitarsus near base, overlooked in the original description. I am inclined to suspect that *perihirta* and *grindelium* are the sexes of one species.

Ashmeadiella aridula, sp. nov.

♂. Length about 5½ mm., black, including legs, with white (not in the least yellowish) pubescence, and perfectly clear, iridescent wings. Eyes green, black in front; white hair dense on sides of face; mandibles black; flagellum dull red beneath; tegulæ rufo-testaceous; apical teeth of abdomen tipped with red, the median ones much longer than broad. Similar to *A. caetorum*, Ckll. (which occurs at Florissant, Colorado), but distinguished by the colour of the tegulæ, antennæ, and apical teeth of abdomen. It is perhaps only sub-specifically distinct from *caetorum*.

Hab. Rifle, Colorado, July 3, 1908 (S. A. Rohwer).

I have referred to *A. prosopidis*, Ckll., two males from Boulder, Colorado (May 26, S. A. Rohwer), and one from Olympia, Washington State (July 1, Kincaid). They are not precisely typical, and the Olympia one especially is rather too large, with the wings not perfectly clear. It is probable that with more material another species might be defined, but at

present I cannot find any satisfactory grounds for dividing the series.

Osmia besseyæ, sp. nov.

♀. Length 7 mm.; similar to *O. copelandica*, Ckll., except as follows: head narrower, obscurely greenish; mesothorax and scutellum dark olive green (metathorax and pleura black); hair of head and thorax above pale yellow; hind margins of abdominal segments not at all reddened. Abdomen with white hair bands, failing in the middle; ventral scopa white; wings dusky; antennæ wholly black; eyes green, blackish in front; second joint of labial palpus longer than first; basin of first abdominal segment with a short but evident transverse ridge above.

♂. Head and thorax distinctly dark greenish; hair of head and thorax above distinctly yellowish; eyes pale sage green. In the Boulder County tables (Univ. of Colorado Studies, 1907, p. 252), it runs to *O. proxima*, from which it differs by its smaller size, black abdomen with distinct hair bands and non-metallic legs. The flagellum is wholly dark.

Hab. Female (type), Boulder, Colorado, at flowers of *Besseyia plantaginea*, June 1, 1908 (*S. A. Rohwer*). Male, Boulder, May 26, 1908 (*S. A. Rohwer*).

A curious little species, rather resembling an *Ashmeadiella*. It is really very much like the European *Osmia submicans*, Mar., which I have from Brindisi (*Morice*), and also from Algeria and Teneriffe. It may perhaps be found to intergrade with *O. copelandica*, but at present they appear distinct. *O. copelandica*, so far as known, flies in September.

Boulder, Colorado: Dec. 1909.

SOME NEW BUTTERFLIES FROM FORMOSA AND JAPAN.

By A. E. WILEMAN, F.E.S.

Sephisia taiwana, sp. nov.

Male. Fore wings fulvous with three black spots of irregular shape on the costal area, the first extends to just below the middle of the cell, the second to the second median nervule, and the third to the third median nervule; a large black patch on the inner marginal area extends from the base to just beyond the middle of the wing; the black, wavy, submarginal line increases in width from the middle to the costa, and is separated from the black marginal line by a series of fulvous lunules; the space between the second costal spot and the submarginal band is broken up by the broadly black nervules into three small spots. Hind wings fulvous, rather paler on the discal area; a black bar about the middle of the costa and a round black spot below it; two small black spots in the cell, that nearest the base obscure; the black markings on the outer marginal area some-

what similar to those on the same area of the fore wings, but the submarginal line is preceded by a black ring and cloud and some blackish spots, and brownish clouding between these and the costa; the abdominal fold is greyish, and the adjoining interspace is clothed with black and fulvous hairs. Under side of the fore wings fulvous, with black markings as above but smaller, the middle spot on costal area divided into three parts, the largest of these enclosing a pale dot; two whitish spots on the outer edge of the third costal spot; the lunules before the marginal line merge into whitish towards the costa. Hind wings silvery white, with a network pattern in black above the cell towards base; two black spots in the cell; beyond the middle there are two black, wavy lines, with the space between them filled in with fulvous, and enclosing a black ring in the first and a black spot in the second median interspaces. Expanse, 70 millim.

One male specimen from Lalachi, June 1st, 1908, 4000 ft.

Orthomiella rantaizana, sp. nov.

Male. Upper side sooty black, the costal half of hind wings purplish with a metallic sheen, but this colour hardly extends to the outer margin. Under side brownish, sprinkled with bluish-grey scales over the discal area, but most in evidence on the basal area of each wing; on the fore wings there is a spot in the cell, one at the outer end of the cell, and a rather curved, transverse, macular band beyond; all these markings are but slightly darker than the general colour, and are very indistinct; the hind wings have two irregular dusky bands, the basal one finely edged outwardly with lilacine; a series of dusky marks on the outer margin, those nearest the anal angle black and most distinct. Expanse, 27 millim.

Hab. Formosa.

Male type from Rantaizan, Formosa, 6000 ft. Two male specimens from Rantaizan, May 4th, 1909, and May 14th, 1909.

This species is near *O. pontis*, Elwes, and *O. sinensis*, Elwes.

Apatura ilia ab. *mikuni* ab. nov.

Male. On the upper side this insect very closely resembles the same sex of *A. iris*, but the general colour is browner, the three subcostal white spots of the fore wings are larger, and almost confluent; there are four black spots in the cell, and the black spot on the outer marginal area is ringed with fulvous. The white band on the hind wings is narrower and very irregular; the black spot in the first median interspace is fulvous ringed, and there is a fulvous dot above it; the interrupted submarginal band is also fulvous. Under surface of all the wings strongly suffused with tawny, the markings pretty much as above, except that the black spot in first median interspace is reduced to a mere dot, and the dot above it is white; the outer marginal area has a double series of more or less confluent, lilacine lunules, except towards the apex of the fore wings. Expanse, 80 millim.

Hab. Japan. One male specimen from Mikuni, Province of Bungo, June, 1896.

Possibly a dimorphic form of *A. ilia* var *substituta*, Butler

ON THE HYMENOPTEROUS PARASITES OF COCCIDÆ.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

(Continued from p. 64.)

68. *Kermes ilicis*, Linn.*

No one has recorded parasites from this species since Fonscolombe gave his account (Ann. Soc. France, 1832, p. 297, quoted by Nees, ii. 427): "E. *cocco Ilicis tinctoriæ*, Junio mense, quo tempore colligitur, observante D. Fontanier, occitano."

69. *Asterodiaspis variolosum*, Ratz.

Habrolepis (*Encyrtus*) *dalmanni*, Westw. (*nubilipennis*, Walk.) has been bred from the synonymous *Lecanium quercicola*, Behé., both in Europe (Wachtl, Wien Ent. Zeit. 1882, p. 298) and America (Ashmead, 1900, p. 404).

70. DACTYLOPIUS.

Several parasites are said by Ashmead (1900) to have emerged from unknown species of this genus. These are:—eleven *Coccophoctonus dactylopii*, Ashm., of both sexes, bred in Australia in Sept. 1894 by Albert Koebele (p. 375); *Aphycus angelicus*, How., bred from a species on passion flower in N. America, and *A. australiensis*, How., bred in Australia from another on eucalyptus (p. 384); *Tetracnemoidea australiensis*, How., from a species on *Pittsporum* (p. 357); *Aphycus nigritus*, How., bred in California from a species on *Artemisia* (p. 387); and *Chrysoplatycerus splendens*, How., from a species from the same locality.

71. *Dactylopius destructor*, Comst.*

From this pest have been raised *Coccophagus flavoscutellum*, Ashm. (Revis. Aphel. N. Amer. 1895, p. 36); *Chiloneurus dactylopii*, How. (Descr. N. Amer. Chal. 1885, p. 17); *Encyrtus inquisitor*, How. (Report Ent. U. S. Agric. 1881, p. 367); *Leptomastix dactylopii*, How. (Descr. p. 23). *E. inquisitor* is placed in the genus *Zarhopalus* by Ashmead (1900, p. 406).

72. *Dactylopius ephedræ*, Coquil.*

Signiphora dactylopii, Ashm., is recorded from this species by its author in Northern America (Ashm. 1900, p. 410).

73. *Dactylopius vastator*, Mask.*

In Hongkong *Aphycus dactylopii*, How., has been raised from this species (*l. c.* p. 385).

74. *Dactylopius virgatus*, Ckll.*

Ashmead tells us (*l. c.* p. 373) that *Blepyrus texanus*, How., has been bred in Texas from this species, together with (*p.* 388) *Aphycus texanus*, How.

75. *Dactylopius longispinus*, Targ.

Two species, *Coccophagus orientalis* (Proc. U. S. Nat. Mus. 1896, p. 633) in Ceylon, and *Eucomys* (*Encyrtus*) *albicoxa*, Ashm. (Trans. Amer. Ent. Soc. 1885, Proc. p. xvi.) from N. America, have been recorded from the synonymous *D. adonidum*, Targ., the "Mealy Bug."

76. PSEUDOCOCCUS.

Newstead says (Mon. Coccid. i. 32) that he has bred *Aphycus Pappus*, Walk., freely from uninstanced species of the genus at Weston-super-Mare, Norfolk, and Cheshire: that it was, in fact, often difficult to find an unaffected female; and Howard tells him that he bred a specimen of the Proctotrypid *Lygocerus hyalinatus*, Thoms., from (probably some dipterous larva in) *Pseudococcus*.

77. *Pseudococcus yuccæ*, Coquil.*

Perissopterus mexicanus, How. (Revis. p. 22) in Mexico, and *Blastothrix yuccæ*, Coquil. (Ashm. 1900, p. 390) from California, prey upon this species.

78. *Pseudococcus aceris*, Sign.

The omnivorous *Coccophagus lecanii*, Smith (Revis. p. 33), *Rhopus* (*Acerophagus*) *coccois*, E. A. Smith (North. Amer. Entom. 1880, p. 84), have been recorded from this species. [For reference to this species' association with ants, cf. Ent. Month. Mag., May, 1892, pp. 60 et 307, and 1894, p. 87.]

79. RIPERSIA.

Two Chalcids, one belonging to the genus *Cerchysius* and the other to an apparently new genus, not far from the curious hemipterous *Dinocarsis*, Först., have been bred from this genus by Newstead (Mon. Brit. Coccid. i. 32).

80. *Eriococcus azaleæ*, Comst.*

Howard records his *Coccophagus immaculatus* (Report Ent. 1881, p. 358) from this species.

81. *Eriococcus rhodomyrti*, Green.*

Encyrtus (*Adelencyrtus*) *solidus*, How. (Proc. U. S. Nat. Mus. 1896, p. 638) is given as bred from this host by Howard and Ashmead (1900, p. 402), in Ceylon.

82. COCCUS.

I have been enabled to refer all the species of *Coccus* (*sensu lato*) from which Hymenoptera have been bred to their restricted genera, except the following four kinds, some of which are probably synonymous with others already cited. This method

is, however, of course impossible when the Coccus-host has been referred in the first instance to no particular species or food-plant, and I must briefly summarize here parasites simply given as raised from *Coccus*. Ratzeburg (Ichn. d. Forst. ii. 145) says *Encyrtus æneus*—or *E. melanopterus*, Nees—was bred by Reising from female *Coccus* on the stem and branches of blackthorn in July, 1843; that the three females of his *Telegraphus maculipennis* (ii. 153) which he described were bred with the above parasite from female *Coccus*, and suggests that *Encyrtus mirabilicornis* is also a Coccus-dweller—*Cerapterocerus mirabilis*, West., is stated by Dalla Torre to have been bred from *Coccus* by Dr. Giraud; of *Bracon brevisculus*, Ratzeburg says (*l. c.* iii. 37) that this specimen is interesting because it had an unheard-of host for a Braconid, viz. *Coccus* on oak-bark; he also instances (i. 200 et 201) *Pteromalus xanthopterus*, *P. microneurus* and *P. maculipes* as also probably bred from *Coccus*. Costa bred his Eucharid *Aspidocoris cyanea* (Bull. Ac. Nat. Napoli, 1863, p. 24) from species of *Coccus* on *Citrus*, *Myrtus*, and *Ficus*. Mayr raised *Eusemion (Cerapterocerus) cornigerum*, Walk. (Verh. z.-b. Ges. 1875, p. 749) from *Coccus* in Austria; this is quoted by Gaulle (Cat. 100), who adds the extremely doubtful record hence of the Cynipid *Allotria rubriceps*, Kieff., probably upon its author's authority.

(To be continued.)

NOTES AND OBSERVATIONS.

We are pleased to note in the list of candidates proposed for election to the Royal Society the name of Dr. F. A. Dixey, M.A., M.D., Bursar of Wadham College, Oxford, and President of the Entomological Society of London. Dr. Dixey has made the Pierine group of butterflies his own especial study, and those of us who were fortunate enough to hear his Presidential Address this year on the "Plume-scales of the Pierinæ" have already had an opportunity to estimate the great value to science of what may be described as his "diploma" work. Dr. Dixey, however, did not deliver the whole of his paper of the occasion of the Annual Meeting. But it will appear *in extenso* in part v. of the Society's publications for 1909, and will be illustrated by three plates—a unique addition to the Addresses published in previous years. Meanwhile we offer our sincerest congratulations to Dr. Dixey, who now joins the select band of Royal Society Fellows who are also entomologists.

OCYSTOLA ÆTHOPIS, MEYR., IN DEVONSHIRE.—I have to record the occurrence of this Australian moth in South Devon in September, 1908. I received the specimen, with others, in the autumn of that year from the captor, the Rev. J. W. Metcalfe, of Ottery St. Mary, who does not collect Tineina. It was first of all submitted to Mr. E. A. Atmore, F.E.S., who said that he had nothing like it, and could

not suggest a name. After lying for some months in my box I was able to find time to forward it to Mr. Edward Meyrick, F.E.S., who wrote me on November 14th, 1909, stating that it "is an Australian insect (*Ocystola ethopis*, Meyr.), described by myself in the 'Transactions' of the Royal Society of South Australia for 1902, p. 136. I have described about forty species of the genus *Ocystola*, which belongs to the Cecophoridae, and is exclusively Australian, so far as known. The occurrence of this species is very curious, but it must be undoubtedly due to accidental importation with its food-plant. *O. ethopis* is found under temperate conditions in Victoria; its larval habits are unknown, but some closely allied species of the genus are attached to *Eucalyptus*, the larva feeding on the leaves in a curious and unusual form of portable case, consisting of a short length of woody twig bored down the centre; it is very probable that *O. ethopis* also feeds on *Eucalyptus* in the same way. You say this specimen came from a correspondent in Devonshire; in the Devonshire climate the hardier species of *Eucalyptus* grow well in the open air. Perhaps you will kindly ask your correspondent for particulars of capture, and whether he has any *Eucalyptus* growing in the neighbourhood, or, failing that, since the hard larval case containing the pupæ could easily be imported with anything from Australia, whether he can account for its introduction by any communication coming directly or indirectly thence." As suggested, I wrote to the Rev. Metcalfe, who replied that he believed he took the moth in September, 1908, at Harpford Wood, near Ottery St. Mary, but that so far as he knew there was no *Eucalyptus* in the neighbourhood. — C. GLANVILLE CLUTTERBUCK, F.E.S., Heathville Road, Gloucester, Feb. 3rd, 1910.

EARLY COPULATION OF NOTONECTA.—I was surprised to find, on January 14th, several pairs of *N. glauca* var. *maculata* in cop. in a small pond near Winscombe, Somerset, especially as, though it was very mild, on the previous day the same pond was covered with a thin sheet of ice. — OSCAR WHITTAKER; "Overstrand," Lancaster Road, Birkdale, Jan. 17th, 1910.

AQUATIC HEMIPTERA.—I am working on the Aquatic Hemiptera, and should be greatly indebted to anyone who has any specimens of the following to spare if he would kindly let me have them. I am more especially in want of males, the species I require being *A. æstivalis*, *M. scholtzii*, *M. minutissima*, *Corixa lugubris*, *selecta*, *limitata*, *venusta*, *sodalis*, *caledonica*, *carinata*, *germari*, *cavifrons*, *bonds-dorffii*, and *coleoprata*. — OSCAR WHITTAKER.

AN ENTOMOLOGICAL MICROSCOPE.—The Zeiss-Greenough stereoscopic binocular microscope is the best I know of for entomological purposes. Its great peculiarity is that it is a true binocular, the object viewed being seen with a pair of objectives so arranged that the natural "standing-up" of the object is somewhat increased. This microscope is not suited for histological purposes, as its magnification is limited to about 72. A complete equipment consists, in addition to the stand, of four pairs of eye-pieces and four paired objectives, hence sixteen different magnifications are obtained. This is a greater variety than is necessary, and anyone starting may limit himself to

the stand, to the No. 1 or No. 2 eye-piece, and to the *a* 2 objectives. Other powers may be obtained subsequently. The combinations mentioned give a magnification of only 20 or 24; of course any other combination may be selected as a start, the magnifications varying from 8 to 65. This microscope requires a good light, especially with the higher powers, and particularly with the more powerful oculars. The pleasure of entomological work is greatly enhanced by the possession of one of these microscopes.—D. SHARP.

A MEETING of the Entomological Club was held in the "Gordon Room" of the Holborn Restaurant on February 1st, 1910. Mr. G. H. Verrall, M.P., was in the chair.

Other members present were: Messrs. Adkin (R.), Donisthorpe, Hall (T. W.), Porritt, and Rowland-Brown.

Including the Honorary Members—Messrs. Jones (A. H.), Sich, and Smith (E. A.)—there were seventy visitors.

A MEETING of the Entomological Club was also held at 58, Kensington Mansions, South Kensington, on February 22nd, 1910. Mr. Horace Donisthorpe in the chair.

Other members present were: Messrs. Adkin (R.), Rowland-Brown, Verrall. Mr. A. H. Jones (Hon. Member) and thirteen other visitors attended.

CAPTURES AND FIELD REPORTS.

NEMOBIUS SYLVESTRIS (ORTHOPTERA).—Mr. G. T. Lyle sent me from the New Forest three specimens of the wood-cricket, which he took on February 12th crawling and hopping about on fallen sweet-chestnut leaves. Two were immature, but the third was a female apparently quite full-grown. I was surprised to see a full-grown individual in the winter.—W. J. LUCAS.

TÆNIOCAMPA OPIMA AND HIPOCRITA JACOBÆÆ, AB. IN BERKS.—It may be of interest to record the capture of *Tæniocampa opima* (grey form) at light on April 24th, 1909, and of a yellow variety of *Hipoerita (Euchelia) jacobææ* in June, 1909.—H. S. RUTLAND; Letcombe Bassett, Wantage, Berks.

VANESSA IO IN JANUARY.—On January 2nd of this year my father was walking along a street, and saw a specimen of *Vanessa io* fly to and rest upon a window. I think this is a record.—S. JONES; "Waimea," West Heath Road, King's Norton, Worcestershire.

ORTHOLITHA CERVINATA AND POLIA FLAVICINCTA IN EPPING FOREST.—My collecting in and around Epping Forest last year has yielded two species which during my four years' collecting in this district I have not before had the good fortune to capture; they are *Ortholitha cervinata* and *Polia flavicincta*. *O. cervinata* I found in the larva stage feeding on hollyhock in the garden of an empty house in Chingford about the middle of May, and *P. flavicincta* came to sugar on September 24th. I should feel greatly interested to hear from your readers what the last record is for either of these insects with

regard to Epping Forest.—R. T. BAUMANN; “Glendale,” 17, Station Road, Chingford, Essex.

EPIONE APICIARIA IN AUTUMN.—Referring to your correspondent’s note (*ante* p. 66), I may mention that I took a very fair specimen of this moth on a gas-lamp in Lewes on the 1st November last. The insect appeared hardly in keeping with such species as *P. populi*, *A. sphinx*, *H. defoliaria* and *H. aurantiaria*, which were obtained at the lamps the same evening.—HUGH J. VINALL; “Torbay,” Park Road, Lewes.

AUGUST IN THE VALAIS AND VAUD CANTONS.—When I found it possible this year, for the first time, to spend a month in Switzerland, I determined to get expert advice as to the most promising localities, and from a number of good places most kindly suggested to me by the Rev. G. Wheeler and Mr. J. W. Tutt, I finally elected to spend the first three weeks on the Col de la Forclaz, between Martigny and Chamonix, and the last week on Mont Pélerin, just above Vevey. Travelling *via* Newhaven and Dieppe, we spent the night in the train, and our first sight of Switzerland could scarcely have been a more impressive one, as we came within view of Lake Lemman with Mont Blanc in the distance, in the glorious haze of a brilliant summer morning on July 31st. Passing the towns on the north side of the lake, we entered the Rhone Valley, and arrived at Martigny, the end of our railway journey, at 9.30, to find a carriage waiting to take us up the three hours’ climb to the Col de la Forclaz. We had not proceeded far from the town and suburb before we began to see butterflies of many kinds in plenty around us, including *Parnassius apollo*, *Leptosia sinapis*, *Dryas paphia*, *Argynnis aglaia*, *Melitæa athalia*, *M. dictynna*, *Pararge mæra*, *Erebia stygne*, *E. tyndarus*, *Melanargia galatea*, and many others, besides several fine *Callimorpha hera*. We arrived at the hotel about one o’clock, and after a hearty meal we unpacked our nets and went down the road to try and take some of the insects we had seen in the morning, and besides those mentioned above we took *Chrysophanus alciphron* var. *gordius*, in splendid condition. The next day we devoted to an exploration of the Valley and Glacier du Trient, in the former of which they were already beginning to cut the hay, so we determined to make the most of the next few days there, before attempting any of the higher ground around us. This locality yielded us splendid bags on each occasion that we visited it, amongst the new things being *Carcharodus althææ*, *Pamphila comma*, *Carterocephalus palæmon*, *Chrysophanus virgaureæ*, *C. hippothoë*, *Lycæna arion* (very much worn), *Cupido minima*, *Nomiades semiargus*, *Polyommatus damon*, *P. hylas*, *P. alexis*, *P. astrarche*, *Papilio machaon*, *Parnassius delius* (worn), *Aporia cratægi*, *Colias phicomene*, *Brenthis amathusia*, *Cænonympha satyrion*, *Erebia melampus*, *E. manto*, *E. euryale*, *E. ligea*, *E. pronœ*, and *E. tyndarus*, as well as *Zygæna minos*, *Setina aurita* var. *ramosa*, a fine specimen of *Plusia bractea*, *Acidalia trilineata*, *Larentia lugubrata*, *L. tristata*, *L. hastata*, and *Odezia atrata*; and on a subsequent occasion we took *Parnassius mnemosyne* and *Polygonia c-album*, on the road between Forclaz and the village of Trient.

We were fortunate in finding an enthusiastic entomologist, Mr. George Flemwell, living at the hotel, and as he has been collecting in the neighbourhood of Forclaz for many years, his experience was very useful, and he generously put at our disposal several of his books, which were enriched by his own coloured drawings and notes.

On the afternoon of August 3rd, after a wet morning, we climbed up the zigzag path to the top of Arpille, which is about two thousand feet higher than the Forclaz. The view from the summit, towards the Bernese Oberland on the one side and towards the Mont Blanc range on the other, is magnificent, and it was especially fine on the day in question, owing to the rapidly changing effects of cloud and mist. On the way up we captured several specimens of *Papilio machaon*, and a fine female *Argynnis niobe*, together with *Zygæna loniceræ*, *Setina aurita*, *Gnophos obfuscaria*, *Nemoria viridata*, *Cleogene lutearia*, and *Thera juniperata*; and among the rhododendrons on the summit we were rewarded with a fine series of *Colias palæno*, and a good number of *Hesperia alveus*, *Polyommatus donzelii*, *P. optilete*, *Brenthis dia*, *B. pales*, *Erebia pharte*, *E. stygne*, and *E. æthiops*; and we paid another visit to this spot three days afterwards, to extend our series of these species. By Mr. Flemwell's advice we went to Martigny on August 7th, and took the train to Sion. During the walk down we captured *Thymelicus lineola*, *Melitæa didyma*, and *Aglaïs urticae*, along the roadside, and two fine specimens of *Papilio podalirius* were netted in a vineyard near Martigny Bourg. It was a very hot day, and on reaching Sion, soon after midday, we toiled up to the Castle of Tourbillon, where we were glad to find a little shade. On a plateau outside the walls we took some more *Papilio podalirius*, as well as one or two worn *Satyrus hermione*, and some fine *S. cordula*, the males of which look very brilliant in the sunshine. *Dryas paphia* was also common here, and *Callimorpha hera* was observed between the castle and the town.

A day spent on the Col de Balme, whence one gets a very fine view of Mont Blanc and the Valley of Chamonix, yielded little that was new except *Erebia lappona*, but on Bovine, and along the Valley of the Durnand to the prettily situated village of Champex we took some more *Polyommatus donzelii* and *P. optilete*, and the pretty little *Psodos quadrifolia*.

On August 11th we went to Châtelard, on the frontier between Switzerland and Savoy. On the road through Trient and round the Tête Noire we took a number of Erebias, with which we were now beginning to be familiar, and observed that *Parnassius apollo* was very plentiful; but immediately after crossing the bridge over the torrent where the road turns off towards Finhaut we came upon a patch of thistles and other wild flowers by the riverside which was literally alive with butterflies and moths. No fewer than thirty-two species of the former and seven of the latter were taken during the busy half-hour which we devoted to this spot, and the new ones were *Chrysophanus dorilis* var. *subalpina*, *Thecla spini*, *Anthocharis simplonia*, *Colias hyale*, *Argynnis adippe*, *Issoria lathonia*, *Brenthis euphrosyne*, *Vanessa io*, *Epinephele jurtina*, and *E. lycaon*; *Zygæna hippocrepidis*, *Lithosia lurideola*, *Parasemia russula*, and *Selidosoma glabraria*. But by far the most interesting insect taken at this spot

was a magnificent variety of *Argynnis aglaja*, with the dark markings very much increased, and approaching fig. 5 on plate 61 in Mr. South's 'Butterflies of the British Isles.' Many visits were made to this spot, and on every occasion the same profusion of insects was observed. On Saturday, August 14th, another brilliantly fine day, we walked to Chamonix by way of Trient, Châtelard, Barberine (where we diverged from the main road to see the Cascade), and Argentière, over the low Col des Montets. Nothing new was noticed, but a fine specimen of *Papilio machaon* was taken as it settled in the dust of the road, and some good examples of *Chrysophanus dorilis* var. *subalpina* were captured. Chamonix itself was almost unbearably hot, and the glare of the sunlight on the snow was rather trying. We walked back through Argentière and over the Col de Balme, thus having accomplished a walk which would have been quite impossible in our English climate. Our last long expedition from Forclaz was to Finhaut, via the Tête Noire and Châtelard, but, entomologically speaking, this was a disappointing day compared with others, though we got some good *Nomiades semiargus* and another *Polyommatus donzelii*, and saw *Chrysophanus phlæas*, the only one observed during our whole visit. On Friday, August 20th, we reluctantly left the Forclaz, and on the road to Martigny we took a few more *Callimorpha hera*, which was very plentiful, and a few *Pyrameis atalanta*. We also out of curiosity annexed a specimen of a large green Locustid and of the red-winged grasshopper, *Ædipoda fasciata*, which is so well concealed by the colour of its elytra as it settles on the rocks. We arrived at Chardonne, a village half-way up the funicular railway between Vevey and Beaumaroche, in time for dinner, and found that our new quarters contained a terrace overlooking the lake. We spent a considerable portion of our week here in studying this view, which we saw in brilliant sunlight and in gloom, by moonlight and at sunrise; at sunset, with the promise of a fine morrow, and at sunset-time when there was no sun to be seen. The fine outline of the Dent du Midi was sometimes visible and sometimes completely hidden, and the waters of the lake took their hues from the sky and mountains above them.

On August 23rd we took out our nets and explored Mont Pélerin and its vicinity, the most interesting captures being *Colias hyale*, *Euvanesa antiopa*, and *Chrysophanus dorilis*. *E. antiopa* had settled in the road among some fallen leaves under a tree, and we should have passed it by unnoticed had it not suddenly opened its wings. An interesting walk through the vineyards, where the green lizards kept peeping up at us from the hot walls, led us to the pretty village of Chexbres, where we took *Zephyrus betulae*, *Pararge megara*, *Hipparchia semele*, and a single *Cænonympha pamphilus*, as well as *Euclidia glyphica* and *Larentia tophaceata*. In the house at Chardonne we found *Bryophila perla*, *Plusia moneta*, *Eois rusticata*, and *Phibalapteryx vitalbata*, but all through our visit we did not go out of our way to get any moths, only taking those that turned up.

On August 27th we left Switzerland for Paris and home, and our eventful month was at an end. During that time we took seventy-five species of butterflies and twenty-six species of moths.—F. A. OLDAKER, M.A.; Haslemere, December 3rd, 1909.

RECENT LITERATURE.

Études de Lépidoptérologie Comparée, fasc. iii. CHARLES OBERTHÜR.
Rennes : June, 1909.

WE have received from Rennes the third part of M. Charles Oberthür's "*Études de Lépidoptérologie Comparée*," an ample volume of 415 pages, illustrated by no fewer than twenty-five coloured plates, and divided up into five separate papers, of which by far the most interesting to British readers will be the last, "*Notes pour servir à établir la Faune Française, et Algerienne des Lépidoptères*." For this paper is in fact the beginning of the first comprehensive work on the Butterflies of France since the time of Berce—a sufficiently long interval filled up for the most part by authors who have busied themselves with repeating the observations, and not a few of the errors, of their predecessors of the middle-nineteenth century. So far as we are aware, it is also the first attempt made by a French naturalist of the highest authority to summarize and explain the existence and meaning, the limitations and possibilities of variation in the many species brought under his own personal notice. Since not the least merit of these "*Études*" consists in their being the individual work of a scientist who, having unrivalled opportunities of forming a collection without peer among the private collections of the world, has turned his advantages to the use of the student.

M. Oberthür may not hold the same views of species, nor employ a nomenclature more advanced than that of Staudinger, but he justifies his arrangement by repeated references to the earliest authorities. Nor is the work such a one as commends itself to the advanced entomologist alone. Written with the ease and charm which seem to flourish more naturally in literary France than in England, M. Oberthür delights to tarry in the flowery Breton by-paths, or in the splendid solitudes of the Pyrenees—his own particular happy hunting-grounds—to discourse upon the rare virtues and fellowship of the many lepidopterists with whom he has taken the field, from Guinée onward; or to paint a charming word-picture of pastures and uplands wholly beyond the ken of our most enthusiastic butterfly hunters. His vision of Angoulême, on the threshold of the Midi, in the transparent sunshine of a still summer morning; the tender references to the father who first kindled in him the love of Nature; the grateful optimism which has preserved his affection for men and winged things alike, fresh and untainted—all contribute to make these studies the more enchanting, without depreciating in the least their scientific value. To those deeply interested, as the writer of this notice, in the distribution of the Lepidoptera of Western Europe, and often seeking in vain for accurate and reliable information, they are a mine of wealth. For, although there are innumerable Catalogues of many departments in existence from Duponchel and Donzel to M. de Johannis*—that is, from the beginning of French

* "*Contribution à l'Étude des Lépidoptères du Morbihan*," par J. de Johannis, *Ann. Ent. Soc. Fr.* 1908, pp. 689-868, a work of special value as a guide to the Micro-Lepidoptera of the Department, but containing some truly remarkable records of species among the butterflies, and the time of their appearance!

entomology to the last year of the French Entomological Society's publications—M. Oberthür limits his localities almost exclusively to those with which he is himself familiar, or those investigated by his distinguished brother, M. René Oberthür, and the several friends and professional collectors whose captures adorn his collection, and whose identifications are above the suspicion not seldom inspired by the published lists of our own as well as of French writers. Thus avoiding needless repetition of descriptive matter in dealing with the typical insect, M. Oberthür devotes the greater part of each notice to discussing local races, varieties, and aberrations, in many instances reproduced with exquisite fidelity in the accompanying coloured plates. Of these, perhaps the most successful are those depicting the variation of *Satyrus fauna*, Sulz. (= *statilinus*, Hufn.), from France and other countries, with its near allies in Algeria; the two devoted to aberrations of Papilionidæ; and, best of all, the fine representation of ten forms of *Melitæa didyma*—decidedly the least convincing of "British" butterflies! Forms of the Zygænidæ also figure largely, and, as with the Lycaenid plates, we can only hope that the blues and reds of modern "process" will wear better than those employed by the hand-painters whose often magnificent work, so far as the pigments are concerned, has not survived the ordeal of time. Lastly, we are certain that the issue of this section of the "Études," when complete as regards the French and Algerian butterflies, is sure to receive in book-form a warm welcome from the growing number of students of Palæartic Lepidoptera on this side of the Channel.

H. R.-B.

OBITUARY.

EDWARD SAUNDERS, F.R.S., F.L.S., F.E.S.—We sincerely regret to hear of the death, on February 6th last, of this eminent entomologist. Although he wrote upon Buprestidæ and described many new species in this family of the Coleoptera, he was more widely and better known as an authority on Hymenoptera and Hemiptera.

In the first volume of the 'Entomologist's Monthly Magazine' (1864) there is a note from his pen on Coleoptera near Lowestoft (p. 75); and in 1880 he, together with the late Mr. C. G. Barrett, joined the editorial association of that magazine.

Among his separate publications are:—'A Synopsis of British Hemiptera-Heteroptera' (1876); 'Catalogue of British Hemiptera-Heteroptera' (1876 and 1890); 'Catalogue of British Hymenoptera' (1890); 'Hemiptera-Heteroptera of the British Islands,' with thirty-two coloured plates (1892); 'Hymenoptera Aculeata of the British Islands,' with forty-nine coloured plates (1896); and 'Wild Bees, Wasps, and Ants,' with four coloured plates.

WITH very great regret we have to record the death, on February 8th last, of Mr. HARRY McARTHUR, aged 54 years.

He was the son of the late Mr. Niel McArthur who during the greater portion of a long life had, in his spare time, been a collector

of British Lepidoptera and had acquired a considerable knowledge of the species occurring in the Brighton district and surrounding country. From early youth the son took an active interest in Nature study with a special leaning to entomology. He soon became as expert as his father in field-work, and thus to a large extent was prepared for undertaking the more arduous labours he afterwards accomplished.

In the year 1880 young McArthur was engaged by Mr. Meek to collect lepidoptera in the Shetland Isles. This trip was so successful that in the following year he again visited the Shetlands and then added thirteen species to the list of fifty-three he had previously obtained. In 1883 he once more journeyed to the Shetlands, but on this occasion Unst, the most northern isle of the group, was the scene of his operations. Among the half-dozen additional species he secured was *Crymodes (Hadena) exulis*. The Outer Hebrides next attracted his attention, and in 1887 he spent the entomological season of that year in the Isle of Lewis. As he added some seventy odd species to the list of lepidoptera known to occur in that island, this venture seems to have been highly successful, although he had a severe illness whilst there.

In 1888 and 1889 he collected in Kashmir for the late John Henry Leech, Esq. Travelling through Lahaul and Ladak up to the Karakoram, he probably worked a good deal of country that had never been visited by an entomologist before. The winter of 1888-89 he spent in the Malay Peninsula. The difficulties attending him during the Kashmir journeys were great, but the fact that he, in spite of all obstacles and endless trouble with natives, coolies and others, attained his object, shows him to have been a man resolute in the performance of whatever he undertook. A large number of insects, chiefly moths, were captured, and many specimens of previously described, but rare, species were obtained.

In 1892 he visited the Shetlands for the fourth time, and in the following year he had a season in Co. Cork, Ireland. Collecting in Orkney during the season of 1895 he added seventeen species to the list of Orkney lepidoptera; and four months spent in the Isle of Lewis, in the year 1901, increased the number of species of lepidoptera known to occur in that island by seventeen species also. His last entomological expedition (1908) was to Aviemore, and here the initial stage of his fatal illness seems to have attacked him, but he would not give in, and even made an expedition to Harris in June, where, however, he was unable to obtain access to suitable collecting ground. On his way back to Aviemore he spent a few days in a reputed locality for *Zygæna achilleæ*, but as he could not obtain this species, or find a shelter for himself, he had to leave the inhospitable district. After his return to London he appeared to be in his usual health for a time, but subsequently he broke down and in May, 1909, he went into hospital, as it was found that he was suffering from cancer.

We also regret to announce the decease, at an advanced age, of
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Vol. XLIII.]

APRIL, 1910.

[No. 563.]

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.

H. ROWLAND-BROWN, M.A., F.E.S.

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THE ENTOMOLOGIST

VOL. XLIII.]

APRIL, 1910.

[No. 563

CHIASTOPSYLLA, A NEW GENUS OF SIPHONAPTERA.

BY THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S., F.E.S.

IN a small pamphlet on rat-fleas which we are going to publish for the use of those who study the transmission of disease through the agency of fleas we had to mention a small group of South African species which were originally described as *Ceratophyllus*, but really constitute a genus apart. As the pamphlet in question is not a place suitable, in our opinion, for the publication of new names, we give here a description of the genus, which we propose calling :

CHIASTOPSYLLA, nov. gen.

Allied to *Ceratophyllus*, but characterized by the following particulars :—The labial palpi consist of four segments. The eye is well developed, but not strongly pigmented. The genal edge of the head bears two spines, one lying on top of the other. The pronotum has a comb of about twelve spines. The seventh abdominal tergite bears one long apical bristle on each side. The eighth sternite is small in both sexes. The hind coxa has a comb of spines on the inside. The mid and hind femora bear no lateral row of bristles. The fifth segment has in all the tarsi four lateral bristles, besides a thin sub-apical hair, there being no ventral bristles in between the proximal pair.

Type : *C. numæ*, Rothschild, Nov. Zool. p. 637, n. 27, pl. xii. fig. 58, pl. xiii. figs. 59, 63, 65 (1904).

Other species :—

C. octavii, Rothschild, l. c. p. 638, n. 28, pl. xiii. fig. 61 (1904).

C. rossi, Waterston, E.M.M. ii. p. 271, n. 547, pl. v. figs. 3, 4 (1909).

CONCERNING THE FERTILIZATION OF *ORCHIS*
MACULATA.

By A. M. STEWART.



Fig. 1.

Fig. 2.

Pollinium on head of *Plusia festucae* and *Cucullia umbratica*.

PROF. MELDOLA'S note on "*Cucullia umbratica*, a Fertilizer of *Orchis maculata*" (Entom. xlii. p. 281), draws attention to a subject of very great interest and some importance. It has been the custom hitherto to regard the bees as the great fertilizing agency at work amongst the flowers. Their labours are carried on in the sunshine, and are therefore seen and noted.

Thirty years of moth-collecting in the dusk of summer evenings, combined with a fair share of knowledge regarding the 'Ways of our Wild Flowers,' have led me to somewhat modify that conclusion. I was always fond of collecting the *Plusias*; they are the trout of the entomological angler, so warily have they to be stalked in the failing light as they speed from flower to flower.

It must have been many years ago—possibly twenty—when I first took *P. festucae* with the pollinium of *O. maculata* fixed on its head.

I know a rough hillside some miles from here where the spotted orchis is a much commoner plant than the ragged robin (*Lychnis flos-cuculi*), which latter is the flower most frequented by the *Plusias* in this district.

At varying intervals I have noticed a specimen amongst my captures with these extra "decorations," but on looking over my series I find that only two remain with me.

If a careful watch be kept in the future by those interested, not only over the species of *Plusia* but also over those of *Dianthæcia* and *Cucullia*, there is no doubt that some new records and facts will come to light.

In the illustration (Fig. 1), which is greatly magnified, the sticky disc at the base of the filament is very clearly brought out, although the pollen mass or anther at the other end is somewhat frayed.

The moth is one of the specimens of *P. festuca* previously mentioned, and the photograph has been taken from the under side of the head.

[Figure 2 is from a photograph ($\times 10$) taken by Mr. F. Noad Clark, showing the pollen mass on the head of *Cucullia umbratica*. We are indebted to Professor Meldola for the loan of the specimen.—ED.]

38, Ferguslie, Paisley.

THE ATHALIA GROUP OF THE GENUS MELITÆA.

By Rev. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 83.)

THE range of variation in *aurelia* is, so far as my experience goes, less than in any of the other species as yet considered. The form of the plains is decidedly lighter than that of the mountains in general appearance, though occasionally the hind wings, even in the former case, show an inclination to melanism, reminding one of the hind wings of *dictynna*. It is stated by Kane, following some of the German writers, that *aurelia* is a larger and finer insect in Germany than in Switzerland. This statement I cannot help thinking is mainly due to a general uncertainty obtaining amongst German authors as to what is or is not *aurelia*. It is only lately that I have come across Gillmer's paper in the 'Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg,' vol. lix. pp. 59, &c., which is the first that I have met with which seems to display any grip of the matter, though I am far from asserting that I have searched all the local German publications, and may have missed other more or less satisfactory pronouncements. At any rate, if any such difference does exist, it must be confined to Northern Germany, for the South German, Swiss, and Bukowina *aurelia* do not differ except in detail from each other. The Scandinavian *aurelia* again do not appear to be larger, so that it is highly improbable that the species increases in size as it goes northward in Germany. Two large specimens I have seen which I am inclined, on the strength of the under side in particular, to assign to this species, viz. a pair submitted to me by Mr. Lowe, which he had obtained from Staudinger as *britomartis*, which they in no way resemble, if judged, as they must be, by the original type. Of this pair the following is a description:—

♂. Up. s. f. w.: border wide, with lunules scarcely visible; outer subterminal thickish, inner of same size; a very broad space before the elbowed line, which is narrow near the costa and slopes very sharply in from the angle to the large marginal blotch; stigma and basal lines indistinct and nearly filled up with black.

Up. s. h. w. as in *aurelia*, but with broader space between inner and extra lines; basal spot distinct.

♀. Up. s.: ground colour in two shades (as in *deione*); f. w. as in *aurelia*, but elbowed line as in ♂, though thicker at costa; h. w. as in ♂.

♂. Un. s. f. w.: inner edging line arched, much more in third space than in others; lunules very small; subterminal lines very close together, both as dark shades; elbowed line visible throughout as an almost connected series of spots. (On the left side the basal lines are joined in the form of an H.)

Un. s. h. w.: with all the characters of *aurelia* exaggerated, especially the lowness of the arches in the outer band; bordering line between outer and terminal bands black and very broad; no trace of the *dictynna* spots in outer band.

♀. Un. s. f. w.: ground colour darker than ordinary *aurelia*, and with elbowed line as in ♂; otherwise as in typical *aurelia*. H. w.: as in *aurelia*, but with the characteristics much exaggerated; outer band light, not differing greatly in colour from terminal band.

The entire absence of the *dictynna* spots at once removes these from the possibility of being *britomartis*, Assmann, and if they represent *britomartis*, Staudinger, the fact of his regarding it as a variety of *aurelia* is sufficiently accounted for. The specimens came from Eastern Europe, and correspond in size with those in the Natural History Museum from Greece and Bulgaria, the latter, however, being somewhat brighter in tint. The under side of Scandinavian specimens is not so characteristic in the hind wing as that of Swiss and German specimens; the ground colour on the upper side is somewhat lighter, and the black markings, as a rule, somewhat heavier. I have seen nothing in this species corresponding with either the *corythalia* or *navarina* forms of *athalia*, but such specimens, unless taken among typical *aurelia*, might probably pass, in the absence of precise data, for the other species. I have one specimen from near Bérissal in which the absence of the upper two-thirds of the "extra" line on the hind wing gives some slight resemblance to *parthenie*, whilst the thickened elbowed line of the fore wing places it in the same category of variation with Freyer's *aphæa*, or with *athalia* var. *mehadiensis*. On the under side the principal directions of variation are in the dark bands of the hind wing, the outer varying much in the extent to which the characteristic lowering of the "arches" is emphasized, and both showing a wide range in depth of colouring. On the whole, the mountain specimens have these bands darker than the lowland examples,

and the light bands are generally whiter in those specimens which have the deeper tint in the dark bands. The approach to *dictynna* in the more melanistic males has already been noticed; the more melanistic females, on the other hand, often approach very near to *varia* on the upper side.

The next species, *varia*, is rich both in extreme and in minor aberrations, the former being both melanistic and albinistic, the latter of these being commoner in the male, the former in the female. There is a wide range of these extreme forms in the National Collection, and Aigner-Abafi specially mentions melanic forms of *varia* in the paper previously referred to ('Annals of the Hungarian National Museum,' 1905). They practically extend over much the same range as the aberrations of *athalia*. The minor variations include in the male the extent of dark suffusion of the up. s. h. w., and the greater or less obsolescence of the markings on the upper side, and the fore wing of the under side, and in the female the greater or less extent of melanistic tendency; in both sexes the depth of the ground colour, and of the colouring both of the dark and light bands of the un. s. h. w., is subject to considerable variation. The presence of the greenish tint on the upper side of the female is due to the freshness of the specimen and soon wears off; it is never, in my experience, retained long in the cabinet. The specimens from the Stilsfer Joch are described as being very varied in ground colour, extent of basal suffusion, and breadth of black markings, yet some of these variations are, to some extent at any rate, racial; the *varia* of the Heuthal, for instance, both male and female, exhibit much more dark suffusion than those of the Simplon, whereas the females from Campfer in the same neighbourhood are so light as to approach, on the upper side, somewhat closely to *parthenie*. The resemblance between the females of *varia* and *aurelia* on the upper side has already been touched upon, and in very small specimens an approach is occasionally made towards *asteria*; but unless the former are so worn as to have lost the outer line of the border, un. s. h. w., there is always a ready distinctive character—for instance, the specimen in the National Collection labelled "*varia, teste Hormuzaki*" is quite certainly named correctly, though some doubt appears to have been felt in the minds of those who referred the matter to his judgment.

Britomartis is probably the most variable on the upper side of all the species of this group. The males of the first brood bear a very close resemblance to dark specimens of *athalia*; indeed, on one occasion when I was exhibiting a series at Geneva, a well-known lepidopterist was pointing out to a youthful collector, before the meeting began, the peculiarities by which he might know them to be that species, and was hugely surprised, when I suggested his looking at the under side, to

find there a very close approximation to *dictynna*. All the first brood males in my possession might well be taken on the upper side for small specimens of var. *mehadiensis*, though of course the under side is totally different; two of the females of this brood might equally well pass as the same variety of *athalia*, but the others are much more obsoletely marked. The second brood is much more varied. I have specimens taken at the same time and place as heavily marked as *aurelia*, and more lightly on the fore wing than *parthenie*; at the same time they have, in series, a facies so remarkably and unmistakably their own that it would seem impossible to confuse them with any other species, if we remember that the *britomartis* of German authors (and of Kirby, who confessedly founds his 'European Butterflies and Moths' on their writings) has no recognizable connection with Assmann's original description, nor with his type specimens. The variation of the under side is principally in two directions—intensity of markings and depth of colour. There is considerable range in the latter respect in the fore wing, and in both light and dark bands of the hind wing, the light varying in both sexes from cream or ivory to silvery-white, and the dark from light orange-brown to very deep cinnamon. There is also considerable variety in the emphasis given to the "*dictynna*-spots," which are sometimes very strikingly developed and sometimes almost rudimentary, as also in the comparative breadth of the un. s. h. w. bands and in the proportion of the two parts of the outer and central bands to each other. The outstanding characteristic of the latter, *viz.* the position of the third and fourth spots of the outer division, thrust as it were out of line, is, however, always present, and often most marked.

(To be continued.)

ON THE HYMENOPTEROUS PARASITES OF COCCIDÆ.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

(Concluded from p. 96.)

83. *Coccus alni*, Ratz.*

Ratzeburg states (Ichn. d. Forst ii. 146): I bred male and female *Encyrtus punctipes* from the berry-like *Coccus alni* on alder twigs, and (iii. 189) Hr. Reissig has bred this pretty parasite again. Later (*l. c.* iii. 193) he says Hr. Reissig bred male and female *Encyrtus sericans* from a *Coccus* on alder.

84. *Coccus cambii*, Ratz.*

The same author, after querying its parasitism upon another Chalcid (i. 295), tells us distinctly that *Pteromalus audouinii* was bred (ii. 191) by Hr. Reissig from *Coccus cambii*.

85. *Coccus ulmi*, Linn.

From this species, which Mr. Newstead considers probably synonymous with *Lecanium capreae*, Linn., Walker has described (Ann. Nat. Hist. xiv. (1844), p. 185) his *Encyrtus machæras*.

86. *Coccus phalaridis*, Linn.

This species is referred to the genus *Lecanium* by most authors, but Mr. Newstead tells me it is in any case unrecognizable. From it Dalla Torre gives (Cat. Hym. v. 247) *Trichomasthus* (*Sceptrophorus*) *cyaneus* and *cyaneifrons*, Dalm., apparently upon Kollar's authority, but *cf.* the synonymous *Encyrtus stigma*, Walk. (Ann. Nat. Hist. xix. (1847), p. 228) in respect to the former, which was also bred from "cottony cocoons"—doubtless Coccids—on a leaf by Curtis (Brit. Ent. fol. 395). Mayr (Verh. z.-b. Ges. 1875, p. 745) raised *Chiloneurus formosus*, Boh., from it; together with (*lib. cit.* p. 695) *Aphycus hederaceus*, West., which I took on ivy at Monk Soham on 8th June, 1908.

87. *Icerya purchasi*, Mask.*

The parasites of this species are stated to be the Pirenid *Ophelosia crawfordi*, Riley ('Insect Life,' 1890, p. 248), *Coccophagus californicus*, Howard (*l. c.* 1889, p. 269), *Encyrtus dubius*, How. (*nec* Fonsc.; *l. c.* 1888, p. 270) from California, and the Proctotrypid *Phanurus* (*Thoron*) *opacus*, How. (*l. c.* p. 268). [Howard's record of his *Isodromus iceryæ* (Report Ent. U. S. Agric. 1886, p. 488) is an error, the species having been raised from the Neuropterous genus *Chrysopa* (*cf.* Ashm. 1900, p. 378.)]

88. *Icerya rosæ*, Riley.*

From a host of this name Ashmead records *Cerchysius iceryæ*, How.—distinct from the last-named Chalcid—from Northern America (Ash. 1900, p. 380). [Dalla Torre (Cat. v. 415) gives *Lestophonus iceryæ* as hemipterous host of *Euryischia lestophoni*, Koebele; Scudder knew no such genus, but *cf.* Riley, Report Ent. U. S. Agric. 1889, p. 92.]

89. *Lichtensia koebelei*, Mask.

Two enemies have been bred from this species in Ceylon. Both *Aphycus lichtensiae* and *Encyrtus* (*Microterys*) *lichtensiae*, Howard, are described in Proc. U. S. Nat. Mus. 1896, pp. 636 et 640.

90. *Lichtensia viburni*, Sign.

Two specimens of a *Coccophagus* sp. were bred at Llandaff from this Coccid, and Newstead suggests (Mon. Cocc. Brit. i. 31) that, since *L. viburni* is seldom attacked, the parasite is probably rare. It is improbably exclusive.

91. *Planchonia delicata*, Green.*

From Ceylon we know two parasites of this species (Proc. U. S. Nat. Mus. 1896, pp. 635 et 637), named by Howard *Encarsia planchoniae* and *Encyrtus (Adelencyrtus) Planchoniae* respectively.

92. PROSOPOPHORA.*

An uninstanced species of a genus of this name is said by Howard (Revis. Aphel. 1895, p. 21) to be attacked by *Perissopterus pulchellus*, How.

93. *Aonidia corniger*, Green.*

From an insect of this name, *Encarsia aonidiae*, Howard, is recorded (Proc. U. S. Nat. Mus. 1896, p. 636).

94. PHENACOCCLUS.*

Ashmead has instanced (1900, p. 388) *Aphycus townsendii*, How., from a species of this genus feeding on cotton.

95. *Phenacoccus cavalliae*, Ckll.*

The same author has devoted a short article to "The Hym. Par. of *P. cavalliae*, Ckll." (Canadian Entom. 1902, p. 301), which he says include *Cheiloneurus dactylopii*, How., *Signiphora dactylopii*, Ashm., his new *Blepyrus phenacocci*, with its new hyperparasite, *Tetrastichus blepyri*, all bred in New Mexico.

96. *Tachardia albizziae*, Green.*

Microterys tachardiae, How., is said to prey upon this species in Ceylon by Ashmead (1900, p. 393).

97. RHIZOCOCCLUS.*

And from a member of this genus feeding on a composite plant the same author describes *Signiphora rhizococci* (1900, p. 411), of which one specimen was bred by F. Noack in July, 1897, in Brazil.

ALEURODIDÆ.

98. ALEURODES.

From members of this curious genus are recorded Howard's Aphelinids, *Eretmocerus californicus* (Bull. U. S. Agric. Ent. Techn. 1895, p. 16), *Pterothrix flavimedia* (Rep. Ent. U. S. Agric. 1881, p. 369), *Encarsia coquilleti*, *E. luteola*, and *E. angelica* (Revis. Aphel. N. America, 1895, pp. 29 et 30). Douglas remarks (E. M. M. 1894, p. 87) upon the immunity from parasitic attacks of his *A. rubicola* throughout its exposed hibernation in Britain.

99. *Aleurodes chelidonii*, Linn.

Dalla Torre gives (Cat. Hym. v. 278) *Eupelmus urozonus*, Dalm., as a parasite of this species upon Rondani's authority;

it appears, however, omnivorous upon Hymenoptera, Diptera, Lepidoptera and Coleoptera. He synonymizes the female (*nec* male) of Walker's *Macroneura maculipes* (Ent. Mag. 1837, p. 354) with this parasite, while Gaulle (Cat. Hym. France, p. 97) gives Walker's species as the same as *Eupelmus degeeri*, Dalm., said by him—possibly in consequence—to also prey upon this hemipteron.†

100. *Aleurodes corni*, Hald.*

The economy of his Proctotrypid *Amitus aleurodinis*, which occurs in Pennsylvania, British Columbia, and Illinois, is set forth by Haldeman (Amer. Journ. Sc. & Arts, ix. (1850), p. 108), and elaborated by Forbes in 1884, Cresson in 1887, and Ashmead (Bull. U. S. Nat. Mus., p. 293) in 1893.

A NEW MEALY-BUG (COCCIDÆ) FROM SOUTH AMERICA.

By T. D. A. COCKERELL.

Pseudococcus missionum, n. sp.

About 2 mm. long, of ordinary form, apparently with little mealy secretion; legs stout, lively ferruginous; antennæ 7- or 8-jointed; anal ring ordinary, with six short hairs. Females studied full of eggs, which are 275 μ long and 170 broad.

The species is especially distinguished by its small robust red legs, and small pale antennæ. The following measurements are in microns:—

Hind leg: length of trochanter, 105; of femur, 222; width of femur, 92; length of tibia, 182; of tarsus, 95; bristles on hind tibia, 15; apical bristle of trochanter about 62.

Antennæ: 7-jointed, joints (1) 37-50, (2) 47-55, (3) 40-52, (4) 37-55, (5) 30-45, (6) 37-42, (7) 75-85.

Antennæ: 8-jointed, joints (1) 50-55, (2) 52-55, (3) 50, (4) 22-30, (5) 32-42, (6) 30-35, (7) 32-42, (8) 87-90. The seven and eight joints do not indicate two species; in one case a specimen was 7-jointed on one side and 8 on the other.

The 7-jointed antennæ are close to those of *Ripersia minima*, Tinsl. & King; the 8-jointed are of an ordinary type, almost exactly duplicated in certain specimens of *Pseudococcus kingii*, Ckll., and *P. texensis*, Tinsley.

Hab.—Santa Ana Misiones, Argentine, No. 13 (*Lahille*). The original lot has been divided between the collections of the U.S. Department of Agriculture and the describer.

† The larvæ of this species is said by Réaumur (ii. Mém. vii., plate 25) to be devoured by a minute coleopterous larva, which Westwood (Introd. ii. 443) suggests is probably that of some species of the Coccinellid genus *Scymnus*.

ON A NEW SPECIES OF PHYTOPHAGOUS *EURYTOMA* (CHALCIDIDÆ) FROM NEW ZEALAND.

BY P. CAMERON.

WHILE the vast majority of the very extensive family of the Chalcididæ are undoubtedly parasitic on other insects, it is now well known that at least three of the tribes—the Agaonidæ (Fig-insects), the Torymidæ, represented by the Idarninæ (which are connected in some way with the Fig-Chalcids, probably as Inquilines), the Toryminæ, *Syntomaspis* and *Megastigmus*, and the family Eurytomidæ, two of whose tribes, the Isosmini and the Eurytomini—contain plant-feeding species. Not only do those Chalcid groups contain plant-feeders, but a few of them are injurious to the plants on which they feed. So far as I know, all the plant-feeding Chalcids feed in the seeds, except the Isosmini, which form galls on the stems of grasses, and the American genus *Eurytomacharis*, which also makes galls in the stems of the food-plant. At least four of these phytophagous Chalcids must be ranked among injurious insects. The damage done by the American “Joint-worm” to wheat is too well known. *Syntomaspis druparum*, Boh., has proved injurious to apples by devouring the seeds, both in Europe and in the United States. *Megastigmus spermatrophus*, Wachtl (said to be really a native of the Western United States), has proved very destructive to the Douglas-fir in the North of Scotland. I once found the larvæ of *M. aculeatus*, Swederus, in Cheshire, in some quantity in the hips of a garden rose, there being no dipterous or other larvæ present. This species is now found in the United States, and it also has been reared from rose-seed received from China (cf. C. R. Crosby, Bull. Cornell Univ. Agric. Exper. Station, Bull. 265, p. 379).* In North America the Eurytomid, *Eroxysoma vitis*, Saunders, badly infests the seeds of the vine. *Bruco-phagus funebris*, How., in North America is certainly an enemy of the clover and alfalfa by feeding on their seeds.

It would be interesting to know if all the species of *Megastigmus* are vegetable-feeders. *M. pictus*, Foer. (a British species), has been reared from the seeds of the rose, and long ago Mr. Parfitt (Zool. xv. 1857, p. 5543) reared *M. pinus*, Parf., from the seeds of the pine. *M. brevicaudis*, Ratz., has been bred from the seeds of the Rowan (*Sorbus* or *Pyrus aucuparia*). It can hardly be that all species of *Megastigmus* are plant-feeders, unless we are to suppose that they live as Inquilines, like *Synergus*, in the galls made by other insects. Thus Mayr (Verh. z.-b. Wien, xxv. 135) gives a list of nineteen species

* In this paper Mr. Crosby gives a good review of the seed-infesting flies with much new matter.

of Cynipidæ from which *M. dorsalis*, F., has been bred, and of six from which *M. stigmaticans*, F., has been reared.

The whole subject of these plant-feeding Chalcids is well worth the attention of entomologists, alike from an economic and biological point of view. In the following paper I give the description of a new species of phytophagous *Eurytoma* from New Zealand, the life-history of which has been worked out by Mr. F. W. Hilgendorf, of Lincoln College, Christchurch, New Zealand. The insects live in the seeds of the Black Wattle (*Acacia decurrens*), which, although now common and thoroughly naturalized in New Zealand, is in reality a native of New South Wales. Mr. Hilgendorf writes me:—"In the autumn of 1909 I found every seed of a certain tree occupied by a grub, and now in November (*i. e.* the spring of 1909-10) each grub has given rise to the Chalcid referred to. There were no other insects than these among those hatched out."

Eurytoma acaciæ, sp. n.

Black; the knees, tibiæ, and tarsi rufo-testaceous, the head, thorax, and legs thickly covered with white pubescence, the head and thorax strongly umbilicately punctate, the abdomen smooth and shining, the female antennæ stout, smooth, bare, and shining, as long as the head and thorax united, the third joint a little enlarged, longer than the fourth, a little roundly narrowed towards the base and apex the last slightly longer and narrower than the penultimate. Wings hyaline, the nervures and stigma black. Female and male. Length, 3 mm.

The centre of the face is shining, finely, weakly, sparsely punctured, the sides opaque, rugosely, slightly, obliquely striated, the striæ not very clearly defined or separated. Centre of front depressed, smooth, shining, the depression wider than long, the sides stoutly margined, and there is a stout keel down the centre. Apex of clypeus broadly rounded. Parapsidal furrows moderately distinct, shallow. Abdominal petiole short, distinct, not much longer than wide. Metanotum with the punctures running into reticulations, the top broadly rounded. The sides of the scutellum are reticulated, but not so strongly as the apex above is rugosely punctured; the apex above is more coarsely punctured than is the base. Alar nervures stout, the post-marginal vein thinner than the others, and extending clearly beyond the stigmal.

The male has the antennal joints clearly, rather widely separated above, the separations almost forming incisions; the joints of the flagellum are somewhat thickly covered with stiff black hairs, most of which are as long as the joints. The abdominal petiole is longer than it is in the female, being more than twice longer than wide, and a little longer than the hind coxæ.

NOTES AND OBSERVATIONS.

THE TAPPING OF THE "DEATH WATCH BEETLE."—In reference to the note by Mr. A. H. Swinton (*antea*, p. 64), I must dispute his theory as to the method by which the beetle sounds the "monitory music." Years ago I used to stay at Felixstowe in an old stud-and-plaster house with my family for summer holidays. The timbers there were infested with "Death Watch Beetles," and we frequently heard their tapping. I could make precisely the same "monitory music" by tapping on my watch-case with my finger-nail, and the beetles would answer me. By this means I discovered the whereabouts of several specimens, and they were duly pill-boxed. My captives responded to my tapping with the lid partly open, and I saw they produced the noise by hitting the box with their heads. I would advise Mr. Swinton to experiment as above, and he will find my statement correct.—E. F. BISSHOPP; 32, Museum Street, Ipswich, February 2nd, 1910.

[The above note should have appeared in our last number, but we regret that, owing to want of space, it had to be omitted therefrom.—ED.]

I see there is an article in the March number of the 'Entomologist' by Mr. C. J. Gahan, M.A., and he states he has never witnessed the act of tapping by an *Anobium*, but suggests a method for the purpose. In my former note I not only stated how the insects might be found, but also how to treat them to induce them to produce the tapping. I may add one or two other facts from my practical experience:—1. The taps certainly do not exceed from five to six on an average, though I am not prepared to dispute Mr. Derham's statement that they do go to as many as seven or eight. 2. When tapping, the beetle rises on its legs and rapidly hits with its head downwards right on the "forehead." I can quite believe the Rev. W. Derham of two hundred years ago was "a most accurate and minute observer." I should very much like to see the article where "he has explained in full detail how the *Anobium*, or Greater Death Watch [the insect to which I refer], makes its ticking noise."—E. F. BISSHOPP: March 11th, 1910.

HIBERNACULUM FOR VANESSA IO.—A lady living at a short distance from Cambridge writes on March 3rd:—"We have a great many 'tortoiseshells' and 'peacocks' in the house; I found no fewer than eight 'peacocks' in an old skirt last month."—F. MERRIFIELD; 14, Clifton Terrace, Brighton, March 5th, 1910.

THE CLARK COLLECTION.—The concluding portion of the collection of British Lepidoptera formed by the late Mr. J. A. Clark was disposed of at Stevens's Auction Rooms on Tuesday and Wednesday, February 22nd and 23rd. It consisted of the latter half of the Geometers, the Micros, and sundry odd lots of duplicates, &c. The first few lots found tardy buyers at small prices, but on the varieties of *Abraxas grossulariata* being reached some little life was imparted to the proceedings; a good specimen of var. *albomarginata* brought £3 5s.; a rather nice form broadly bordered with black and the hind wings slightly rayed £2 2s.; one with basal half of fore

wings black the same figure; another in which the disc of fore wings was orange and blotched with black, £1 1s., and a fine specimen with broad black margins, £2. Some of the better-known forms, however, did not command high prices; thus "*ultra lutea-lacticolor*," with two other varieties, failed to go above 16s. the lot; two *varleyata* brought 6s. and 12s. respectively; *lutea-lacticolor* and *subviolacea* together, 6s.; *flavofasciata*, 8s.; "a very pale variety," 3s., and so forth. Other interesting varieties among the Geometers were a melanic form of *Ligdia adustata*, which, when offered with the previous lot which had failed to find a buyer, brought £3 3s.; four *Camptogramma bilineata*, including a large unicolorous brown form from Sligo, one with chocolate-brown fore wings, one pale banded form, and a greyish brown dwarf, £1 2s. the four; a fine black-banded *Eubolia bipunctaria*, £5 5s., and an unusual form of *Tanagra atrata*, £1 1s. Six specimens of *Sterrrha sacraria*, each with full data, realized from 5s. to 10s. apiece, and 15s. was obtained for var. *labda*; forty *Phibalapteryx polygrammata*, put up in lots of six or five, brought an average of 3s. 4½d. per specimen, and twelve *Cidaria reticulata*, sold in lots of two, from 11s. to 20s. per lot, the average price per specimen being 8s. 2d.

Little interest appeared to be taken in the Pyrales further than that a lot in which nine specimens of *Madopa salicaris* had been included fetched £1 8s.; two *Diasemia ramburialis*, one "Folkestone, 1878," and one from "Burney's Collection," 12s.; a lot of forty-three insects, among which were two *Antigastra catalaunalis* and one *Margarodes unionalis*, 16s.; and three *M. unionalis*, labelled "F. Bond, 1879," with some sixty other specimens, 12s. the lot. But the Crambites attracted a good deal of attention, a lot containing four *Crambus myellus* bringing 17s.; two *C. rorellus* (Burney Collection), with fifty-nine other fairly good things, £1 2s.; four *C. myellus* and two more of the *C. rorellus*, £1 4s.; but four *C. rorellus* from the same source, put up with six *Galleria cerella* and ten *Achræa grisella*, made only 7s. Six *Epischnia banksiella*, with eight *Anerastia lotella* and three *Epischnia farrella*, realized £1 12s. 6d. the lot; one *Cateremna terebrella* (C. G. Barrett, Norfolk), with other species, £1 6s.; twelve *Ephestia semirufa*, with some fifty other species, £1 8s.; a lot of fifty-seven, including *Gymnancyla canella* and sundry *Phycis*, &c., £1 12s. 6d.; five *Myelois ceratonix* in a lot with sundry *Rhodophæa*, &c., £1; one *Trachonitis pryerella* (Nottingham, Briggs's Collection), with *Ephestia kuhniella* and *Myelophila cribrella*, £1 2s.; and one *Selagia argyrella* (Mason Collection), with one *Dioryctria splendidella* and nine *Oncocera ahenella*, £1.

Nor were the Tortrices by any means neglected, and although occasionally a lot or two of a hundred or more of the commoner species might be picked up for three or four shillings, anything out of the ordinary soon made good prices; thus the lot containing four *Ditula woodiana* realized £1 10s.; two lots, each containing two specimens of *Penthina grevillana*, £1 4s. each lot; three *P. fuligana*, with fourteen *Sericoris bifasciana* and others, £1 2s.; eight *P. postremana*, in a lot of forty-six insects, £1 12s. 6d., and five in one of sixty-eight, 15s.; while for the solitary specimen of *Tortrix pronubana*, a male captured at Bognor in October, 1908, the bidding ran up to £1 12s. 6d. A lot of seventy-nine specimens, including seven *Opadia*

funebrana and five *Stigmonota leguminana*, sold for £1 2s.; and a somewhat similar lot having one more each of these two species, £1 10s. Seventy-four *Stigmonota*, including *S. weirana*, *S. trauniana*, &c., brought £1 7s.; seventy-eight *Dicrorampha*, including ten *D. alpinana*, eight *D. senectana*, &c., £1 2s.; sixty-eight *Eupæcilia*, among which were included fifteen *E. flaviciliana*, £1 5s.; and a lot of sundries in which perhaps four *Argyrolepis shreberiana* and eighteen *E. mussehiana* were the attractions, £1 1s. A mixed lot of Psychids and Tineids, seven *Fumea casta*, eleven *Dasystoma salicella*, five *Lampronia pubicornis*, and fifty-six others realized £1 6s.; and another of seventy-nine, in which *Solenobia inconspiciella*, *Bankesia staintoni*, &c., figured, £1 2s.; while sundry other lots, in which some of the rarer Tineids were included, fetched prices of £2, £1 4s., £2 17s. 6d., £2 2s., and so forth.

At the commencement of the second day's sale the long series of *Peronea cristana*, on which the late Mr. Clark had bestowed so much attention, were offered; they comprised upwards of three thousand specimens. Among the more interesting items were the type specimens of the varieties that he described and figured in the 'Entomologist's Record,' vol. xiii., which sold as follows:—*Transversana*, *ulotana*, *nigroruficostana* [ined], and *alboruficostana*, 10s. the four; *punctana*, *proxanthovittana*, *prostriana*, *subalbostannana*, and *fuscana*, 10s. the five; *subchantana*, *nigrosubvittana*, *subfulvovittana*, *nigrocristana*, and *prochantana*, 10s. the five; *attaliana*, with another specimen of the same form and one of *subcapucina* (Desvignes), 14s. the three; *masoniana*, £1 1s.; *charlottana*, £3; *nigropunctana*, *atrana*, *ochreapunctana*, and *intermediana*, £1 the four; and *merlana*, *subunicolorana*, *nigrana*, *rufinigrana*, and *albonigrana*, £1 the five. We believe that all these types are now in the possession of Mr. Sydney Webb. The highest price obtained for any one specimen was £3 5s.—for a form between *curtisana* and *charlottana*; while among the other more interesting lots were two examples of a doubtfully new variety near var. *gumpinana*, which realized £1 1s. and £2 2s. respectively, and another approaching var. *tolana*, for which £2 was obtained; specimens of var. *tolana* sold for 10s. each, and one of var. *curtisana* for £2. The series of some six hundred odd of *Peronea hastiana* was offered in five lots, each containing several named forms, the prices per lot realized being 6s., 6s., 6s., £1 12s. 6d., and £1 2s.; and that of *Sarothripus revayana*, consisting of nearly five hundred specimens, brought 8s., 8s., and £1 10s. per lot for the three lots in which it was sold. The remainder of the Tineina which had been left over from the previous day contained many interesting species, and the lots in which they were contained frequently ran up over £1, the highest price given for any one lot being £2 10s., and the only lot among the "Plumes" which attracted special attention was that in which a specimen of *Leioptilus brachydactylus* from the Burney Collection was included, which fetched £1. Among the duplicates, &c., six specimens of *Chrysophanus dispar* were offered, of which a fine male brought £3 15s.; a fine female, £4 10s.; another, £3 15s.; a male under side, £2 5s.; and the two others, £2 2s. and 18s. respectively. The sale of the whole collection occupied nearly six full days, and the total amount which it realized exceeded £1300.

On the concluding day two other small properties were disposed of, the only lots of any special interest included in them being a fine male example of *Noctua subrosea*, £3 10s.; three lots of four each of *Agriades corydon* var. *syngrapha*, £2 2s., £1 10s., and £1 10s.; two lots, each consisting of four var. *syngrapha* and three intermediates, £2 2s. and £1 12s. 6d. per lot; a specimen of *A. corydon* var. *fowleri*, £1 15s., and a fine female under side of *A. bellargus* having the entire disc of the hind wings white, which ran up to £9 9s.—R. A.

THE ENTOMOLOGICAL CLUB.—A meeting was held at "Wellfield," 4, Lingard's Road, Lewisham, on March 15th last. Mr. Robert Adkin in the chair. Other members present were Messrs. Donisthorpe, Hall, Porritt, and Verrall. In addition to three honorary members—Messrs. Jones (A. H.), Sich, and Smith (A. E.)—seven other entomologists attended.

THE NATIONAL COLLECTION OF BRITISH LEPIDOPTERA.—Among recent additions to this collection we note four beautiful examples of *Abraxas grossulariata* ab. *varleyata*, presented by Mr. Porritt of Huddersfield; and a lovely series of *Tortrix pronubana* given by Mr. Robert Adkin, who reared the specimens from Eastbourne larvæ.

ERRATUM.—P. 104, line 21 from bottom, after "A large number of insects" insert "new to science."

CAPTURES AND FIELD REPORTS.

EUVANESSA ANTIOPA IN SURREY.—"Mr. Eric Parker writes from Holmthorpe, Weybridge, under date March 5th:—'Entomologists may be interested to hear that to-day, walking in the woods of St. George's-hill, I saw a Camberwell Beauty butterfly. It jumped up at my feet from a bank of pine-needles on which it had been sunning itself, flew about long enough for me to notice that the cream border of its wings was very pale, almost white, and then went away high over the pines.'"—From the 'Times,' March 8th.

PHIGALIA PEDARIA AB. MONACHARIA.—I should like to record the abundance of the black form of *P. pedaria* (*pilosaria*) in this district. Last year I found the variety but rarely. This year the black form outnumbered the ordinary type, indeed the latter is scarce. — WM. BARRACLOUGH; Holly Hall, Low Moor, March 15th, 1910.

ORTHOLITHA CERVINATA AND POLIA FLAVICINCTA IN THE EPPING FOREST DISTRICT.—As my earliest collecting days were spent in this district, I am in a position to answer the question raised by Mr. R. T. Baumann (*antea*, p. 98). In 1868–1870 I collected regularly in a garden at Leyton (where we lived) and in the neighbouring parts of the forest. A complete diary of captures for that period is still in my possession, and the list of species recorded was published in the 'Essex Naturalist' in 1891 (vol. v. p. 153). *O. cervinata* was taken at that time in a lane between our house and the Hackney Marsh, and *P. flavicincta* was taken not uncommonly in the garden at sugar. With respect to this latter species I am inclined to think that it has been getting rarer of late years. It used to be quite common in

gardens at sugar, and in 1875-1877 it could be depended upon as a regular autumn species in a garden at Twickenham where I used to collect. Since then I had not seen the species until 1908, when I saw two on sugar at Lyme Regis. Whether this increasing scarcity is real or only apparent must be decided by an appeal to wider experience than mine, as I have done but little autumnal collecting in the South of England for many years.—R. MELDOLA; 6, Brunswick Square, W.C., March 5th, 1910.

ENTOMOLOGY IN IRELAND.—Entomologists are so rare in Central Ireland that anyone seen with a butterfly-net risks being taken, as I have recently been, for a harmless lunatic, but he need fear nothing worse from such a kindly, albeit not very entomological, people. The district of which I write lies between Birr (in King's Co.) on the north and Nenagh (in Tipperary) on the south, a few miles east of Lough Derg; and the collector may there rely on finding many somewhat local or rare insects. *L. sinapis* occurs yearly in considerable numbers; *M. aurinia* and *C. rubi* also yearly, though more plentifully in some years than others. Last June-July, when sugaring was less successful than usual, I found that *Centranthus ruber* and, rather later, its white variety proved wonderfully attractive at dusk, alike to Sphingidæ, Noctuidæ, and Geometridæ. Among the moths taken at the valerian, I may name *C. elpenor*, *C. porcellus* (plentiful), *P. chrysitis*, *P. festuæ*, *P. pulchrina* (plentiful), *P. bractea*, *C. umbratica*, and many common species. In my good-sized garden (containing some three hundred varieties of herbaceous plants) each scattered plant of *Centranthus* had its visitors, and a few *Plusias* were taken at *Geranium pratense* flore pleno; while profusely blooming honeysuckle and all other flowers failed to yield a single moth.—PERCY BICKNELL; Lincoln Hatch, Burnham, Bucks.

EOIS (ACIDALIA) HERBARIATA, F., IN GLOUCESTERSHIRE. — Mr. W. B. Davis, of Stroud, has generously given me a specimen of this Geometer, which he took on July 11th, 1909, at Messrs. Partridge's Mill, Stroud, flying over a fine species of *Reseda*, said to come from Spain, and used for dyeing cloth yellow. Mr. Meyrick, in his 'Handbook' (1895), at p. 235, states: "*E. herbariata*, F., . . . is said to have occurred in London, but, if authentic, it was doubtless an accidental importation. The species inhabits S. C., and S. Europe." The late Mr. C. G. Barrett, in his 'Lepidoptera of the British Islands' (1902), vol. viii. p. 21, says: "this moth is one of the most rare of our species, and indeed may not be genuinely domiciled here; its sole food seems to be the dried leaves of preserved plants or herbs, and since it is not known to occur regularly anywhere with us, there is room for suspicion that our few native specimens may have been introduced, in the larva state, with imported herbs. This, however, is quite conjectural, and the insect is usually admitted into any British collection, the possessor of which is so fortunate as to secure a specimen. The first record of it in these islands appears to be that by the late Mr. H. T. Stainton, in the 'Entomologist's Annual' for 1856, under the name of *Dosithea circuitaria*, but afterwards corrected by him in the 'Zoologist' for 1858. This was of a

specimen taken in Bloomsbury Street, London, and Mr. Stainton added that specimens already existed in the collections of Mr. F. Bond and Mr. A. F. Sheppard. In 1869 the capture of three or four specimens in the shop of a herbalist in Holborn was announced, and in 1873 one was taken from a shop window in Oxford Street. Six years later another was taken in Cannon Street, City; and from that time it does not seem to have been noticed here until 1898, when Mr. Selwyn Image had the good fortune to secure a specimen in Southampton Row, Bloomsbury. Thus all the recorded British specimens seem to have occurred within an area of from one to two square miles in the Metropolis. On the Continent it is said to have quite the same habit, being found in and about houses, and especially herb warehouses." I am indebted to Mr. Edward Meyrick, F.E.S., for his kindness in identifying the specimens, and for the suggestion that the capture should be put on record.—C. GRANVILLE CLUTTERBUCK; Heathville Road, Gloucester, March 18th, 1910.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, February 2nd, 1910.*—Dr. F. A. Dixey, M.A., M.D., President, in the chair.—The President announced that he had nominated as Vice-Presidents for the Session 1910–1911 Professor T. Hudson Beare, B.Sc., F.R.S.E.; Mr. G. T. Bethune-Baker, F.Z.S.; and Mr. H. Rowland-Brown, M.A.—Mr. Edward Morrell Holmes, of Ruthven, Sevenoaks; Mr. E. G. Josephs, of Lincoln College, Oxford; Mr. Ernest Cooper Joy, of 2, St. Kilda's Road, Stoke Newington, N.; Mr. John W. Ward, of Rusinurbe House, Somerset Road, Coventry; and Mr. Frank C. Willcocks, Entomologist to the Khedivial Agricultural Society, of Cairo, Egypt, were elected Fellows of the Society.—Dr. M. Burr gave an account of the Entomological Congress to be held at Brussels in August next, and appealed to all Fellows for their support, as well as to the local Natural History Societies throughout the United Kingdom; and Dr. K. Jordan gave an outline of the sectional programme of papers already arranged.—The Secretary having read a letter from the Entomological Society of Russia, inviting the Society to send a delegate to the forthcoming Jubilee Celebration in St. Petersburg, it was resolved unanimously to send a letter of congratulation to the Society in honour of the occasion.—Mr. John Alderson, who was present as a visitor, exhibited the results of six weeks' collecting in the Rhone Valley, Switzerland, in May and June last, representative in all of one hundred and two species of Rhopalocera.—Mr. E. E. Green sent for exhibition boxes designed for the convenient storage of butterflies in paper envelopes, together with the original model as made by a local tinsmith in Ceylon.—Dr. K. Jordan exhibited two specimens of the earwig, *Arixenia esau*, lately described by him in Nov. Zool., p. 313, Pl. xvi–xviii (1909). The insect was discovered in the breast-pouch of a specimen of the naked bat obtained in Sarawak. Under the microscope were shown the man-

dible and maxilla of *Arixenia*, together with the mandible of *Hemimerus*.—Dr. Malcom Burr, D.Sc., F.L.S. F.Z.S., communicated a paper entitled "A Revision of the *Labiduridæ*, a Family of the *Dermaptera*." The discussion of the affinities of *Agriades thetis* (*bellargus*) and *A. corydon*, adjourned from the December meeting, was resumed by Mr. J. W. Tutt, who exhibited long series of the two species, demonstrating in particular the several forms of *A. corydon* as occurring in the palæarctic region. He pointed out in detail the nearness of the two Agriadid species in the structure of their eggs, larvæ, pupæ, imagines, especially noting in the latter case the similarity in the male genitalia. Not only was their environment similar, and their morphological structure almost identical, but their actual range was practically the same. Exhibitions were also made by Mr. G. T. Bethune-Baker of varieties of *A. corydon* from Spain, Greece, Syria, Asia Minor, and Persia, and of *A. thetis* (*bellargus*) from Spain, Algeria, and Greece; by the Rev. George Wheeler, of examples from Italy and Central Europe; and by Miss M. E. Fountaine, of *A. corydon* var. *olympica*, taken by herself at Amasia, Asia Minor, and of *thetis* var. *syriaca* from the Lebanon. At the end of Mr. Tutt's remarks the discussion was continued by Mr. A. L. Rayward, Mr. Hamilton H. Druce, the Rev. G. Wheeler, Dr. T. A. Chapman, Mr. W. G. Sheldon, Miss Fountaine, and other Fellows, the President paying a special tribute to Mr. Tutt's lucid explanation and diagnosis of the various forms of the two closely allied butterflies. — H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 13th, 1910.*—A. Sich, Esq., F.E.S., President, in the chair.—Mr. South, on behalf of Mr. Hallam Moore, of Barnet, exhibited specimens of Coleoptera, &c., mounted on transparent gelatine card, allowing of ready examination.—Mr. Adkin, a series of *Selenia bilunaria*, bred from Eastbourne ova, and read notes on the brood.—Mr. Lucas, photographs of *Hybernia defoliaria*, taken on January 4th and 8th.—Mr. Turner, on behalf of Rev. C. R. N. Burrows, series of the genus *Hydræcia*: *H. nictitans*, *H. palustris*, *H. lucens*, and *H. crinanensis*, together with microscopical preparations of the genitalia, and photographs of the same.—Mr. Tonge, a bred series of *Cidaria miata*, from Chichester; a bred pair of *Catocala fraxini*, from ova laid by a female taken at Horsham; and two species of Hymenoptera bred from a bamboo-cane standing in a garden at Redhill.—Mr. Newman, living specimens of *Pyrameis atalanta*, which he was endeavouring to hibernates.—Mr. A. H. Hemming, an under side aberration of *Polyommatus icarus*, taken at Redhill, in which the submedian spots were closely clustered around the discoidals; on the hind wings some spots were obsolete.—Mr. Enock gave a lantern demonstration of the life-histories of *Gonepteryx rhamni*, *Dicranura vinula*, and *Urapteryx sambucaria*, and many illustrations of the marvellous and delicate hymenopterous egg-parasites, Mymaridæ.

Annual General Meeting, January 27th, 1910.—Mr. A. Sich, F.E.S., President, in the chair.—A satisfactory Balance Sheet was read and adopted, as was also the Report of the Council. The President declared the following gentlemen duly elected as Officers

and Council for the Session 1910-1911:—President, W. J. Kaye, F.E.S.; Vice-Presidents, A. Sich, F.E.S., and A. E. Tonge, F.E.S.; Treasurer, T. W. Hall, F.E.S.; Librarian, A. W. Dods; Curator, W. West (Greenwich); Hon. Secretaries, Stanley Edwards, F.L.S., F.Z.S., F.E.S. (Corresponding), and Hy. J. Turner, F.E.S. (Reporting); Council: R. Adkin, F.E.S., S. R. Ashby, F.E.S., E. C. Joy, F.E.S., H. Main, F.E.S., A. M. Montgomery, F.E.S., R. A. R. Priske, F.E.S., and B. H. Smith. A letter was read from Mr. Kaye, thanking the Society for the honour done him, and explaining his absence for the next few months as due to his having undertaken an expedition to Southern Brazil in search of Lepidoptera and evidences for or against mimetic resemblance. The President then read his address, and hearty votes of thanks were passed to the Officers and Council.

Ordinary Meeting: Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. R. D. Morford, of Upper Kennington Lane, was elected a member.—Mr. Tonge and Mr. Colthrup exhibited long series of *Hybernia aurantiaria*, *H. defoliaria*, and *Himera pennaria*, taken in New Forest, November 17th to 19th, 1909, where they were abundant, in spite of the weather being clear and frosty. Mr. Colthrup exhibited a *Gonepteryx rhamni*, found at the same time, hibernating among holly.—Mr. Turner, a short series of the beautiful *Limonia (Melitea) taylori*, and specimens of *Basilarchia lorquinii* from Victoria, Vancouver Island. A short discussion took place on the hibernating habits of *G. rhamni* and *Orrhodia rubiginea*.

February 10th, 1910.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—The deaths were announced of two members, Mr. Kirkaldy and Mr. McArthur.—Mr. H. J. Turner exhibited a series of the brilliant Lycænid *Danis taygetes* from Brisbane, obtained by Dr. Lucas, an old member of the Society.—Mr. J. P. Barrett, a box of conspicuous insects of various orders from near Messina, Sicily, including an immature mantis and a *Pieris brassicæ* it had captured on a flower-head.—Mr. Coote and Mr. Barnett exhibited *Hybernia defoliaria*, which species was said to have been very abundant at West Wickham from November to mid-January.—Mr. Moore, a box of various species of Diptera, mainly from Africa, and which were instrumental in spreading disease.—Mr. West, Ashstead, a specimen of the "fish" insect, *Lepisma saccharina*, which had existed two months without food.—A number of members brought microscopes and slides, and the rest of the evening was spent as a microscopical one.

February 24th.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. G. S. Robertson, of Dulwich, was elected a member.—Dr. Chapman exhibited a bred living specimen of *Callophrys avis* from South France, and pointed out its divergence from the closely related *C. rubi*.—Mr. Barnett, a long series of *Hybernia aurantiaria* from West Wickham Wood, where it was abundant in November of last year.—Capt. Cardew, gynandromorphs of *Amorpha populi*, *Agrotis puta*, and *Dryas paphia*, the last-named captured in the New Forest.—Mr. Russell, a strikingly aberrant form of *Polyommatus icarus*, from Reigate; the under side was striated on the right wings only.—Mr. Sperring, *Agrotis agathina*, from Chiselhurst, and a smoky example of *Arctia villica*.—Mr. Adkin, a bred series of *Peronea permutana*, from Sussex, and read notes on its occurrence

and characteristics.—Mr. Alderson, a large collection of butterflies taken by him in a six weeks' holiday in and near the Rhone Valley during May and June of last year. Over one hundred species were represented, most of them being in very fine condition.—Mr. R. Adkin read a paper entitled "The Lepidoptera of a London Garden."—HY. J. TURNER, *Hon. Rep. Sec.*

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*January 4th, 1910.*—Pocket-box Exhibition. Exhibits: *Hydræcia nictitans*, L., *paludis*, Tutt, *lucens*, Fr., and *crinanensis*, Burrows, with microscopic mounts, and photographs of the genitalia of both sexes of each species to show the specific distinction, Rev. C. R. N. Burrows.—*Agriades corydon* var. female *syngrapha*, and *A. thetis* (*bellargus*) var. female *caelestis*, Obth., both from West France, Dr. T. A. Chapman.—*Nonagria neurica*, Hb. (*edelsteni*, Tutt), from Sussex, with the new aberrations *rufescens*, Edelsten, var. *fusca*, Edelsten; also the ova and pupa *in situ*, and photographs of the early stages by Mr. Main, to illustrate the life-history of the species, Mr. H. M. Edelsten.—*Agriades corydon*, males and females, from the South Downs, August, 1909; the males showing shades from steel grey to bright blue, and some females of ab. *semi-syngrapha*, Mr. A. F. Hemming.—Butterflies taken mainly, in 1909, in parts of Surrey and Sussex, showing some variation in series, Dr. G. G. C. Hodgson.—*Catocala fraxini*, bred from eggs laid by the female specimen taken at Horsham, Sept. 9th, 1908, Mr. G. H. Leach.—*Arctia villica*, *Spilosoma fuliginosa*, *S. mendica*, *S. lubricipeda*, with var. *radiata* and *S. menthastri*, with its buff aberration, Mr. A. W. Mera.—*Venusia canbrica*, with its two melanic forms, ab. *bradyi*, bred, from Sheffield district, with both wings melanic, and ab. *lofthousi*, from the Middlesbrough district, with only the fore wings melanic, yet still streaked longitudinally with white, Mr. L. B. Prout.—*Abraxas grossulariata*, aberrations bred from larvæ taken wild in North London upon *Euonymus*. One other specimen, suffused and spotted with black, taken by Mr. Southey at Barnsbury in 1884, Mr. J. Riches.—Lepidoptera from Rannoch, Bude (including a remarkable aberration of *Aplecta prasina* (*herbida*) with the centre of the fore wings very pale, and *Boarmia repandata* var. *conversaria*), Reigate and Potters Bar, Mr. L. A. E. Sabine.—*Smerinthus*, Hyb., *hybridus*, three specimens bred October, 1909; *Amorpha populi*, a gynandromorph, left side male, right side female, bred June 10th, 1909; and a series of *Thecla quercus*, bred from New Forest larvæ, July, 1909, Mr. V. E. Shaw.—*Depressaria putridella*, first taken in Britain by Mr. E. D. Green, who found the larvæ at Whitstable in 1906; an interesting addition to the British fauna on account of its southern distribution and large amount of variation; also *D. umbellana* and *D. yeatiana*, for comparison, Mr. A. Sich.—*Tapinostola fulva*, series taken in Richmond Park, September, 1909, Mr. P. W. Tautz.—*Rumiccia phlæas*, ab. *alba*, taken at Brasted, Kent, August 28th, 1909; and several specimens of *Cupido minimus*, unusually small, little more than half the usual size, taken at Winchester, June, 1909, Mr. H. J. Turner.—*Agriades corydon* ab. *fowleri* from Swanage, and ab. *suffusa* from Shanklin, Mr. C. H. Williams.—*Melitæa cinxia*, groups showing

gradation of ground colour and intensity of markings; some of the specimens were distinct from the groups, and formed striking varieties; the insects exhibited were picked from specimens bred from wild Isle of Wight larvæ collected over a series of years.—Council for 1910:—President: A. W. Mera; Vice-Presidents: Dr. T. A. Chapman, Rev. C. R. N. Burrows, Messrs. Frederick J. Hanbury, and L. B. Prout; Trustees: Dr. J. S. Sequeera and Mr. L. B. Prout; Treasurer: Mr. P. H. Tautz; Librarians: Messrs. V. E. Shaw and H. M. Edelsten; Curators: Dr. G. G. C. Hodgson and Mr. A. J. Willsdon; Hon. Secretaries: Messrs. S. J. Bell (Reporting), and T. H. L. Grosvenor (Corresponding), and Messrs. A. W. Bacot, F. B. Cross, G. H. Heath, J. Riches, and A. Sich.—C. R. N. BURROWS.

THE LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquhoun Street, Liverpool, Monday, January 17th, 1910, Dr. P. F. Tinne, Vice-President, in the chair.—A lecture was delivered by Mr. C. F. Walker, M.A., of the Liverpool University, on Mendel's 'Theory of Inheritance.' The lecturer by means of some excellent lantern slides gave a very lucid and interesting account of Mendel's discovery, and also adverted to the recent work which has been done by numerous investigators. Mr. Walker mentioned the experiments of Messrs. Prout and Bacot with *Acidalia virgularia*, instancing it as a case of "Blended Inheritance," to which the Mendelian principle did not appear to apply. At the close a vote of thanks was proposed by Mr. Wm. Mansbridge, who made a few remarks in opening the discussion which ensued. The motion, seconded by Mr. F. N. Pierce, was carried by acclamation, and Mr. Walker suitably replied.—Mr. F. N. Pierce exhibited a female specimen of *Hydræcia crinanensis* captured at Bolton, Lancs, in 1897, by Mr. J. E. R. Allen. This is the first record for England. Mr. Allen also recorded the moth from Enniskillen, Ireland.—Mr. Wm. Mansbridge showed his series of *Aplecta nebulosa*.—The meeting was adjourned until February 21st.

February 21st, 1910.—Meeting held at the Royal Institution, Colquhoun Street, Liverpool, Dr. P. F. Tinne, Vice-President, in the chair.—The following gentlemen were elected members of the Society:—Mr. H. S. Leigh, of Worsley; Mr. T. A. Clarke, of Hooton.—Mr. Wm. Mansbridge gave an address on "Variation in Lancashire Lepidoptera," specially instancing such species as *Boarmia repandata*, *Aplecta nebulosa*, *Macaria liturata*, *Odontopera bidentata*, and *Melanthia bicolorata*. The various local forms of these species were described, and their distribution within the Society's area fully noted. A discussion ensued, in which the Chairman, Mr. F. N. Pierce, Mr. R. Tait, Jun., and others took part.—Mr. Wm. Mansbridge exhibited his series of *B. repandata* to illustrate his remarks; also the well-known Cheshire forms of *A. nebulosa*. Dr. Tinne also showed *repandata*, including vars. *nigra* and *conversaria*, the latter from the New Forest.—Mr. A. W. Boyd brought *repandata* var. *nigra*, *Hybernia defoliaria* and *H. aurantiaria*, from Delamere Forest. Mr. Tait's exhibit included a fine and varied series of *Himera pennaria*, from Monks Wood. The meeting was adjourned to March 21st.—H. R. SWEETING and WM. MANSBRIDGE, *Hon. Secs.*

HYPONOMEUTA IRRORELLUS, Hüb., IN LANCASHIRE: A CORRECTION.—Referring to the record of this insect at Silverdale, in the report of the November meeting of the Lancashire and Cheshire Entomological Society, my attention having been directed to the fact that the species was only taken in a very restricted area in Surrey, and has not been known to occur for many years, I took an opportunity of comparing the specimens with Mr. Capper's collection, and found them to be only the common *H. evonymella*, Sc. (*cognatella*), Hüb.—WM. MANSBRIDGE, *Hon. Recording Sec.*

RECENT LITERATURE.

A Monographic Revision of the Twisted Winged Insects, comprising the Order Strepsiptera, Kirby. By W. DWIGHT PIERCE. Bulletin 66, Smithsonian Institution. Washington, 1909.

IN this we have a most important monograph of 232 pages, illustrated by fifteen plates, a map, and text-figures, treating in a most thorough manner with an obscure group of insects. The author tells us that, "after being tossed about from one point to another amongst the insect orders, it seems to be pretty generally acknowledged that they [the Strepsiptera] must be accorded ordinate rank." He concludes therefore that the Strepsiptera form "a separate order, on a distinct line of descent from that of the Coleoptera, and nearer the Hymenoptera and Diptera, and as highly specialised as the highest insects in any of the orders." They are of economic interest as being parasites on Orthoptera (Blattodea and Grylloidea), Homoptera, Heteroptera, and Hymenoptera. The young at first look like the primitive insect *Campodea*, "being very lively little hexapods, with two bristles at the caudal end, and with padded clawless feet." When settled on a host they lose legs and eyes and become entirely grub-like. The monograph treats fully of the life-cycle, structure and anatomy, experiments and observations in connection with the insects, and inter-relation of host and parasite. There is a description of all the species, with many tables, list of hosts, glossary, and full bibliography. The author finds that there are one fossil and one hundred and eight recent species, four of them being queried. The European species are twenty-four.

W. J. L.

Catalogus Hemipterorum (Heteropterorum), auctore G. W. KIRKALDY: volumen i. Cimicidæ: Berolini, sumptibus Felicis L. Dames: mdcccix. pp. xl. et 392.

ALWAYS original and sometimes apparently bizarre in his nomenclatorial notions, Mr. Kirkaldy has left us the first stone—a monolith of no mean proportions—of his proposed general Catalogue of the world's Heteroptera. It is in reality much more than a list of names, their synonyms, and references, for it embraces both distribution and the (we believe) unique feature of references to the entire biology. In the preface an early opportunity is taken of discussing types, genotypes, and classification; tables of superfamilies (to which the curious

suffix *-oidea* is applied), bibliography, dates, and other pertinent matters are duly noticed. Mr. Kirkaldy's Cimicidæ is what has hitherto been known under the name Pentatomidæ, and care must now be exercised not to confuse our old nocturnal enemy with his *Cimex* (*Picromerus*, olim) *bidens*, concerning which references are given to the spermatozoa, ovaries, teratology, and such varied foods as birch, ling, sallow, larvæ of sawflies, of Chrysomelid beetles, of lacewing flies, and even its erstwhile namesake. *Clinocoris* (*Cimex*, olim) *lectularius*, L. That Mr. Kirkaldy's peculiar ideas respecting priority will stand the test of time, doubt must be expressed; but that he has produced a work of the greatest and most lasting value to heteropterists is undeniable. Dufour's remark, which is claimed to be still true when the preface was penned, that "cet ordre d'insectes se trouve un des plus négligés, des plus arrières," is certainly falsified by the very production of this Catalogue. Douglas, Scott, and Saunders have laboured since this quotation was written, but Kirkaldy attempted a greater work than them all. Ståll failed to complete more than five volumes; Lethierry and Severin produced but three of their 'Catalogue Général des Hémiptères' (1893-4-6). That before us is the fullest, and, unfortunately, it stands alone. *Ars longa, vita brevis!*

C. M.

OBITUARY.

ALBERT PIFFARD.—The deceased's father collected Lepidoptera, and was a good all-round entomologist; his favourite haunts were the woods around Paris, before the construction of the Versailles Railway, long since felled. His collections passed to Mr. Bernard Piffard, of Brockenhurst, the deceased's elder brother, who subsequently gave them away in the New Forest. At the time of the Franco-Prussian War, Albert Piffard* was living in France, but he then took up his residence at Felden, near Boxmoor, in Herts, where he lived to the time of his death on December 5th last, at the age of seventy-five. The family are Huguenot, descending from a great-grandfather, a citizen of Geneva, who took out patents of English naturalization in order to acquire land here. There is no other family of the name in Britain. Albert's mother was a Miss Sabine, born in December, 1834, and collected beetles in 1845; she used to find *Crioceris merdigera*, when a girl, on lilies in the garden of the Manor House, Islington, and noticed both its smell and stridulation. Our subject was articled to Robert Wilson, Q.C., at the age of

* It is of interest to mention, since many appear under misapprehension on the subject (Mr. Piffard told me in 1900, while I was staying at Felden), that Herbert E. Cox, the author of the well-known coleopterous 'Handbook,' was an independent gentleman, who married early in life; a very handsome man, whose children were off his hands about 1894, and he then permanently went abroad. At that time he was studying foreign Coleoptera, and bought somewhat largely at Stevens's. He wrote his standard work in about two years, while residing at Harrow, and was a strong Unitarian—hence the interesting dedication. Should this meet his eye, we trust Mr. Cox will forgive the liberty taken; it is our informant's, and not his, obituary we write.

eighteen, and then knew Epping Forest well (quite wild, with rabbit-warrens and impassable bogs); he was in the habit of visiting a naturalist-gamekeeper, who lived in Queen Elizabeth's Lodge. Subsequently Mr. Piffard travelled in Spain, Asia Minor, and America. He lived in Algeria for some years, learnt Arabic when about twenty, and assimilated something of the native religion. He was a great sportsman and hunter, walked forty-two miles at a stretch, and several times narrowly escaped death in Northern Africa. He never earned money, for which there was no need, as his charming residence amply testified. His first love was the Coleoptera, but he amassed Diptera for the National Collection during a decade from 1892. He had been extremely melancholic, through severe family affliction, for some years, and had long retained a house nurse; but his final breakdown was surprisingly sudden. He sustained a fall and injured his leg, though much recovered by September; during the autumn, however, he gradually became more feeble and ill, till the end was reached in December. His collections and books are passed to his nephew, Mr. C. T. Gimingham; the former are considerable, though the nation is the richer for his Diptera, and the writer for his Parasitic Hymenoptera. Reticent in his writings and at all times retiring, his personality was lavish of all good things, both entomological and hospitable, to those he liked, as many entomologists both of this and the last generation can testify. Piffard, Chitty, Saunders, Bignell—what havoc is wrought in our vanguard! *Sic transit gloria mundi.*

C. M.

GEORGE CARTER BIGNELL.—Mr. Bignell was born at Exeter on March 1st, 1826, and educated at St. John's College there; he joined the Royal Marines at Stonehouse in 1842. During the Civil War of 1847 he was on board the 'Superb,' and took part in the capture of the rebel army. Later he became employed in the Office of Works, and filled a post in Millbay Barracks. In 1862 he was discharged with the rank of Barrack-Master-Sergeant, with a Long Service Medal. For the Stonehouse District he was almost immediately appointed Registrar of Births and Deaths, Poor Law Officer, and Vaccination Officer. In a more scientific way he contributed to the 'Entomologist' from 1864, the 'Young Naturalist,' and was on the editorial staff of the 'British Naturalist.' The consummation of these labours came in 1893, when he was elected President of the Plymouth Institution and Devon and Cornwall Natural History Society. He was a first-rate field entomologist, attacking all Orders of insects, and received a bronze medal from the Royal Cornwall Polytechnic Society for a paper on Land and Freshwater Shells. Recently he suffered from an attack of influenza, partially recovered, but finally succumbed on the supervention of bronchitis at The Ferns, Home Park Road, Saltash, barely breathing into his eighty-fourth birthday. His entomological collection (in whole or part) was presented by him to the Municipal Museum at Plymouth last November.

C. M.

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Vol. XLIII.]

MAY, 1910.

[No. 564.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.	W. F. KIRBY, F.L.S., F.E.S.
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THE ENTOMOLOGIST

Vol. XLIII.]

MAY, 1910.

[No. 564

ODONTOPSALIS LEWISI, BURR (ORTHOPTERA).

BY W. J. LUCAS, B.A., F.E.S.

IN January, 1904, a specimen of this earwig was taken amongst "sweepings" in St. John's Market, Liverpool. Though of course the capture is interesting, it does not constitute the insect a British one, and we must not add the name to our list. Recently I have had the opportunity of photographing the specimen, which is in good condi-



O. lewisi ($\times 3.25$).

tion, and am therefore able to give a figure of it. Both genus and species were described by Burr in *Trans. Ent. Soc. Lond.* 1904, pp. 315 and 317, from specimens taken in Japan. His description is as follows:—"Nigra, vel fusco-castanea, alis flavescentibus, nigromaculatis. *O. harmandi* vicina; ab eo differt statura majore, minus depresso, colore fusciori, abdomine minus dilatato ac deplanato, segmento ultimo dorsali ♂ tuberculis minimis instructo, forcipe graciliori,

longiori, dentibus minus validis, pedibus longioribus, gracilioribus. Long. corporis ♂ 14 mm. Long. forcipis 4 mm." In size and general appearance it is somewhat like our common *Forficula auricularia*, but the callipers are very different, as the figure shews.

THYAMIS BRUNNEA AND LURIDA.

By DAVID SHARP, M.A., F.R.S., &c.

THESE two insects have always been a great trouble to coleopterists, as is made clear enough by the remarks of Mr. Rye, quoted by Canon Fowler (Brit. Col. iv. p. 342). Since then Weise's important work (Ins. Deutschlands, Col. vi.) has become known to us, and, as his views are not only of great importance but of much interest, I revert to the subject.

Weise considers the *luridus* of our Catalogues to be a winged form of our *brunneus*. And he has also changed the names, applying *brunneus* to our *castaneus*. According to him the forms stand:—

1. *brunneus*.
 castaneus, Brit. Cat.
2. *luridus*.
 brunneus, Brit. Cat.
 var. (*alatus*) = *luridus* var. *cognatus* Weise, = *luridus*,
 Brit. Cat.

The matter is even more complicated, as he considers that the wingless form is the original "*luridus*" of Scop. But I think we ought not to follow Weise in the changes of names he proposes. These result from the fact that he interprets the old description of *brunneus* Duftsch., differently from his predecessors, with the result that the literature for three generations would become a chaos. It is possible Weise may be right, and it is possible Weise may be wrong, and I think in such a case the opinion of his predecessors should be maintained.

As regards the question whether *luridus* and *brunneus* are distinct species, or winged and apterous forms, respectively, of one species, decision is much more difficult.

Weise's work is a comprehensive and masterly one, and his opinion is entitled to the greatest respect. He says that our *luridus* is a winged form that does not extend northwards beyond 55°, though the wingless form goes farther north. In this he may be correct; at any rate, our *brunneus* occurs in profusion in the South of Scotland, as well as all over England, but our *luridus* has not been found even in Southern Scotland, though it is not rare in England, and has been recorded as far north as Northumberland, *i. e.* just about the 55th parallel.

But besides the distribution being different, the variation of the two insects is dissimilar. For our *brunneus* is a most puzzling creature on account of its variation, while our *luridus* is, for a *Thyamis*, remarkably constant.

Hence, if the two be really one species, as Weise maintains, we have the remarkable condition that a variable wingless species produces winged individuals in the case of only one of its varieties, as well as over only a portion of the area of its distribution.

This is certainly far from impossible; but we know nothing of the life-histories, and until we do so I do not think we can accept Weise's opinion as certainly established. It is true that the ædeagus of the male is extremely similar in the two forms, but the structure of this organ is very simple and very much alike in the different species of *Thyamis*, so that I feel by no means sure that this character is decisive.

I consider the question, therefore, to be one still requiring elucidation.

Brockenhurst, April 10th, 1910.

ON NEW SPECIES OF PARASITIC CYNIPIDÆ
CAPTURED BY MR. JOHN HEWITT, B.A., AT
KUCHING, BORNEO.

By P. CAMERON.

Paramblynotus rufiventris, sp. n.

Black, the abdomen rufous, the wings hyaline, the radial and first cubital cellules smoky, the nervures black. Pro- and mesonotum closely, somewhat strongly reticulated, the scutellum much more widely and irregularly reticulated; propleuræ reticulated like the pronotum, the mesopleuræ almost smooth, densely covered with depressed silvery pubescence; the metapleuræ irregularly areolated. Metanotum areolated, the lateral area larger and wider than the central; its sides and lower part covered with silvery pubescence. Face rugosely punctured; there is a stout keel between the antennæ; it is, as is also the oral region, densely covered with silvery pubescence. Ocellar region raised, margined, rounded in front. Collar margined behind by a smooth keel. Apical abdominal segments fringed with white pubescence. ♀. Length 4 mm.

The legs are stout, and are densely covered with silvery pile. The puncturation on the thorax is stronger than it is on the other Bornean species, from which it may be further known by the red abdomen.

For a synopsis of the previously described Bornean species of *Paramblynotus* see the *Deutsch Ent. Zeitsch.* 1909, p. 18.

The ocellar region in *Paramblynotus* is raised, clearly separated, triangular; the ocelli are in a curve. The male has the antennæ

fourteen-jointed; they are shorter than the body, of almost equal thickness, the third joint is a little shorter than the fourth, and is neither thickened nor curved. The abdomen is somewhat compressed and has the petiole longer than it is in the female.

Paramblynotus carinifrons, sp. n.

Black; the abdomen, except the first segment, red, densely covered with white stiff pubescence, densely so on the sides of the head, on the pleuræ, tibiæ, and tarsi; wings, to the transverse basal nervure, hyaline, the rest fuscous violaceous, the nervures black. ♀. Length 8 mm.

Face rugosely punctured above, the rest covered with stout curved striæ. Front and vertex smooth, the sides raised, margined on the inner side, the raised part becoming gradually widened below and covered densely with white pubescence. Pronotum coarsely, irregularly reticulated. Mesonotum less coarsely, irregularly striated at the base, the rest irregularly reticulated. Scutellum more strongly and regularly striated than the mesonotum. Metanotum very short, perpendicular, reticulated. Propleuræ coarsely reticulated, the meso- and metapleuræ smooth, sparsely haired.

Paramblynotus annulicornis, sp. n.

Ferruginous, the antennæ, except the scape, which is ferruginous, and the eighth, ninth, and tenth joints of the flagellum, which are white, the four anterior coxæ, the greater part of the femora, apex of hind coxæ, and the hind femora, tibiæ and tarsi, the sternum and the abdomen, black; wings hyaline, the nervures black, a black cloud covering the radial cellule and extending backwards to shortly beyond the middle of the wing, becoming gradually narrowed and forming a longish triangle.

Face closely reticulated, the front and vertex smooth, the sides raised, irregularly reticulated and margined on the inner side. Temples stoutly irregularly, longitudinally striated. Pro- and mesonotum with scutellum and propleuræ coarsely reticulated. Mesopleuræ smooth, the metapleuræ coarsely reticulated. Metanotum with a depressed area, narrowed above in the centre, the sides widely reticulated. Abdominal petiole more than twice longer than wide and bearing stout longitudinal keels. ♂. Length 5 mm.

Abdomen smooth and shining, somewhat compressed, as long as the thorax. Cubitus narrow, not very distinct, roundly curved. Frontal keel stout, and it is continued, but more narrowly, down the face. Cheeks stoutly keeled.

Xystus borneanus, sp. n.

Black, smooth, and shining, the third joint of antennæ testaceous, the legs pallid yellow, tinged with fuscous; wings hyaline, iridescent, the nervures fuscous, the outer edges distinctly ciliated; radial cellule closed along the fore margin, where it is clearly longer than it is from the margin to the second cubital cellule; the apical abscissa of radius roundly curved, longer than the basal and thicker than it; second cubital cellule not defined, the cubitus obsolete. Antennæ

almost twice the length of the body; the third joint straight, twice the length of the following. Head large, clearly wider than the thorax. ♂. Length 1 mm.

The coxæ are darker coloured than the rest of the hind legs, almost black. The antennæ are lighter coloured, *i. e.* almost fuscous underneath.

The species of *Xystus*, so far as we know, are parasitic on *Aphidæ*. This is the first species of *Xystini* I have seen from the Oriental Zoological Region.

Xystus tinctipleuris, sp. n.

Black, bare, shining, the pronotum and pleuræ rufous, the legs rufo-testaceous, the hind tarsi darker coloured; wings hyaline, the nervures black, the radial cellule more than twice longer than it is wide at the commencement of the cubitus; basal abscissa of radius straight, the apical roundly curved, fully one-third longer than the basal; cubitus distinct to the apex of the wing; the apex of the wings shortly ciliated. The antennæ twice the length of the body, bare, the third joint not curved or dilated, one-fourth longer than the following joint. ♂. Length 1 mm.

A larger, stouter species than *X. malayana*, with larger radial cellule, owing to the apical abscission of radius being longer compared with the basal, the nervures, too, being black; and the legs are of a deeper red colour.

THE ATHALIA GROUP OF THE GENUS MELITÆA.

By Rev. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 110.)

THE range of variation in *dictynna* is considerably greater than its very special facies would lead one to expect, but the development does not take place in any unusual direction. The depth of colouring, extent of suffusion both of the dark bands and of the base, variegation of the bands of the ground colour on the upper side, depth and extent of the markings on the f. w., and the colour and proportion of the bands of the h. w. form, as in other species, the elements of variation. With regard to the proportion of the black and the ground colour, every imaginable distribution is to be found, from the light f. w. of *vernetensis* to the black h. w. of *seminigra*; nor does it at all follow that the fore and hind wings present anything approaching parallel variation; neither can I find any rule, either of altitude or latitude, which seems to govern this distribution of coloration, though the mountain forms are on the whole both smaller and darker than those of the plains; the exceptions, however, are so many, that to formulate a law on the matter would be impossible, the var. *vernetensis* alone being apparently

confined to that part of the Pyrenees to which it owes its name. The depth of the ground colour varies from a deep red-brown to a pale yellow ochre shade, the latter being confined to light specimens of the female, and being more usual on the hind than on the fore wing. The variegation of the ground colour into lighter and darker bands is not entirely confined to the female, though its appearance in the male is rare. In the former it is sometimes carried to a surprising extent, so much so that Bergstrasser, in his 'Nomenclatur,' iii. pl. lxxviii. fig. 6, depicts it under the name of *maturna*, and then is not unnaturally surprised at its absence of red. The finest specimens I have met with come from Bouveret, at the upper end of the Lake of Geneva, the most beautifully varied on the upper side from Weesen on the Walensee, and from Austria. On the under side there is great variety in the colour and proportion of the bands of the hind wing. There is nearly always a considerable difference between the colouring of the edging and the lunular portion of the terminal band, and usually, but not always, between the two portions of the central band as well. Sometimes the lunules of the terminal band, sometimes the outer division of the central band, sometimes the light spot and the basal band, or two, or all three of these, are dead-white, or almost as silver as the spots of the Argynnids, sometimes only the spots near the inner margin; in other cases these bands are of various shades of pale or rich buff; the dark bands vary equally in colour, they may be of a deep, rich, cinnamon-brown, of a lighter orange-brown, of a dirty yellow-brown, or even of a rich orange containing only a brown tinge. The characteristic spots of the outer band are generally very conspicuous, but occasionally they are somewhat obscured by the darkness of the band, as in some specimens from Bouveret and from Hintzarten in the Black Forest; or they may be ill-marked, as in some of the very orange-banded specimens from Éclépens in the Jura. There is a specimen in the National Collection labelled "Germania," with the basal band and the light spot almost black, in which the upper side has broad tawny dashes inside the outer line, and a faint tawny suffusion over the fore wings. There are also among those from Germany some of both sexes which seem to me to belong to *britomartis*, and of which one regrets not to have more data.

The specimens of *dictynnoides* with which I am acquainted are somewhat few from which to make generalizations; they consist only of some ten specimens sent to me by Freiherr v. Hormuzaki, of the few in the National Collection, and of the specimens, again few in number, brought by Mr. Sheldon last year from the Tatra, the latter, however, being in first-rate condition. These, however, vary considerably on the upper side in the extent of their dark suffusion, especially on the hind wing.

I have, for example, one female in which only a single row of spots of the ground colour, *viz.* that within the inner line, remains, and a male with only the same row of spots and an intimation of a few more within the extra line. Many of them, however, approach the darker forms of *britomartis* on the upper side, and occasionally are not much darker than dark specimens of *athalia*. Mr. Sheldon has a female beautifully variegated on the upper side, reminding one of the best Bouveret or Weesen *dictynna*. The under side seems to vary less, having always a general look of *athalia*, the *dictynna* spots being always entirely absent; the outer portion of the central band is, however, almost always much broader than the inner, and I have one female in which, by reason of the light colour and total lack of division in this band, a distinct reminder of *deione* is afforded, which is, oddly enough, enhanced by the somewhat triangular shape of the light spot. The colouring of these light bands is, however, generally somewhat lighter than is usual in *athalia*, especially in the male.

Asteria, when regarded in detail, is by no means so constant as I supposed when writing my 'Butterflies of Switzerland, &c.' It is often much suffused on the up. s. almost to the extinction of the ground colour, while in other specimens the lines and nervures are very clear, giving quite the appearance of a very tiny *aurelia*. The approach of *varia* female to *asteria* has already been noticed; the converse is much more rarely the case, but both male and female are sometimes wonderfully close to *merope* on the up. s. It is, I imagine, the nearest approach to the ancestral Melitæid form. On the un. s. there is occasionally an indication of the second marginal line, but as a rule the characteristic absence of this is complete. In many cases the narrowness of the dark bands and the lack of division in the central as well as in the terminal band gives a very albinistic effect to the un. s.; the breadth of the dark bands is, however, very variable, as is also their colour; indeed, in the latter respect, *asteria* is quite as variable as any others of the group.

On p. 8 of the 'Entomologist' for this year I noticed Oberthür's var. *nevadensis* of *deione*. Lately, however, Mr. Powell, of Hyères, has drawn my attention by letter to the fact that Oberthür has since, in the third part of his 'Etudes,' pp. 251, 252, declared his conviction that the form there described is either a race of *athalia* or a new species altogether. Having no material on which to found an opinion, it is impossible to express one, further than by saying that from all that is known of the distribution of *athalia*, it is not likely that any form of it is to be found in the South of Spain. Certainly *nevadensis* would form a strong contrast to other southern Spanish forms of *deione*, but, then, so does *vernetensis* to other Pyrenean forms of *dictynna*.

To another point I must also briefly refer, *viz.* to Dr. Chap-

man's note on the Reazzino *Melitæa* in the March number of the Ent. Record, p. 71. Those who have followed my papers on this group will be aware of the grounds on which I pronounced this to be *britomartis*, Assmann. They still appear to me to be amply sufficient, which I cannot say for the grounds of Dr. Chapman's "correction." I shall, however, take the whole question of the genitalia of the group next, explaining my attitude towards the whole question, and the uses and abuses to which, in my opinion, this method of determination of species may be put, as illustrated by the group at present under discussion.

(To be continued.)

SOME NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

Diacrisia magna, sp. n.

Head and thorax creamy white, the latter spotted and striped with dark brown; prothorax edged with crimson; abdomen crimson above, ochreous grey beneath, dorsal spots blackish. Fore wings creamy white with dark brown, almost black. Markings disposed as follows: an almost triangular spot on costa towards the apex; a longitudinal stripe from the base, of uniform width to the blackish discoidal spot, thence expanded into a large triangular patch enclosing a small triangle of the ground colour on the outer margin; a large patch along the inner marginal area. Hind wings pale yellowish buff, the hairs towards the base crimson tinted; discoidal and two large spots near the anal angle blackish, between the latter there is a small blackish spot, and two others lie on the outer margin above the middle. Expanse, 74 millim.

Collection number, 1772.

Two males from Rantaizan, May, 1909. Taken at light.

Hab. Formosa.

Arguda formosæ, sp. n.

♂. Fore wings reddish ochreous, with a small dark ringed white spot at end of the discal cell; postmedial line and the veins beyond leaden grey; the outer margin clouded with dark leaden grey; beyond the postmedial line (which is almost parallel with the outer margin) there is a dusky, crenulated, transverse line. Hind wings reddish brown, darker and mixed with leaden grey on outer area, paler on the costal area. Under surface reddish brown, paler on the inner margin of each wing; the markings of the fore wings as above but thicker; on the hind wings the ante- and postmedial lines are blackish, and the latter is irregular. Expanse, 50 millim.

Collection number, 1184.

Two male specimens, Kaushirei, March, 1908; 1000 feet. Taken at light.

Hab. Formosa.

Metanastria albisparsa, sp. n.

♂. Head and thorax reddish brown; patagia thickly mixed with whitish; body rather paler reddish brown. Fore wings reddish brown, sprinkled with whitish scales on the veins; along the inner marginal area are three oblique dark streaks representing transverse lines, and these are whitish edged; a white discal dot, and beyond this is a dusky, interrupted streak running towards apex. Hind wings brown. Under surface brown.

Female paler, especially the hind wings, and the patagia are whiter.

Expanse, 58 millim. ♂; 82 millim. ♀.

Collection number, 1178.

Three specimens—two males, one female—from Arizan (7300 feet), August, 1908. Taken at light.

Hab. Formosa.

Callimorpha albipuncta, sp. n.

♂. Fore wings deep bronzy-green; a white spot in the discoidal cell, and a smaller one below it; seven white spots on the outer margin, three, four, and six rather nearer the margin than the others, spots one and seven minute. Hind wings bluish, costa broadly fuscous from base to beyond the middle. Fringes of all the wings black. Under side similar to above, but the fore wings are bluish. Head and palpi crimson, marked with bronzy-green; thorax bronzy-green, inner edge and front of patagia crimson. Body crimson, with a velvety black patch on the back of each segment, the fourth and fifth confluent, and the seventh small, and black spots on the sides; the under side black except the last segment.

♀. Agrees with the male, but has only four white spots on the outer margin of the fore wings, the first, third, and seventh being absent.

Expanse, 88 millim.

Collection number, 1175.

One example of each sex from Arizan, August 15th, 1908; 7300 feet. Taken at light only. Has a slow, heavy, fluttering flight.

Hab. Formosa.

Cypa (?) formosana, sp. n.

♀. Head and thorax reddish brown finely mixed with greyish; abdomen rather paler. Fore wings violet-grey sprinkled with reddish brown scales; there are five dark brown transverse lines, the first is not well defined, the second and third are outwardly angled at cell, the fourth is rather oblique, and the fifth is wavy; the space between lines three and four reddish brown except near the inner margin; on the outer margin there is a brownish crescent-shaped patch below the apex; fringes brown marked with white between the veins. Hind

wings obscure reddish, fringes white marked with brown at ends of the veins. Under side obscure reddish suffused with greyish; the fore wings are bordered with reddish brown, inwardly limited by a brown, slightly wavy line; the hind wings have two brown lines, the first medial, the other limiting the reddish brown outer border. Expanse, 56 millim.

Collection number, 1673.

A female specimen from Taiko (2000 feet), October 8th, 1908.

Hab. Formosa.

Phalera obscura, sp. n.

♂. Head reddish brown; thorax grey with a dark brown patch above, marked with reddish in front. Fore wings greyish, finely stippled with blackish; antemedial and postmedial lines rather obscure, before the latter are three fairly distinct, wavy, blackish lines; submarginal line represented by a series of black dots; reniform and orbicular mark outlined in white; apical patch obscure dark purplish brown. Hind wings fuscous grey, the abdominal area clothed with long fuscous hair. Under side greyish, basal half of each wing suffused with fuscous. Expanse, 56 millim. ♂; 64 millim. ♀.

Collection number, 1183.

Three male specimens and one female from Kanshirei, April, 1908. The female is rather rubbed, but seems to agree in colour and markings with the male.

Hab. Formosa.

Tarsolepis taiwana, sp. n.

♂. Head dark brown; thorax pale brown transversely marked with dark brown; metathorax and abdomen dark brown, segmental divisions pale brown. Fore wings ochreous brown streaked with darker, outer margin broadly blackish mixed with grey, tapered to apex; four brilliant silvery marks, the two largest placed as in *T. remicauda*, Butl., a smaller one on the inner margin, one above the lower large mark and united with it by a slender silvery line; the area enclosing the silvery marks is streaked with dark brown. Hind wings ochreous brown clouded with blackish on the inner two-thirds; a blackish spot at end of the cell. Under side ochreous brown, suffused with blackish below the cell and towards the inner angle of the fore wings; hind wings rather paler, with a black dash in the cell, and a black spot at end of the cell; undulated post-medial line brown. Expanse, 62 millim. ♂; 76 millim. ♀.

Collection number, 1773.

One example of each sex from Rantaizan, May, 1909. Except in its larger size the female agrees with the male.

Hab. Formosa.

Pidorus marginatus, sp. n.

♂. Fore wings pale fuscous brown, the marginal edges black, bordered inwardly with crimson-red except on the inner margin; apical patch black. Hind wings yellowish brown, margined with

black broadest at outer angle, and inwardly clouded with crimson-red; the abdominal area fuscous brown. Under side similar to above but with more crimson-red. Expanse, 34 millim.

Collection number, 706.

Six males and one female taken at Daitozan (8500 ft.), Sept. 11th, 1906.

Hab. Formosa.

Erasmia picturata, sp. n.

♂. Fore wings white, basal two outer thirds blackish, veins whitish; the basal third is traversed by three bands, the central one yellow, and the others metallic blue; the costal portion of the blackish outer third extends to the middle of the wing and encloses a round spot of the ground colour. Hind wings white, broadly bordered with blackish on outer margin, the edges of this border, and the veins, powdered with metallic blue. Fringes of all the wings whitish. Expanse, 56 millim.

Collection number, 1195.

One male specimen from Suisha (Lake Candidius), October 1st, 1907.

Hab. Formosa.

VARIATION OF *A. LEVANA*, L.: COMPARATIVE DESCRIPTION AND POSSIBLE SIGNIFICANCE OF THE WING MARKINGS IN *LEVANA*.

By T. REUSS.



A. levana and *A. levana* ab.

ON February 6th last I bred the above aberration* of *A. levana* from a *summer pupa*,† which should have produced var. *prorsa* last August, but had hybernated instead. It emerged after being taken indoors for some days and then given an "early

* The figure is somewhat enlarged.

† One of twenty-one summer pupæ from wild Mecklenburg larvæ that were kindly sent to me by Mr. Merrifield.

spring" with temperatures of 8°–15° C. at night, and 16°–25° C. by day, from January 29th onwards. The aberration exhibits exceptionally large blue markings (lunules) on the upper side of the orange black-spotted hind wings, and in the median and anal parts of the wing these blue markings form into a band, such as, in the Entom. vol. xlii. p. 311, I had suggested might decorate the wings of *V. urticæ*. There are blue lunules also on the forewings near the apex. The *levana* under side has the broad violet colour patches which in the large-sized *Araschnia bureyana*, Brem., var. *thibetana*, Obth. (which is facially connected with *levana* by *bureyana* and the large *levana*-variety of the Sayan mountains), help to form an *apical ocellus* reminding one of the ocellus in the fore wings of *V. io*. As the markings of the upper and under sides are *interchangeable* to a certain extent, the comparison is, perhaps, not quite vain. Two of the ocelli in the anal wing parts are shaped strikingly like those of *P. atalanta-indica*, and also otherwise the under side facies pictures details characteristic of the subtropical or tropical Pyrameid group of Vanessidæ—for instance, of *indica-caryetepsichore-virginiensis-myrrina*.*

On the other hand, the upper side resembles the "tortoiseshell" forms of the Vanessids, which are characteristic of northern climatical conditions, such as the many forms of *c-album-urticæ* (*milberti*), *xanthomelas-polychloros*. Mixed with these markings, the white Pyrameid spots show brightly on the fore wings, but these spots, though changed in appearance, occur also in the several "tortoiseshell" species or their aberrations, and especially in *V. io*. The third costal spot in *levana* is also—together with the distribution of yellow along the costa—*ioform*. I would suggest that the small-sized polymorph *A. levana*, with its whitish-ringed body and light-veined *harmoniously coloured* under side, pictures a comparatively primitive stage of facial development in the Vanessidæ, that, indeed, the very dark under sides of, for instance, *urticæ*, *io*, *polychloros*, are of comparatively recent origin and representative of high specialization in adaptation to the habit of these forms to *hibernate in the imago state*, for all the Vanessidæ that hibernate in earlier stages of development, and the non-hibernating tropical Pyrameid species, particularly those of South America, preserve the light-veined, fine-toned under side facies, which, among rich vegetation and in every kind of light, may be supposed to be more in harmony with its surroundings,† and therefore, also, more

* See 'Ent. Rec.,' pt. 1, pl. 1, 1910, "Comparative View of Vanessid Species," for text see pts. 3 and 4.

† The wing parts of a butterfly, which are exposed when the insect is at rest, most distinctly show a tendency to "colour photograph" their surroundings (Poulton, Standfuss, Wiener). The influence of colour on the wing-cells may be either direct or indirect through the eyes of the butterfly. Thus the colours and even the patterns of *favourite resting-places*, flowers,

protective than a plain dark under side. I have, indeed, often found that *V. io*, for instance, may appear as one of the most conspicuous of insects by its black-brown under side. Perhaps the (polymorph!) *A. levana* with its next relatives comes very near picturing to us what the ancestral form of the Vanessidæ was like. If, then, the ancestors of *levana* were also "the ancestors of *V. urticae* and *V. io*" (see *antea*, pt. 2, p. 58), then the latter species would have separated (1) from *levana* (which hibernates in the pupal stage) by adopting the habit of hibernating in the imago stage, and (2) from each other by different reaction to climatic influence (Standfuss), *V. urticae* remaining smaller and many-brooded under temperature conditions which leave the larger *V. io* single-brooded.

(To be continued.)

TRANSPARENT GELATINE SHEET: A MEDIUM FOR MOUNTING THE SMALLER COLEOPTERA.

BY F. H. MOORE.

THE preference which coleopterists show for pinning their specimens, whenever size permits, argues a defect in the carding method.

An obvious disadvantage of *carding* is the concealment of the insect's ventral side, and since *pinning* is out of the question for a vast number of small Coleoptera, the advantages of a transparent medium for mounting must be evident; indeed, for species bearing peculiar ventral characters, such a medium becomes very necessary.

Now a transparent gelatine mount permits of a clear inspection of one's specimens dorsally and ventrally, and obviates the risks to which fragile insects fixed on pins are exposed. The material is exceedingly clean and easy to work with, and no gum is required in the actual process of mounting.

The *modus operandi* is as follows:—Set the specimen in the ordinary way by gumming on card. When set, remove from the card, cleanse, dry, and place on a gelatine mount. Then proceed to touch down the tarsi and antennæ with the point of a camel's-hair brush dipped in warm water, and allow to dry for

&c., could be "photographed." And thus, also, in another sense, the resemblance of the under sides of *V. urticae* and *V. io* to the dry twigs and dead leaves of winter could be explained, while the *suppression of colour development in the under sides* would account for the *transference of brilliant colours to the upper sides* and the reduction of the *black upper side markings*. *V. io* and *antiopa* which have the blackest under sides exhibit the minimum amount of black in their upper sides.

a minute or two, when the insect will be found firmly and cleanly attached.

Some difficulty may be experienced with the larger species, if their tarsi do not lie evenly on the mount at all points; in such cases the insect should be relaxed, if necessary, and care taken when mounting to fix each tarsus firmly before proceeding to the next.

Soft-limbed species may be mounted without previously being set.



C. maxillosus, *L. nebulosus*, *L. melanopa*, and *M. atricapillus*, mounted on gelatine (enlarged).

A glance at the illustrations (somewhat enlarged) of *L. melanopa*, *C. maxillosus*, and *L. nebulosus* on gelatine mounts, and a pinned specimen of *M. atricapillus* on a disc of the same material, will give some idea of the pleasing results obtainable by the gelatine method, which is especially useful for smaller species than those shown in the photographs.

No doubt Diptera, Hemiptera, &c., could easily be mounted on gelatine without pins, but as there are few insects abroad at the moment of writing I am unable to make the experiment.

I might mention that Messrs. Watkins & Doncaster have undertaken to supply these mounts.

NOTES AND OBSERVATIONS.

EARLY APPEARANCE OF A DRAGONFLY.—I was fortunate enough to get a good view of a dragonfly on Easter Sunday (March 27th), which appears to be a most extraordinarily early date for any of the Odonata. My father was accompanying me, and also saw the insect, which was flying briskly about on a sheltered bank in the bright sunshine about midday at Hever in Kent (some nine miles south-west of Tunbridge Wells). On mentioning the fact to Mr. Herbert Campion, a well-known authority on dragonflies, I was given to understand that a dragonfly in March was worth recording, especially as there does not appear to be another instance recorded. I cannot do better than quote from a letter on the subject received from Mr. Campion, to whom I must tender my very best thanks. He writes:—"I find I have no note of any observation or capture of any British Odonate earlier than April 22nd, 1900 (*see* the 'Entomologist' for 1901, p. 65). On the date named some dragonflies were seen, but not taken, and were considered to be *Libellula quadrimaculata*. This identification is rendered probable by the fact that the same species was taken on April 25th, 1894. *L. depressa* has also occurred in April (April 28th, 1902). . . . I rather gathered from your remarks, however, that you considered your dragonfly to belong to the *Æschnid* series. The only spring *Æschnid* is what is generally known as *Brachytron pratense* (recte *B. hafniense*), but I have no positive record for that earlier than May 5th. Such *Agrionine* as *Pyrrhosoma nymphula* and *Enallagma cyathigerum* have also occurred in April, but these, of course, are small species." Thus it will be seen the only large spring dragonfly is the *Æschnid* *B. pratense*. Assuming the insect seen to belong to this species (and it certainly was quite as large), the earliest records are—*vide* "British Dragonflies" (W. J. Lucas), p. 176—"seen at Egham, but not captured, April 29th, 1893 (C. A. Briggs); captured at Dover, May 5th (C. G. Hall); May 14th (W. J. Lucas)." There does not appear to be any reason why dragonflies should not appear more commonly after such mild weather as we experienced during the latter half of March.—GEOFFREY MEADE-WALDO.

NOTE ON *ATTACUS EDWARDSI* (White).—In the May, 1909, 'Entomologist,' I had a note on the pupating larva of the above. The secret of this particular larva was that it was infested with a dipterous parasite, feeding internally, and which emerged during May. This winter I have had a further consignment of wild collected cocoons of *Attacus edwardsi*, and I have a few more of this dipteran in pupæ and hatching. I shall be glad to forward them as long as they will last to any dipterists who send small box and postage. I cannot, however, offer any hope that this species is rare, as over twenty per cent. of the imported Himalayan cocoons of *edwardsi* were infested. I retained, however, some of the infested larvæ for distributing the dipteran. I have also a few living dipteran cocoons, ex the Nevada *Papilio eurymedon* to give away—Diptera not interesting me, as I only collect the Saturnidæ moths.—J. HENRY WATSON.

GYNANDROUS LYCIA (BISTON) HIRTARIA.—Amongst a number of *Lycia (Biston) hirtaria* I have been taking in this neighbourhood from trunks of lime (linden) during the last few days, one appears to be worthy of notice. The fore wings are of the normal female outline and markings, as also are the hind wings, except that they are rather more densely scaled with black. Abdomen of female character, but much less in girth than usual (probably from the absence of developed ova), with ovipositor slightly protruding. Right antenna female, but the left is pectinated as in the male, though rather less strongly than usual. It is a fairly well-developed example, but rather small for a female, being only $1\frac{1}{2}$ inches in expanse. C. G. Barrett's work refers to a similar gynandrous specimen from the Bond collection, which was taken in Regent's Park.—WM. G. PETHER; 4, Willow Bridge Road, Canonbury, London, N., 23rd April, 1910.

LIFE HISTORY OF PAMPHYLA FIARA.—As nothing has yet been published of the early stages of this butterfly, and as the change in colour of the larvæ are very great, I think a description of the same may be of interest to collectors of South African insects. The egg, which is yellow-green in colour, is laid upon the upper side of the leaves of the *Strelitza* (wild banana), and the larva, when it emerges, is brilliant red in colour, with a black head; it immediately rolls itself up in a small piece of the leaf, leaving the ends open, and feeds upon the edges. The first moult takes place about the fourth day; the larva is then dark-brown in colour, and the head still black; it makes a new house this time, turning a piece of the leaf flat over itself and fixing the sides down with a strong white silky web. It is some three-quarters of an inch in length before the second moult takes place, in about five days. The larva is then a dark green in colour, except the head, which is black, and the last segment which has a brown, hard patch above the last claspers; the spiracular spots are orange-red in colour. The third moult takes place in about six days and the larva is similar in appearance to the previous stage. The fourth moult takes place about seven days later; the larva is then very pale green in colour, and the intestine can be plainly seen through the skin; the head is then very large and the colour half black and half white, while the last segment is black upon the upper half, and the spiracular spots are bright orange-red in colour. When full-fed this larva is two and a quarter to two and a half inches in length, and is very strong, being able to cement firmly together the two sides of a whole leaf, which is often twenty-four to thirty-six inches in length. When about to pupate, the larva rolls itself up, generally in a dead portion of the leaf, fixing itself entirely all round with silk, turns a pale pink colour, and in about seven days it changes to a light brown pupa; it is then covered with white powder which easily rubs off. The time before the butterfly emerges varies greatly: in one instance only twelve days elapsed, but others have been twenty-six days in the pupal state. I found the eggs at Pinetown, Natal, on February 4th of this year, this is the second new larva of a butterfly I have found there, in twelve months. Last year in the same locality I got *Carys disjunctus* (see Entom., 1909, p. 184).—G. F. LEIGH, F.E.S.; Durban, Natal, March 26th, 1910.

ENTOMOLOGICAL CLUB.—A meeting was held at the Savage Club, Adelphi Terrace, on April 20th, 1910, Mr. H. Rowland-Brown in the chair. Other members present were Messrs. Adkin (R.), Donisthorpe, Hall, and Verrall. Among the nine other guests were the honorary members Messrs. Jones (A. H.) and Sich.

ERRATUM.—*Antea*, p. 78, lines 7-8 from top. For "larger and more robust" read "smaller and less robust."

CAPTURES AND FIELD REPORTS.

BISTON HIRTARIA IN INVERNESS-SHIRE.—Early in April I came across the above species *in cop.* Both specimens were large and of a very dark greenish brown, and black markings very strong. At first sight I was doubtful as to what species it was; however, after examination, I found it to be the above-named species. I am not aware whether *hirtaria* has been recorded from Inverness-shire before.—ROBERT LAWSON; Croft Park, Craigie, Perth, N.B.

EARLY OCCURRENCE OF AGROTIS PUTA.—Seeing Mr. Jackson's note on the occurrence of *Agrotis puta* in May (*antea*, p. 66), the following may be of interest as throwing some light on the question as to whether this insect is double-brooded or not. I find on looking at my diary that *Agrotis puta* has occurred here at sugar in May and June in 1905, 1907, 1908, and 1909. In 1906 I did not do any sugaring in May, and in June only on the 9th, 16th and 23rd. I have also taken the species in August in 1904 and 1905, so that I should think it is almost certainly double-brooded in this locality. My earliest date is in 1907, May 21st (one male and one female), and in that year I also took specimens on June 10th, 11th, and 19th.—GUY E. H. PESKETT; Simla, Preston, Brighton, Feb. 22nd, 1910.

NOTES FROM HASLEMERE FOR 1909.—For various reasons my collecting in this neighbourhood last year ceased at the end of July, but in spite of the unpropitious weather, one or two things may be worth recording. On the whole, sugar was a failure, and save for a bright exception here and there, the same may be said of the lamps. The most noteworthy thing was the immense profusion of the commoner larvæ on the oaks, sallows, and hazels about the end of May: the leaves were stripped entirely off the trees in many places, and in some instances second crops were noticed later on. Other facts worth recording are that *Calestrina argiolus* appeared in great profusion during May, that the larvæ of *Vanessa io* and *V. urticae* were swarming everywhere up to about the end of July, and that many species were later than usual in appearance.

A few ova of *Pieris napi* were taken on *Alliaria officinalis* on May 30th. The resultant larvæ, which appeared on June 7th, fed up quickly, and had pupated by July 6th. I took them to Switzerland with me, thinking they would emerge in August, but they have passed the winter as pupæ. Ova of *Euchloë cardamines* found on

the same day also produced larvæ on June 7th, and pupated on July 5th. This species did not seem so plentiful as usual, and very few females were observed. Females of *Vanessa urticae* were seen ovipositing on April 15th, and the first young larvæ were noticed on May 6th, from which date until the end of July almost every patch of nettles swarmed with them. Many full-grown larvæ were taken for the purpose of studying their ichneumon parasites, and three species of these were obtained. In July the larvæ of *V. io* were in great profusion too, and one ichneumon was obtained from these. A full-fed larva of *V. polychloros* was taken on a road near some elm trees, and this duly pupated, but an ichneumon was the only result. This is, however, the first time I have noticed the species here. *Limenitis sibylla* seems to be fairly well established in the locality, and several specimens of *Apatura iris* have been seen. It may be remembered that I had ova of *Cænonympha pamphilus* on June 15th, 1908, from which larvæ appeared on June 28th. None pupated that year, but those that survived the winter, eating continuously, though very sparingly, the whole time, began to pupate on May 12th, 1909, and the resultant imagines came out on June 5th, *i. e.* only ten days short of a year to complete the cycle. Larvæ of *Thecla quercus* emerged from the egg on March 23rd, but died owing to the impossibility of procuring oak-buds for them. Full-grown larvæ were plentiful during the early part of June, and imagines from July 22nd onwards. Two complete broods of *Rumicia phlæas* were bred from ova deposited by captured females, but no striking varieties were obtained. The dates of emergence were:—First brood: ova, May 21st; larvæ, May 31st; pupæ, July 10th; imagines, July 27th. Second brood: ova, June 17th; larvæ, July 3rd; pupæ, August 6th; imagines, August 21st.

Ova of *Lycæna ægon* appeared on April 8th, when they readily ate the flowers of gorse. Later they were transferred to broom flowers, and later still to bird's-foot trefoil. But they fed very slowly, and the first date for pupation was August 2nd. The pupæ were small and they unfortunately shrivelled up and died. A good batch of ova of *L. icarus* was obtained on June 16th, and the larvæ fed from June 26th till August 15th, when the first pupated; and imagines began to appear on September 1st. It was noticed that a few larvæ far outstripped the rest, which seemed to be retarded in their growth, and never reached maturity.

During a week-end visit to Dorking at the beginning of May, a search was made for full-fed larvæ of *L. bellargus*, and about a dozen were found. They pupated on May 13th, and imagines appeared from June 9th to June 11th—nine females and three males. *C. argiolus*, first seen on May 8th, oviposited May 21st; the larvæ appeared in eight days, and began to pupate on July 8th, producing imagines July 26th.

A female *Tæniocampa miniosa* was taken at a lamp, and she obliged with a large number of ova on April 17th; the resultant larvæ, which emerged on May 2nd, fed up very rapidly, especially after their last moult, and went down on June 2nd.

A visit to some shallows during the night of April 28th yielded a

number of full-fed larvæ, which began to go down the next day, and the following species resulted from them later on:—*Boarmia repandata*, June 13th; *Aplecta tincta*, June 15th; *Noctua brunnea*, June 18th; *N. ditrapezium*, June 24th; *N. baia*, July 8th; and on July 18th *Cleoceris viminalis* came out from larvæ beaten out of sallow in the daytime. Some sections were removed from sallow trees infested with *Trochilium crabroniformis*, and imagines began to appear on June 15th.

A female *Phragmatobia fuliginosa*, taken on July 13th, laid a quantity of ova, and the larvæ, which came out on July 21st, look quite healthy at the time of writing. The larvæ of *Calymnia trapezina* were a perfect pest at the end of May, in company with other common things. Larvæ of *Aspilates strigillaria*, obtained on heather, pupated on May 8th, and produced imagines on June 11th, a fortnight before they were observed wild. Some ova of *Melanippe sociata* and *Coremia ferrugata* were obtained, and the resultant larvæ fed together on bedstraw from June 20th till July 15th, the imagines appearing on July 30th and August 1st respectively.

The above partially represents, but by no means exhausts, an account of my breeding for the year, which may be considered fairly satisfactory. One night at the lamps stands out among a host of bad ones—June 9th—when several specimens of *Drymonia trimacula*, in first-class condition, were taken, as well as *Acronycta leporina*, *Demas coryli*, *Notodonta ziczac*, *Drepana binaria*, *D. falcataria*, *Amphidasys betularia*, and many others. All these were taken from one lamp during an hour's stay between eleven and twelve. Many good geometers were taken by day, notably *Metrocampa margaritaria*, in great numbers, *Eurymene dolabraria*, *Geometra papilionaria*, *Phorodesma pustulata* (for the first time in this locality), *Acidalia bisetata*, *A. dimidiata*, *A. subsericeata*, *Eupithecia pumilata*, *Thera firmata*, *Melanthia albicillata*, and *Coremia designata*; and in addition to those mentioned above, the following were taken here for the first time:—*Xylophasia rurea*, May 29th; *Caradrina morpheus*, June 29th; *C. alsines*, July 20th; *Tæniocampa populeti*, April 16th; *Tephrosia punctularia*, June 8th; *Acidalia sylvata*, July 20th; *Eupithecia linariata*, July 10th; *E. castigata*, June 1st; *E. minutata*, July 20th; *E. abbreviata*, May 8th; *Triphosa dubitata*, May 20th.—F. A. OLDAKER; Haslemere, February 14th, 1910.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, March 2nd, 1910.*—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—It was announced that the Society would be represented at the forthcoming Jubilee Celebration of the Entomological Society of Russia, by Dr. Malcolm Burr, D.Sc., F.L.S., F.Z.S., &c., and that he would deliver an address of congratulation.—Mr. John C. Eales-White, of 47, Chester Terrace, Eaton Square, S.W., was elected a Fellow of the Society.—Mr. W. G. Sheldon ex-

hibited various forms of *Agriades* (*Polyommatus*) *corydon* from Southern Europe, including *A.* var. *aragonensis*, and its form *cærulescens* from Albarracin, Spain; also a pair of *Brenthis selene* from La Granja, and a pair of *B. hecate* from Hungary, showing the remarkable approximation of the two species in the markings of the wings.—Mr. H. St. J. Donisthorpe brought for exhibition a case containing a small nest of about thirty to forty hermaphrodite living examples of *Formica rufibarbis* var. *fusco-rufibarbis* from Whitsand Bay, August, 1909, into which had been introduced a queen of *Formica rufa* from Nethy Bridge (May, 1909). The queen had been accepted by the other ants in a few days.—Mr. C. O. Waterhouse, on behalf of Mr. J. C. Moulton, of the Sarawak Museum, exhibited a Longicorn beetle of the genus *Chlorydolum*, in which the right antenna was much shorter than the left. The specimen appeared to be a male in every respect except in the length of the right antenna, the joints of which were a trifle shorter than those of a female. Mr. Moulton was inclined to think that the specimen might be gynandromorphous. Mr. Waterhouse suggested that it might rather be regarded as a malformation.—Mr. W. E. Sharp exhibited an example of *Calathus mollis*, having the right anterior tibiæ and tarsus in triplicate. He said that such reduplication was not uncommon, but that it was seldom so perfect in detail.—Mr. L. W. Newman showed a case containing the following forms of *Anthrocera hippocrepidis*, all taken in June, 1908, in one small field in the neighbourhood of Bristol: (a) analogous to *A. filipendulæ* var. *chrysanthemii*, (b and c) analogous to *A. filipendulæ* ab. *flava*, Robson, and a pink form, with (d) an example with yellowish spots, otherwise normal. Also a specimen of *A. loniceræ* captured at the same place, with the markings broadly confluent.—Mr. G. Bethune-Baker brought for exhibition three nests of a species of Lasiocampid from Mount Elgon, Albert Nyanza, belonging to the same group as *Thaumetopæa processionæ*. He had been consulted relative to the possibilities of using the silk of which the long pouch-like "nests" were constructed. Mr. G. A. K. Marshall said that they belonged to a species of *Anaphe*.—Professor E. B. Poulton, F.R.S., read a "Preliminary Note on Mr. A. D. Millar's experimental breeding of forms of the Nymphaline genus *Euralia* in Natal," by Mr. Roland Trimen, M.A., F.R.S., and exhibited examples of the species and forms referred to. He said that Mr. Millar was greatly to be congratulated on his success in obtaining the long-wished-for proof that *Euralia wahlbergi* and *E. nimæ* were forms of the same species. Professor Poulton also exhibited a set of six *Euralia anthedon*, Doubl., and four *E. dubia* from Lagos, the western representatives of *E. wahlbergi* and *E. nimæ* respectively, giving it as his opinion that after the proof obtained by Mr. Millar, the western butterflies were also the dimorphic forms of a single species. The following papers were read:—"Third Paper on the Tetriginæ (Orthoptera) in the Oxford University Museum," by J. L. Hancock, M.D. "Descriptions of New Algerian Hymenoptera-Aculeata (*Sphegide*)," by the late Edward Saunders, F.R.S., and the Rev. F. D. Morice, M.A. "On *Zizeria*, Chapm. (= *Zizera*, Moore), a group of Lycænid Butterflies," by

Dr. T. A. Chapman, M.D., F.Z.S. "Further Notes on two *Osmia* species of the *Adunca* group," by the Rev. F. D. Morice, M.A. "A Few Words respecting Insects and their Natural Enemies," by Arthur G. Butler, Ph.D., F.L.S., F.Z.S., M.B.O.U. The Rev. F. D. Morice M.A., then delivered an address "On the Saws of Saw-flies," illustrated by many lantern slides prepared and arranged by him.

Wednesday, March 16th, 1910.—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—Dr. Malcolm Burr, D.Sc., gave an account of his reception in St. Petersburg by the Entomological Society of Russia, to whom he had presented the address of congratulation, published at the last meeting.—Mr. Edmond Wace Carlier, M.S.C., M.D., F.R.S.E., of the University, Birmingham; Mr. Herbert Alfred Green, of the Central Fire Station, Durban, Natal; Mr. Philip Harwood, of 23, Northgate End, Bishop's Stortford; Mr. J. Henderson, of Clifton, Ashbourne, Derby; Mr. Lionel Leslie Jacobs, Shelford, Copers Cope Road, Beckenham; Mr. William Laidlaw, 73, Endsleigh Gardens, Ilford, Essex, and 74, Great Tower Street, E.C.; Mr. H. S. Leigh, of the University, Manchester; Mr. F. Graham Millar, of "Seafield," Batu Tiga, Selangor; Mr. Francis Allcock Oldaker, M.A., of the Red House, Haslemere; Mr. Aiyappa Raman Pillai, Trivandrum, India, and 13, Buccleuch Place, Edinburgh; Professor Reginald Crundall Punnett, M.A., of Gonville and Caius College, Cambridge; Mr. James M. Williams, F.R.Scott.G.S., of the Howard Motor Garage, Cardiff, and Canford Cliffs, Hants, were elected Fellows of the Society.—Mr. H. St. John Donisthorpe exhibited examples of *Cremastogaster sentellaris* hermaphrodites, *Colobopsis truncatus* hermaphrodites, and a beetle, *Formicornus pedestris*, a good mimic of the latter ant, all taken in virgin cork at Kew, May, 1909.—Commander J. J. Walker, R.N., a living specimen of *Holoparamesus caularum*, Aubé, taken commonly in refuse haystack at Water Eaton, Oxon, on March 14th.—Mr. H. M. Edelsten brought for exhibition photographs of the anal appendages of *Tapienostola hellmanni*, *T. concolor*, and *T. fulva*, showing their remarkable similarity; also ova of the same species *in situ*. The photographs were the work of Mr. H. Main and Mr. A. E. Tonge.—Mr. G. W. Nicholson showed a specimen of *Dyschirius angustatus*, Ahrens, from Littlestone, Kent, taken in July, 1906; two specimens of *Bembidium 4-pustulatum*, Dj., taken at Pulborough in June, 1909; and two specimens of *Conosoma bipunctatum*, Gr., found by Mr. Jennings and himself at Broxbourne, Essex, in January of this year.—Dr. T. A. Chapman exhibited series of *Callophrys avis*, Chapm., bred this spring, together with series of *C. rubi* for comparison, and pointed out the principal superficial differences between the two species.—Mr. J. W. Tutt read a paper on the several forms of *Hydræcia* occurring in Britain, and illustrated the superficial differences where discoverable, and the marked difference in the anal appendages of the several species, *Hydræcia nictitans*, *H. paludis*, *H. lucens*, and *H. crinanensis*. He made an appeal to Fellows to try, during the coming season, to obtain eggs, larvæ and pupæ of the four British species for comparison, and to discover, if possible, structural differences in their

stages, in support of those shown by the superficial imaginal characters, and those of the ancillary appendages in *H. nictitans*, *H. paludis*, and *H. lucens*, but more particularly to detect, if possible, differentiating characters in the early stages of the two species *H. lucens* and *H. crinanensis*, the genitalic characters of which are so entirely different in both sexes and yet whose facial characters so far appear practically indistinguishable. Excellent photographs of the genital organs of the four British species (both sexes), made by Mr. F. N. Pierce, were handed round for examination.—The Rev. C. R. N. Burrows, to whose research the discovery of *H. crinanensis* is really due, stated that he had little to add to what Mr. Tutt had said; it seemed to him amazing that two species showing so much difference as *H. lucens* and *H. crinanensis* in their genitalia, should present no definitely marked superficial character in the imago.—Dr. Karl Jordan considered that the four species, as proved by the differences in the genitalic structures, were abundantly distinct, and brought forward a parallel case among the Attacids.—Mr. J. C. Kershaw contributed a paper on "The Oothecæ of an Asilid (*Pro-machus*, sp.)."—Dr. T. A. Chapman, M.D., F.Z.S., read a paper entitled "*Xanthandrus comtus*, Namr., a Correction."—H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 2nd*, 1910.—Mr. A. Sich, F.E.S., Vice-President, in the chair. Mr. Sich exhibited specimens of *Coleophora troglodytella* bred from larvæ fed on *Achillea millefolium*, and also larvæ feeding on mignonette seeds, probably those of *Borkhausenia pseudospretella*.—Mr. R. Adkin, series of *Tæniocampa gothica* var. *gothicina*, selected from a large number of bred and captured specimens.—Captain Cardew, a bred series of *Pachnobia leucographa*, very dark in colour; a series of typical *T. gothica*, bred from var. *gothicina* parents; and specimens of *Phygalia pedaria* from Wimbledon, one taken on January 2nd, worn; two on March 18th, in good condition.—Mr. P. Barrett reported *Brephos parthenias* and *Gonepteryx rhamni* in woods near London.

March 10th.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. West exhibited two cabinet drawers of the Society's collection of Coleoptera which he had just remounted and arranged.—Mr. Barrett, specimens of *Nyssia hispidaria*, *Phygalia pedaria*, and *Hybernia leucophaæria*, from Richmond Park, and noted that he took the first-named species in the same locality forty years ago, and that quite one-third of the last species seen were more or less crippled.—Mr. Lucas, the photograph of a very rare earwig, *O. lewisi*, from a specimen obtained in the Liverpool Docks (see p. 129).—Mr. Bonham, two bred, intensely black, females of *Nyssia hispidaria*.—Mr. L. W. Newman, an interesting series of *Anthrocera* species from Bristol, taken by Messrs. Smallcombe, including *A. hippocrepidis* var. *chrysanthemii*, a yellow form, a fine pink form, and a red form with yellow spots, with a confluent form of *A. lonicerae*. He also showed a confluent specimen of *A. meliloti*, and reported that pupæ of a second brood of *Abraxas grossulariata* kept out of doors were still alive. The remainder of the evening was devoted to the exhibition of

lantern slides by Messrs. Tonge, West (Ashstead), Lucas, Dennis, and Edwards, including series illustrative of the resting attitudes of insects, the crystals formed from various solutions, rare plants from the New Forest, details of insect structure, various plants attacked by galls, and the natural history and structure of the cockroach.—HY. J. TURNER, *Hon. Rep. Sec.*

RECENT LITERATURE.

Dermaptera (Earwigs): the Fauna of British India, including Ceylon and Burma. By M. BURR, D.Sc., M.A., &c. London. 1910.

APART from its first-rate importance in connection with the Fauna of British India, there are two special ways in which this work will be of very great use to entomologists generally. For one thing, we have at last a satisfactory classification of the whole of the earwigs, the author treating them as he intends doing in the general revision and monograph of the earwigs of the world, which he has in hand. He is inclined to consider these insects as a distinct order (in which we scarcely agree with him) consisting of five families—Apachyidæ, Pygidiceranidæ, Labiduridæ, Labiidæ, and Forficulidæ. The other feature of interest to all is the full, interesting, and very readable introduction giving the description and life-story of the earwig in general. The now well-known case of the jointed cerci of the immature *Diplatys* is adequately referred to. This, it appears to us, is one feature amongst others linking up the earwigs with other Orthoptera. The species described are one hundred and thirty-five in number, including two with a query; fifty-four of these are not represented in the British Museum. The book is illustrated by ten fine plates (one coloured), containing one hundred and four figures, and by sixteen figures in the text; it contains a full bibliography.

W. J. L.

A List of the Neuroptera of Ireland ('Proceedings' of the Royal Irish Academy, vol. xxviii. Branch B, No. 2). By J. J. F. X. KING and J. N. HALBERT. Dublin. 1910.

THIS publication of eighty-three pages, which is considerably more than a mere list, brings us up to date with the known distribution of the Irish Neuroptera in the older wide sense of the word. It appears that there are two hundred and forty species known as compared with three hundred and eighty-four for Great Britain; it is therefore clear that much work remains to be done. Specially interesting results may be expected from the south-west of the island, when that district comes to be systematically worked. Since the dragonfly *Somatochlora arctica* occurs there, what may not be expected? We note that the peculiar insect, *Psectra diptera*, has been found in Co. Wicklow, and that at last a scorpion-fly (*Panorpa germanica*), from Co. Cork, may be added to the Irish list. The paper contains a useful bibliography.

W. J. L.

List of the "Clyde" Copeognatha, or Psocidæ (from the 'Glasgow Naturalist'). By J. J. F. X. KING. 1910.

TWENTY-ONE species (out of forty-three known to be British) are here given, with their distribution as far as known.

W. J. L.

Smithsonian Institution. United States National Museum. Bulletin 63. "A Monographic Revision of the Coleoptera belonging to the Tenebrionide Tribe Eleodiini inhabiting the United States, Lower California, and Adjacent Islands." By FRANK E. BLAISDELL, Sr. Pp. i.-xi. and 1-524.

THIS revision of the Eleodiini has been based on a study of the primary characters, and, when possible, the mouth-parts; the data thus obtained being then correlated with the other known characters. It is the outcome of the author's labours during the past five years, in the course of which he has dissected about one thousand specimens, and studied the superficial characters of five thousand. There are eight genealogical diagrams in the text, and thirteen plates showing genital and other structural details of the Eleodiini.

United States Department of Agriculture. Bureau of Entomology:—

Technical Series, No. 16, part iii.: "Catalogue of Recently Described Coccidæ.—II." By J. G. Sanders, M.A.

Technical Series, No. 17, part i.: "The Genus *Dendroctonus*." By A. D. Hopkins, Ph.D.

Bulletin No. 58, part iv.: "The Southern Pine Sawyer." By J. L. Webb, M.S. Part v.: "Insect Depredations in North American Forests, and Practical Methods of Prevention and Control." By A. D. Hopkins, Ph.D.

Bulletin No. 77.: "Hibernation of the Mexican Cotton Boll Weevil." By W. E. Hinds & W. W. Yothers.

Bulletin No. 82, part ii.: "The Parsnip Leaf Miner. The Parsley Stalk Weevil. The Celery Caterpillar." By F. H. Chittenden, Sc.D. Part iii.: "The Lima-bean Pod-borer. The Yellow-necked Flea-beetle." By F. H. Chittenden, Sc.D.

Bulletin No. 83, part i.: "Bark-beetles of the Genus *Dendroctonus*." By A. D. Hopkins, Ph.D.

Bulletin No. 85, part i.: "The Lesser Clover-leaf Weevil." By F. M. Webster, M.S. Part ii.: "The Slender Seed-corn Ground-beetle." By W. J. Phillips.

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Vol. XLIII]

JUNE, 1910.

[No. 565.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

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THE ENTOMOLOGIST

VOL. XLIII.]

JUNE, 1910.

[No. 565

SOME INSECTS IN BALTIC AMBER.

BY T. D. A. COCKERELL.

THE insects now described are chiefly of interest as showing the immense antiquity of many existing forms of insect-life. Although of Oligocene age, none of these species would excite any surprise in the modern fauna.

HOMOPTERA.

Oliarus oligocenus, n. sp. (Fulgoridæ : Cixiinae.)



Length about $8\frac{2}{3}$ mm. ; head broad, rounded in front, not much produced ; a delicate carina extends from near the level of the front of the eyes backward to the apex of the mesonotum ; eyes prominent, not very large (smaller, for instance, than in *Cixius vitreus*) ; lateral carinae of mesonotum delicate, with more or less of a double curve ; exterior to the lateral carina is a straight groove ; tegmina broad, obtuse, clouded with dark brown in the whole anal field, in the upper apical region, and an irregular band connecting these areas ; nervures not punctate ; no definable stigma ; hind wings dilute fuscous.

Oliarus oligocenus, Ckll. The venation of the tegmina is not unlike that of *Lamenia*, which Kirkaldy holds to be a Cixiine. The subcosta and radius separate before the middle of the tegmen, but have a longer common stalk than in *Lamenia kulia* ; the media leaves them about as in *Lamenia* ; the cubitus branches at about the same level as the subcosta and radius, and has a long fork before joining any other vein ; the anals are nearly as in *Lamenia*, *Dictyophora*, *Dicranotropis*, &c., but the first anal is modified apically, so as to become practically lost in a couple of strong cross-veins ; the apical field is much smaller than in *Lamenia*, and the inner series of gradate veins is zigzag and little oblique. The head behind is very distinctly angled, as in *Oliarus*, and not as in *Cixius*. Among the species described from amber, this is

rather similar to *Civius insignis* and *C. succineus* of Germar and Berendt (1856), but it is clearly distinct from all.

Hab. In Prussian (Baltic) amber; purchased from Mr. Janson. The same piece of amber contains trichomes and an anther of *Quercus*, such as are figured by Conwentz.

DIPTERA.

Sciara meunieri, n. n. (Mycetophilidæ: Sciarinæ.)

Sciara prolifica, Meunier, Ann. Soc. Sc. Bruxelles, 1904, p. 65 (not of Felt, 1897).

Sciara electrophila, n. sp.

♂. Length nearly 3 mm. (head and thorax 1020 μ , abdomen about 1700); ferruginous, antennæ pale at base; antennæ 1900 μ long, 16-jointed, the middle joints cylindrical, four times as long as wide; claspers thick, obtuse. In the following description all the measurements are in microns: middle antennal joints about 125 long, with short bristles (about 20 long) of about equal length; last joint 144, penultimate 110; first and second together about 120; third joint about 100, longer than fourth (as in *S. villosa*); halteres about 340 long, with a large elongate-oval knob, which is about 220 long and 93 broad; claws simple; hind legs with coxa about 355, femur about 830, tibia 930, tarsus 1000, of which 476 is basitarsus; first vein ending 270 before level of forking of fourth, and third ending about 440 beyond that level; width of fork of fourth in middle about 170. In Williston's table of St. Vincent species (Trans. Ent. Soc. Lond. 1896) this runs to *Sciara* sp.; the anterior furcation (of fourth vein) is about as in *S. debilis*, except that it is not at all contracted apically.

Among the species described by Felt (1897), the venation is essentially as in *S. agraria*, Felt, except that the anal curves downwards more abruptly at end. The genitalia are as in *S. agraria*, but more robust.

I cannot identify this with any of Meunier's species from amber. It is too large for *S. variabilis*, *verticillata*, *eocenica*, *diabolica*, *rara*, *bella*, *ignorata*, &c. The second antennal joint is much too broad for *S. botuli*, which is also a smaller species. The third joint is too short for *S. errans*, but agrees with that of *S. splendida*, which, however, has longer hair on antennæ. The terminal joints are nearly as in *S. villosa*, but the last joint is not quite so long as in that species. The joints are quite distinctly petiolate, as in *villosa*, but not so much so as in *S. eocenica*. The last joint is too long for *botuli*. Compared with *S. sendelina* the hair of antennæ is too short, and the apical joint differs in not being tapering.

Hab. Baltic (Prussian) amber; purchased from Mr. Janson. Trichomes of *Quercus* are in the same piece.

Macrocera abundare, Meunier. (Mycetophilidæ.)

In Baltic amber, purchased from Mr. Janson. Trichomes of *Quercus* are in the same piece. This is not a typical *Macrocera*; it should perhaps constitute a distinct genus.

Myiolepta lühei, n. sp. (Syrphidæ.)

Probable length about 11 mm., wing 9 mm., or a fraction less; legs rather robust, black, with dark hair; a dark cloud traverses the wing in the region of the forking of veins 2 and 3, and above and below (the same is seen, less developed, in the living *M. varipes*); venation agreeing with *M. varipes*, Lw., in nearly all respects. The following table brings out the venational characters:—

Second vein ending nearer to third than to first

M. bella, Williston.

Second vein ending much nearer to first than to third 1.

1. First posterior cell ending almost on margin of wing;
outer side of discal cell nearly straight; fourth
vein more strongly bent near end of discal cell

M. lühei, n. sp.

First posterior cell ending some little distance from
margin of wing; outer side of discal cell bent in-
wards; fourth vein less strongly bent near end of
discal cell

M. varipes, Lw.

Hab. Baltic (Prussiau) amber; in the University Museum at Königsberg.

Boulder, Colorado, U.S.A.: Jan. 1910.

THE CULICIDÆ OF FIJI, INCLUDING TWO
NEW SPECIES.

By F. V. THEOBALD, M.A.

Up to the present time only four species of mosquitoes have been recorded from the Fiji Islands, namely, *Stegomyia fasciata*, Fabricius; *S. scutellaris*, Walker; *Culex nocturnus*, Theobald, and *C. fatigans*, Wiedemann.

Mr. F. Jepson, the Government Entomologist, has recently sent me a small consignment which contains two new species, described here.

One of the commonest mosquitoes in Fiji is the Tiger Mosquito (*S. fasciata*). The specimens I have received from the islands are all rather small, but otherwise quite typical. Mr. Jepson writes that this species is supposed to convey dengue fever there. Dr. Bancroft, in Australia, also regards this insect as the transmitter of "dengue."

Culex fatigans, Wiedemann, is also very common, and is probably the species connected with Filariasis.

Culex nocturnus, Theobald (Mono. Culicidæ iii., p. 159), was received from Dr. Hall and taken at Ba, where it was found active at night in houses. It can be told by the abdominal ornamentation, the ground colour deep brown, the base of the second, third, and fourth segments having white bands, the fifth and sixth with white basal median patches, constricted in the middle, the sixth and seventh with narrow apical yellow bands, laterally are median white spots, and the venter is ochreous. The legs have basal pale bands, which are narrow on the fore and mid pairs, broad on the hind, and the ungues of the two front pairs are uniserrate, whilst those of the hind are simple.

These characters will at once separate it from the new species of *Culex*, described here (*C. jepsoni*). The specimens sent were taken in April, May, and June.

With regard to *Stegomyia scutellaris*, Walker, I do not feel certain. Some much rubbed specimens sent me were taken to be that species, but I noticed at the time that there were three more or less parallel white scaled lines on the sides of the thorax. On comparing Mr. Jepson's specimens, I find they are distinct from the true *S. scutellaris* of Walker, and I have described them here as a new species.

The original record of *scutellaris* for these islands was made on some specimens sent to the British Museum by Mr. B. G. Corney (Mono. Culicidæ, iii., p. 144, 1903), who also sent the following note:—"Diurnal mosquito, disappearing entirely at night, taken in a wooden hut five yards from high water line of sea coast, on sandy soil, forest adjoining and high land; locality, Island of Bega."

Walker's species can easily be told by its having the sides with white puncta, not lines, and by the basally white banded abdomen and longer wings; otherwise, the general appearance is very similar.

Culex fatigans, Wiedemann, is the common brown, unbanded-legged household mosquito, which seems to occur like *S. fasciata* all over the tropics and sub-tropics, and on most oceanic islands.

One specimen sent by Mr. Jepson near *Culex jepsoni*, nov. sp., was too damaged to describe, but is apparently distinct, having an ochraceous scaled venter to the abdomen.

Stegomyia pseudoscutellaris, n. sp.

Head black, with white median line and a white patch on each side. Thorax blackish brown, with brown scales, a narrow median white line, a thin white line on each side above pleura, extending lateral from the head to root of wings; pleura bright brown, with one long and one short parallel white lines, which are also parallel with the one above the pleura. Abdomen black, unbanded above, but with curved white spots ending about the middle of the segments; basal white bands ventrally. Legs black, with narrow basal white bands

to the metatarsi and first tarsals on fore and mid pair; the hind with broad basal white bands and the last tarsal all white.

♀. Head black, clothed with flat black and white scales, the latter forming a broad median line and a patch on each side and small white scales around the eyes; chætæ black; the white median area passes well between the eyes. Proboscis and clypeus black; palpi black, the upper surface with snow-white scales for about half



Wing of *Stegomyia pseudoscutellaris*, n. sp., ♀.

their length from the apex; clypeus black, with bronzy sheen and with a transverse carina ending each side in a slight swelling; antennæ black; basal segments black, with silvery white flat scales on the inner side; second segment slightly paler at the base.

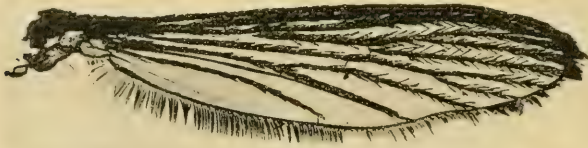
Thorax dark brown, with bronzy-brown narrow-curved scales, a narrow median white line extending from the fore border of the mesothorax to the bare space in front of the scutellum; a thin white line on each side between the mesonotum and the pleura composed of small flat scales, extending just past and over the base of the wings; pleura rich brown, with a long thin white line with a small one below it both running parallel to the white line above, composed of flat scales; scutellum brown, with flat white scales; metanotum deep brown. Abdomen deep black, the segments with curved white lateral areas which end in the mid or posterior third of each segment; posterior border-bristles dark; venter black, with prominent basal white bands; legs black, with white basal bands; femora pale at base and below with white apical spots, base of metatarsi and first tarsals of fore and mid legs with narrow basal white bands, other tarsals unbanded, in hind legs basal bands white and broad, the last tarsal all white; unguis all equal and simple.

Wings with rather short fork-cells, the first longer and narrower than the second, its base slightly nearer the base of the wing, its stem about half as long as the cell; stem of the second posterior nearly as long as the cell; posterior cross-vein a little longer than the mid, about twice its own length distant from it; scales brown, and rather dense. Length, 3 to 4 mm.

Hab. Suva, Fiji (F. Jepson).

Observations. Described from three females. This species may easily be mistaken for *S. scutellaris*, Walker, as its general thoracic ornamentation is very similar, but in *scutellaris* there are white puncta on the pleura, in this two white lines, which together with the mesothoracic one, show as three parallel well-

marked lines mentioned in the third volume (p. 144) of my 'Monograph of Culicidæ.' The abdominal ornamentation also



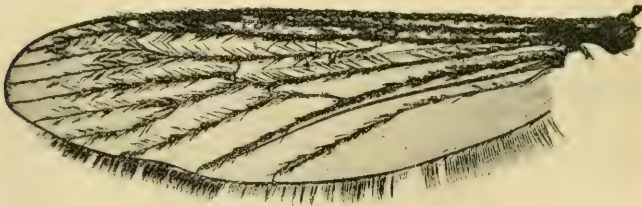
Wing of *Stegomyia scutellaris*, Walker, ♀.

differs and the wings are relatively much shorter, as shown in the figures given here.

Culex jepsoni, n. sp.

Head rich brown, a narrow pale border around the eyes, broadening out laterally. Proboscis black, with a distinct narrow median creamy-white band. Thorax brown, with darker lines and some patches of indistinct paler scales. Abdomen blackish, with basal white bands above and below, the latter broadest. Legs deep brown, with narrow apical and basal pale banding; ungues equal and simple.

♀. Head deep shiny black, with narrow-curved dusky and dull creamy scales, the latter especially forming a narrow border around the eyes which runs at the sides into a dull white scaled area, the whole area (except the flat white scaled lateral patches) with very numerous dusky upright forked scales; a row of long dark chætæ



Wing of *Culex jepsoni*, n. sp., ♀.

project forwards over the eyes. Proboscis jet black, with a narrow median creamy-white band; palpi black; the apex creamy-white and black chætæ; antennæ deep blackish-brown, base of second segment reddish-brown; clypeus black. Thorax deep brown, with a median and sub-median darker lines, clothed with narrow-curved brown and dull golden-brown scales and four indistinct paler scaled spots, almost golden in some lights; chætæ black, with golden reflections at their apices, especially dense and short and thick over the roots of the wings; around the bare space in front of the scutellum are pale scales which spread on to the dark scutellum; posterior border-bristles

long, dark brown, golden reflections apically, eight to the mid lobe; metanotum black; pleuræ dusky, with patches of flat white scales and some golden chætæ, one prominent patch. Abdomen steely black, with dusky black scales and basal white scaled bands and basal white lateral spots, which run a little along the sides of the segments; border-bristles golden, short in the middle, long at the sides; basal segment all dark scaled with two patches of short dusky hairs, golden at their apices and longer ones at the sides of similar hue; venter black, with broad basal white bands.

Legs dark blackish-brown; the fore pair with a small pale spot at the apex of the femora and tibiæ, and a narrow pale band at the junction of the metatarsus and first tarsal; mid legs similar, but traces of banding at the junction of the first and second tarsals as well; hind legs with the narrow banding more pronounced; ungues all equal and simple.

Wings with the fork-cells rather short, the first sub-marginal longer and narrower than the second posterior, its base if anything slightly nearer the apex of the wing, its stem about half the length of the cell; stem of the second posterior also about half the length of the cell; posterior cross-vein longer than the mid, about two and a half times its own length distant from it. Scales brown, dense, median ones of short broad *Teniorhynchus* type, lateral ones straight, narrow, but broader than in *Culex*. Length, 5 mm.

Hab. Suva, Fiji (F. Jepson).

Time of Capture, February 8th, 1910.

Observations. Described from a perfect female, caught by Mr. Jepson in his laboratory. A very distinct species, near to *Culex nocturnus*, Theobald, from the same island, but the ungues being simple, not uniserrate on the fore and mid legs as in that species, at once separate it. In the latter also the abdominal bands bend in the middle, and on some segments do not form actual bands. Nor has *jepsoni* the well-marked median lateral spots seen in *C. nocturnus*.

Another female shows the venter of the abdomen mostly pale scaled, and the pale lateral spots are much larger than in the type, and is probably a distinct species but too damaged to describe.

THE ATHALIA GROUP OF THE GENUS MELITÆA.

BY REV. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 136.)

BEFORE considering the question of the male genitalia, with special reference to the group before us, it seems to me necessary to make certain observations and to venture certain opinions on the subject at large. There can, I think, be no doubt that the likenesses and differences between these structures are of great phylogenetic value, and are moreover in most cases an important

auxiliary, and in some possibly the decisive factor, in the determination of species. But I cannot help thinking that extravagant claims have been made both as to their actual value, and perhaps even more as to their comparative value with regard to other structures, in differentiating species. Of course, if the differences were such as to debar insects from pairing, no claim based upon them for the differentiation of species could possibly be regarded as extravagant, for the circumstance would of necessity act automatically in keeping species apart; and I readily admit that there was a time when I was a full believer in this "lock and key" theory, as it has been called, and was under the impression that only the most closely connected species would ever pair in a wild state, and that the fact of insects of different species ever pairing (except in captivity) was in itself enough to show that they were at least congeneric. But this was in the days when *a priori* reasoning was in vogue, and when, moreover, I had access to few facts other than those which entered into my own very limited experience. It is now of course a matter of common knowledge that scarcely any pairing, even in a wild state, is out of the question, unless some obvious reason should render it physically impossible; and it would be a mere matter of searching in periodicals and the 'Zoological Record' if one wished to produce a long list of what would otherwise be astounding cases. Here are a few picked up at random in the course of searching for information on a widely different subject:—*Tenio-campa stabilis* ♂ and *T. gothica* ♀ (Ent. xxi. p. 158); *Cerastis vaccinii* ♂ and *Miselia oxyacanthæ* ♀ (*loc. cit.* p. 188); *Xylophasia monoglypha* ♂ and *Hadena trifolii* ♀ (*loc. cit.* p. 282); *Melitæa athalia* ♂ and *Polygonia c-album* ♀ (Schneider, 'Iris,' xix. p. 107); *Aglais urticae* ♂ and *Epinephele janira* ♀ (Ent. xxxiii. p. 224); *Melitæa cynthia* ♂ and *Erebia lappona* ♀ (Rebel, 'Societas Entomologica,' ii. p. 73); *Attacus cecropia* ♂ and *Sphinx ligustri* ♀ (Ent. xix. p. 136); *Dryas paphia* ♂ and *Parnassius apollo* ♀ (this I saw myself at Faïdo, in the Leventina, in company with Mr. Warren); *Salamis anacardii* ♂ and *Aphelia apollinaris* ♀ (Trimen, Proc. Ent. Soc. Lond. 1880, pp. 23, 24, the moth being a day-flier, and bearing a general resemblance to the butterfly); *Euchloë cardamines* ♂ and *Bapta temerata* ♀ (Ent. xxi. p. 188—here there is no such excuse). I have arranged these in an ascending scale of significance, at least as the instances strike me, and it will be readily seen that they are not the result of search, by the very small number of publications mentioned. If I had the time, and the search seemed sufficiently profitable, I could certainly make the list several times as long, but quite enough has been said to support my assertion that the differences, even between the most widely separated insects of the order, are not such as to preclude pairing, and therefore cannot be treated as being of the same importance as if they were so. In reply to this argument it was

remarked to me, by an enthusiastic supporter of the claims of this means of differentiation, that the important question was not that of mere pairing, but of *fertile* pairing. In answer to this there are two things to be considered. First, we do not *know* whether, or how far, these pairings are infertile. We do know that no insect has ever been taken which could possibly be a hybrid between *Euchloë cardamines* and *Bapta temerata*, for instance, or even between *Melitea athalia* and *Polygonia c-album*, but, on the other hand, we know that hybridity interferes greatly with vitality, and even should some of the less violently abnormal pairings prove fertile, the chances of the progeny reaching maturity would be exceedingly small, and of those that reached the perfect state—if any did so—it is improbable that any would happen to be the specimens seen by lepidopterists, as they would probably be weak and fall an easy prey to marauders within the first few hours of their imaginal existence. But giving the fullest possible weight to this aspect of the argument, and granting that none of the above pairings (with the probable exception of the two *Tæniocampids*) could prove fertile, the very important fact still remains that it is not the differences of the structures in question which *per se* are the cause of the infertility, as they could only produce this effect directly by making pairing itself impossible, and that at the most they can only be a secondary and correlated cause, not to be compared in importance with such facts as species appearing at different times, inhabiting different altitudes or latitudes, feeding on different (or at any rate on unrelated) food-plants, hibernating at a different stage of existence, flying at a different time of day, or possessing any other habit which must either effectually keep them apart, or be practically certain to cause the early death of any hybrid progeny which might manage to struggle into existence.

These considerations appear to me to reduce the importance of these organs, which *prima facie* seem to be on such a vastly higher plane, to the same level as any other structural details, and as the differences are usually very slight, often actually and almost always relatively so, I should be inclined to assign to them, in general, an importance distinctly below neuration, still more markedly below that of the number of fully-developed legs, but possibly above that of scale-forms, even of the androconia, and probably above most other imaginal characteristics which have been used for purposes of classification, such as hairy or glabrous eyes, details of wing-shape and markings (including the presence or absence of "tails"—a very unimportant matter, I believe, especially when the "tail" is filamentous)—markings of the body, number of rings in the antennæ, &c. ; on the other hand, I do not believe their phylogenetic and consequent classificatory importance to be nearly so great as that of many points in the earlier, especially the egg and newly-hatched larval, stages;

as these would seem, to some extent at any rate, to recapitulate the evolutionary history of species, genera, &c., or at least to point the way to a partial reconstruction of such history.

But putting all this aside, and granting for the sake of argument that this is the most important—nay, *far* the most important—of all structural differences, it is still liable to abuse; for it cannot for a moment be conceded (or even claimed) that this is the *only* mode of divergence, and parallel differences in this respect may have been evolved after other divergences had taken place, the dormant tendency having been retained, and we might thus find parallel groups exhibiting the same different forms of clasp, &c., even when these groups had in other respects diverged somewhat widely from each other; and, on the other hand, likenesses, or even identity of structure, in this respect might be retained, especially in closely related species, even after they were specifically separated by differences of habit, food-plant, habitat, &c. In the first case we should find two or more groups of insects, different members of which appeared, judging by the genitalia alone, to be more closely related to members of the other groups than to those of their own; and in the second case we should find insects, obviously from other reasons specifically distinct, “lumped” together as a single species, on the ground that they were not yet differentiated in this one particular. We have in fact no reason to suppose either that differentiation necessarily takes place simultaneously along various lines, or that it follows a certain routine order in the various lines along which it takes place; on the contrary, all such evidence as we at present possess would seem to point in an opposite direction. A further consideration tending towards the same conclusion is the fact that it is possible in this matter, as in others, that a similarity or even an identity of structure may sometimes be reached along different evolutionary lines. Just as I have wished to give the greatest possible weight to the arguments of those who have advanced the strongest claims as to the importance of these structures—a weight far greater than in point of fact I consider them capable of supporting—so here I feel my position to be so strong that I can afford to minimize the results that might fairly be made to rest upon the arguments that I have used, and to say only that it is manifestly unsafe to rest any part of a classification, whether generic or specific, upon the likeness or unlikeness, the difference or identity, of the genital armature *alone*. I should wish to forestall the possible objection, that nobody in point of fact does found any part of their classification on the testimony of these structures alone, by answering that though they generally appear to be unconscious of doing so in *theory*, yet some of the ablest exponents of the system certainly do so in *practice*, even if they call in other considerations afterwards in support of their results. If

anyone should feel disposed to question this statement, the proofs are to be found in almost all writings on the subject; as an instance—let us hope an extreme instance—I would mention my friend Dr. Chapman's notice in the Ent. Record of the current year, p. 71, where the *Meliteas* that I brought from Reazzino, and believe to be *britomartis*, Assmann, are definitely pronounced to be *dictynna* on this character alone, and in total disregard of the many differences which I have already enumerated. To this, however, it will be necessary to recur.

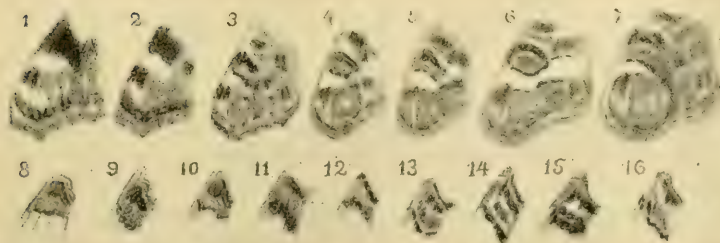
It seems also necessary to remark that this means of distinction, in common with all others, is of far greater value in some groups than in others. In a group, for instance, where there is close resemblance between the members with regard to the appendages, a slighter difference will be of importance than in a group where the divergences are generally considerable, and in the same way these characters are of much greater value for specific distinction where little or no variation occurs in the undoubted specimens of a single species, than in a case where their characteristics are by no means so constant.

(To be continued.)

VARIATION OF *A. LEVANA*, L.: COMPARATIVE DESCRIPTION AND POSSIBLE SIGNIFICANCE OF THE WING MARKINGS IN *LEVANA*.

BY T. REUSS.

(Continued from p. 141.)

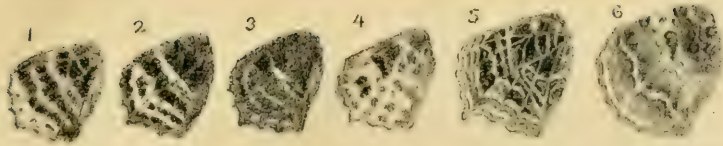


THE above figures give a comparative view of some of the facial details in the different species to which I have referred. Fig. 1 is a form of *V. io* ab. *fischeri*, and discloses the normal *io*-form shape of the third (apical) costal blotch. A similar development of the marking is shown in the aberration of *V. urticae*,

fig. 2, which was bred by heat, and in *A. levana*, fig. 3. The latter is an apparently very primitively marked female specimen from the Ussuri regions in Eastern Siberia (for hind wing, see fig. 4 in the next row of figures), and not only exhibits the second costal blotch divided into three parts (counting the light median part, which is of the original ground colour, as in the fritillaries—(fig. 11 is drawn from *B. euphrosyne* ab. ; see pl. 56, fig. 1, in Mr. South's 'Butterflies of the British Isles')—but also the black inner marginal spot is broken up into three parts. That the second costal blotches of *V. io* and *V. urticae* originally consisted of three such parts, as are shown in the upper side of *A. levana*, is betrayed by the corresponding parts in the under sides of these species: fig. 8 (*V. io*), and figs. 9, 10 (*V. urticae*). All other "tortoiseshell" forms of the Vanessidæ have similar under side markings. In the Pyrameid groups the same parts are responsible for the beautiful differently shaped metallic-blue markings in the *atalanta*-form species—*itea-gonerilla* (with conspicuous blue rings), *indica-tammeamea*, *dejeani-atalanta*. In these species the blue colour demarcates the median part belonging to the second costal blotch. In the Araschnids, and in the *cardui*-form Pyrameids, these demarcations show a yellowish or greyish colour, and are therefore comparatively inconspicuous. They are all, however, easy to compare when drawn in "black and white." Fig. 12 shows these markings in the under side of *P. carye*, fig. 13 is drawn from *P. myrinna*, fig. 16 from *P. cardui*, fig. 14 from *P. atalanta*, and fig. 15 from *P. indica*. The beautiful blue ring in *itea-gonerilla* arises in the same way as the nearly ring-shaped (yellow) demarcation in the second costal blotch of *A. bureyana*, fig. 6 (under side). The—especially characteristic—markings in the basal and apical parts in the fore wing under sides of *Hypanartia** (closely allied to *Pyrameis*) *delius* (from Sierra Leone), *H. schoneia* (Natal), correspond especially well with the markings in the same wing parts in *A. levana*. The figures 4, 5, 7 represent under side markings of *A. levana* and *A. bureyana* var. *thibetana* ♀ (fig. 7),† which latter is the "under side *io*" of the Araschnids (compare fig. 1); fig. 4 is taken from a female *levana* from Berlin, fig. 5 from a male *levana* from the Sayan Mountains (Irkutsk), which latter local form shows an increase in size. While exhibiting further variation of the median part in the second costal blotch, these specimens also show how the shape of this costal marking is altered as a whole—(1) when the apex becomes ocelliform (figs. 1, 7), or (2) when the wing is fasciated (fig. 6). Figs. 4 and 5 exhibit intermediate markings.

* The only wholly African species of *Pyrameis*—*P. abyssinica*—is interesting for resembling the African species of *Hypanartia* in its upper side.

† The facial differences between *bureyana* and var. *thibetana* are so great that one suspects them to be different species.



Of the six hind wings shown above, figs. 1, 2, 3 are drawn from the upper sides of *levana* aberrations. Fig. 1 was bred by low temperature (breeder unknown to me) in Köslin, on the Baltic. *The marginal band is atalanta-form, the colours are exceptionally rich, the markings in the fore wings resemble those of levana, but the very dark brown under side is without the violet colour-splashes of levana.* Fig. 2, ab. *porima*, from Eichstädt, north of Ingalstadt, on the Danube, almost exactly copies the markings of *A. bureyana*. As a whole, the specimen has just the appearance of a "cross" between *levana* and *prorsa*; all the markings and colours of the two varieties are combined in the facies. Fig. 3 dates from Augsburg-on-the-Lech, south of the Danube. *There are blue spots in the margin of the wing. The vestiges of the fascia are creamy-white, the median lines marking the position of the levana spots are orange, the fore wings show markings like prorsa, but the colour of the central band is orange, though the costal blotch is creamy-white. The under side is that of prorsa.* Fig. 4 shows a specimen of *A. levana* from the Ussuri regions, north of Vladivostok (the fore wing is shown in the preceding set of figures). The large isolated costal blotch (composed of three parts) reminds one of the markings in *V. io* and in aberrations of *V. urticae*, of which latter I have bred several specimens in which the discal cell is orange-coloured. Similar markings are found in other "tortoiseshell" forms of *Vanessidæ*. The transversal row of black markings usually adjoining the costal blotch in *levana* is nearly obsolete in fig. 4, but the second row of spots is strongly developed, and when one remembers that some of these spots are often blue-centred in *levana*, the two spots in the outer angle cannot fail to suggest that the ocellus of *V. io* may have developed from similar markings. The under side of normal *V. io* exhibits details which support this inference in every way. In fig. 4 the third row of spots (lunules) is powdered with blue, but already the spots are shaped like the corresponding markings in the under side of *V. io*. In the hind wing of the aberration of *V. io* (figured in *antea*, vol. xlii. p. 223), the three (five) separate spots correspond in position with the median row of spots in *levana*, and need not, therefore, be referred to the third row of spots (the lunules of *urticae*). This *V. io* ab. is moreover remarkable for possessing a complete corresponding row of median spots in the under side,

while in normal *V. io* only the large spots in the outer angle, two shown also in *A. lerana*, fig. 4, are plainly marked in the under side. The "tortoiseshell" Vanessids develop the whole chain of spots also—sometimes both in the upper and under side—but the spots are only rudimentary, their real centres being visible mostly only in *Grapta*-species. In the Pyrameids two of these spots—in each wing part one—are usually far advanced by development. The Araschnids develop these markings much as they are found in the *atalanta*-form Pyrameids. All the Araschnids mentioned hitherto were fasciated at least in their under sides, but fig. 8 shows the normal facies of *A. davidis* (male), in which the central fascia is masked, and it may be of interest to note the markings by which the process of masking up is accomplished.

Fig. 6 (drawn three-quarter size) represents an aberration of *P. atalanta* (reared on September 22nd, 1908), which shows one of the most characteristic Araschnid markings—a light line bordering the median ocelli. The Araschnid fascia is also traceable, and its upper part can be seen to have wandered towards the base of the wing; *P. indica* and the *cardui*-form species (also species of *Hypanartia*) show transitory stages of this movement. If the under side hind wings of *V. io* and of the "tortoiseshell" Vanessids are compared, it will be found that also in these the Araschnid fascia is plainly traceable, and that it occupies exactly the same position in every wing as shown in the aberration of *P. atalanta*, fig. 6. In normal *P. atalanta* the fascia is found in the same position, but it is not so plainly marked by lighter colours as in fig. 6.

(To be continued.)

A NEW SPECIES OF *TRACHYPUS* FROM ERYTHRINA, RED SEA.

By P. CAMERON.

Trachypus curvimaculatus, sp. n.

Black, shining, a transverse broad line on the top of the face, the sides obliquely narrowed below, the incision forming a curve, the central lower part rounded; the part below the antennæ, except for a longish triangular black spot below each antennæ, the spot continued below along the suture and ending in a rounded spot which is dilated outwardly; laterally the mark is continued to the middle of the eyes, the upper half being obliquely narrowed, and the mandibles broadly at the base, pale yellow. The following markings are bright orange yellow: a large transverse spot, broadly rounded above, the apex transverse in the middle, the sides (this part wider than the central) roundly obliquely narrowed, a curved line behind the ocelli reaching

close to the eyes, an oblique line in the centre of the upper half of the outer orbits, obliquely narrowed below, the raised apical part of the pronotum, tegulæ, scutellums, a spot on the sides of the centre of the metanotum, rounded above, dilated outwardly and gradually narrowed, tubercles, a curved spot behind them, narrowed to a fine oblique point above, dilated in the centre at the base, a large semi-circular spot on the middle of the apex of first abdominal segment, the second almost entirely, the yellow rounded at the base, the apex with a slight incision, the apical three-fourths of the fourth segment, its apex incised broadly, but not deeply in the centre, the fifth with a four lobate line, the fifth and sixth entirely, the apical half of the second segment, the base trilobate, the central lobe the larger, a mark, with the inner side roundly obliquely narrowed on the sides of the fourth and fifth segments and with a transverse line on the base between them, and a narrow oblique line on the sides of the apical legs of a brighter sulphur yellow colour, the hind coxæ broadly black at the base, the fore femora narrowly black at the base above, the middle at the base all round and the hind femora, black. Wings hyaline, the stigma and nervures black. Basal three joints of the antennæ sulphur yellow, the third black at the apex above, the fourth yellow, black above, the rest brown, black on top. ♀. Length 9 mm.

Erythria, Red Sea.

Front and vertex punctured, closely, finely obliquely striated at the ocelli, the striæ commencing at the outer ones. Face finely punctured. Mesonotum and scutellum shining, sparsely, distinctly punctured in rows. Metanotum in the centre at the base finely, closely transversely striated, ending in a depression with its apex acutely pointed. Upper third of mesopleuræ raised, smooth, bordered below by an oblique furrow, the rest closely coarsely punctured. Metapleuræ closely, obliquely striated, first abdominal segment semisessile, broadly rounded above, wider than it is long at the apex, a little longer than the second.

Allied to *T. nursei*, Bingham.

JOTTINGS ON THE BRITISH ICHNEUMONIDÆ IN THE NATIONAL COLLECTION.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

WHILE engaged in the rearrangement of the National Collection in the British Museum last winter, I noted various points bearing upon the British List that may be of interest in resolving some of the enigmas which always surround a partially studied group of insects. In my Preface to the first volume of 'Ichneumonologia Britannica,' I was careful to present that work in the form of a basis, not a termination, of investigation into the subject. Since then I have studiously

refrained from publishing anything, unless of moment, respecting our Ichneumonidæ for fear of confusing the many acolytes who were beginning the study, since I had myself suffered from surfeit of scattered information. Only five papers having reference to the three published volumes of my book have appeared since 1903.* Perhaps, however, it were better to present the following notes at once, rather than store them up, *perdu*, till such problematical time as a supplementary volume might appear. As a whole the National Collection, though sufficiently full in the commoner kinds, is distinctly lacking in interest through the specimens emanating, for the very great majority, from Stephens's and Desvignes's collections, neither of which bore locality labels; Fred. Bond, many years ago, presented his collection, duly ticketed with biologic details, which were deplorably destroyed; there is a small amalgamated collection from Dr. Heysham of Carlisle, together with that of Rev. T. A. Marshall, and a good many odd and localised specimens from various sources; the latest addition is from Mr. C. G. Champion, who presented his small collection last January. As a whole, however, it had not been touched since 1856, and contributions are still badly needed, especially in the smaller species of Cryptinæ, which group, as will be seen, presented little of note.

ICHNEUMONINÆ.

Cælichneumon.—There is no representative of *C. Bohemani*, and Stephens's mention of it must refer to something else. There are several *C. sugillatorius* from Heysham's, Desvignes's, and a female ex Stephens's collections.

Hoplismenus uniguttatus.—This has no doubt stood in our fauna on the strength of a single *Platylabus decipiens*, Wesm., which had long done duty for it, having been erroneously so named by Desvignes (Cat. 1856, p. 50). The former must be deleted.

Stenichneumon.—Several species of this genus are most unsatisfactorily established as British, but a pair of the four *S. castaneus* appear correct: at least, it is a species which I do not possess (till Mr. Champion kindly gave it me) myself, and which agrees very well with the descriptions of that insect;

* (1) "On *Barichneumon heracleana*, Bridg., with a Description of the Male," E. M. M. 1904, p. 37. (2) "*Ichneumon inquinatorius*, Wesm. and *Amblyteles microcephalus*, Steph." *lib. cit.* p. 239. (3) "*Theronia atalantæ*, Poda, as British," Entom. 1909, p. 65. (4) Mr. Collins's "Note on the supposed Larva of *Pimpla oculatoria*, F., figured in Morley's British Ichneumons, vol. iii, 1908, and its Location." (5) "The Antipodean Genus *Proboloides*, Morl." *lib. cit.* p. 119. My paper "On the Ichneumonidæ of the Banksian Collection in the British Museum," Entom. 1909, pp. 131-137; and my "Observations on the Economy of the *Ichneumon manifestator*, Marshall (*nec* Linn.)." Journ. Linn. Soc. 1909, pp. 271-274, may also be consulted.

but the other two specimens belong to distinct species under the genus *Ichneumon*, s.s. *S. defraudator* is probably included on the strength of *I. sedulus* of Desv. Cat., but all its exponents belong to *Barichneumon*. Of *S. apricus* there is no trace, though introduced by Stephens in his illustrations of 1835. There are nice series of both *S. culpator* and *S. pistorius*, which must be, or have been, much commoner elsewhere than is now the case in the east and south of England; a fine male of the latter, taken by Fred. Smith in N. Devon, is suggestive.

Ichneumon ruficeps, Steph. = *Melanichneumon sanguinator*, Rossi.

Ichneumon pallidatorius, Steph. = *Cratichneumon coruscator*, Linn., male.

Cælichneumon albicillus, Grav.—There is a male *Cratichneumon fabricator*, F., ex coll. Steph., bearing a printed label "*Albicillus*, Grav.", which probably constituted the species brought forward by Stephens, and, as no one has found the Simon Pure since the latter's record, it should be regarded as doubtfully indigenous.

Ichneumon albimanus, Steph. vii. 133 = *Cratichneumon fabricator*, F., male.

This is not the place to go into the distinctions between *Cratichneumon nigrarius* and *C. albilarvatus*, which appear little more than colorational; if they be distinct, my details of capture, &c., in Ichn. Brit. i, must be referred to the latter and not the former.

Ichneumon Walkeri.—The single male in the collection is labelled "*Ich. Walkeri*" in Francis Walker's writing; this is not the type, but the supposititious alternate sex as described by me. The type is a female, of which Wesmael simply says (Bull. Ac. Brux. 1848, p. 184): "Specimen unicum ab oculatissimo entomologo Do Walker ex Londino accepi." I am glad to learn from Dr. H. Schonteden that the type is still extant in Wesmael's collection in the Musée Royale d'Histoire Naturelle de Belgique.

Ichneumon raptorius, Steph.—The author's "type" is a large female *I. gracilicornis*; and his *I. quadrinotatus* is, as I have pointed out, referable to the same species.

Ichneumon quadrialbatus.—The five males that were doing duty here are all referable to *Melanichneumon nudicoxa*, Thoms. (= *albognatus*, Steph., nec Grav.).

Ichneumon maculiventris, Desv.—A re-examination of Desvignes's typical and unique female proves, without possibility of error, that it is synonymous with *Hepiopelmus leucostigmus*, Grav., var. *melanogaster*, and not (as ignorantly stated by me, E. M. M. 1902, p. 122 et Ichn. Brit. i. 170) with *Ctenichneumon cæruleator*, Zett, which must consequently be deleted.

Ctenichneumon plicatus, Morl. = *Spilichneumon occisorius*, Fab., var. *nigrinus*, Berth. Ann. Soc. Fr. 1895, p. 646. Professor

Brauns has called my attention to this fact by determining a male taken by the late Mr. C. J. Watkins of Painswick, Glos., under the latter name. The two forms look very different superficially, hence my error.

Acolobus.—There is no representative of this genus in the Collection; the specimens recorded under this name by Stephens consequently belong elsewhere: [*cf. I. albimanus*, supra].

GENUS AND SPECIES DOUBTFULLY NEW TO BRITAIN.—I discovered a single specimen of *Ctenochares* (*Joppites*) *instructor*, Fab., female, among the "Reputed British Species" in Stephens's cabinet. Berthoumieu records it under the name *J. xanthomelas*, Brullé (Ann. Soc. Fr. 1894, p. 511), from Greece, Italy, Southern France, Spain, and Algeria; Dalla Torre says it also occurs throughout nearly the whole of Africa; and there is a capital figure of it by Guérin Menneville in Théophile Lefebvre's "Voyage en Abyssinie," Paris, 1848, pl. vii, fig. 1, under the name *Ichneumon dimidiatum*. In the General Collection in Brit. Mus. are five other specimens thus:—Male from the Cape of Good Hope, ex coll. F. Smith; female from Sicilia, ex coll. F. Smith; two males from Spain, ex coll. Cameron; and a female "*Joppa apicalis*, Brullé: Zante (Greece), May, 1889: Dr. O. Schmiedeknecht," who, however, is certainly in error in placing it in the Listrodromini; I consider it should be placed in the Platyurini, near *Platylabus*. No suggestion of an indigenous origin has before been brought forward for this species, nor is such likely to be the case.

A NEW BRITISH SPECIES.—Under *Ichneumon*, Desv. Cat. No. 46 (*pallidatorius*), I found a female *Platylabus* mixed: a black species with white-cinctured hind tibiæ, leaving no doubt respecting its identity with *P. histrio*, Wesm. (Bull. Ac. Brux. 1855, p. 412 = *P. variipedalis*, Wesm. l. c. 1857, p. 408). It is known to occur in Prussia, Bavaria, Belgium and Hungary, to which must now be added Britain, since I never have reason to doubt the native origin of Desvignes's insects, whence came this individual. I find I possess three others, taken by Mr. E. C. Bedwell at Boxhill on September 17, 1905, by Dr. Capron about Shere some twenty years ago, and by the late Mr. J. A. Clark, from whose collection I have but just acquired it.

Phæogenes stipator, Wesm.—The two males of *Ichneumon Cambrensis*, Desv., in his collection, are not the types of his species, as I had very naturally supposed to be the case (E. M. M. 1902, p. 123 et *Ichn. Brit.* i. 249). These are on gilt pins; but the types, also two males, were returned by Desvignes to Marshall, and are carded in the latter's collection, which I have merged with the other Britishers.

Notosemus (*Ischnidium*) *albibuccus*, Kriech.—This may now be

definitely enrolled as British, since I find the specimen lightly mentioned by me (Ichn. Brit. i, Addenda, 293) to be in Marshall's collection, where it is labelled as captured by him at Bishops Teignton in Devon. It is probably the same as referred to by Thomson (Opusc. Ent. xv. 1627):—"Jag har endast sett en hanne af *N. albibucca* (Kriechb.), hvilken öfverensstämmer med ett exemplar från England utom deri att den sednare har bröstets undersida blek."

Ichneumon erythrocerus, Grav., may certainly be synonymous with *Oiorhinus pallidipalpis*, Wesm., as I indicated (*l. c.*) upon Marshall's authority; but his exponents are all *Phæogenes fulvitaris*!

PHEOGENES EQUUS, Wesm.—The male, hitherto undescribed, may be characterised:—

Head normal and not strongly dilated posteriorily; face not strongly, but closely and distinctly, punctate; cheeks neither sinuate nor produced; frons closely, distinctly and somewhat deeply punctate; clypeus distinctly sinuate on either side; mandibles except apically, and the facial orbits very broadly stramineous. Antennæ nearly as long as body, fulvescent with the scape apically stramineous beneath. Thorax with the pronotum, small pre- and sub-radical lines, and the apical half of scutellum transversely stramineous; metathoracic areæ complete with the areola subcircular-hexagonal, but slightly longer than broad, and emitting costulæ before its centre. Abdomen badius with the distinct thyridii, and apices of the following segments paler; postpetiole subglabrous and laterally elevated, Legs fulvous with the anterior coxæ and trochanters entirely, and the hind ones apically, white; hind legs otherwise unicolorous infusate ferrugineous. Wings normal with the tegulæ white, stigma fulvous and nervellus intercepted. Length, $6\frac{1}{2}$ mm.

I brought the above species forward as British in 1903 on the strength of an indigenous female. The above diagnosis is drawn from a single male in the National Collection from that of Desvignes's, who had named it doubtfully as a variety of *Ichneumon albinotatus*, Grav. (*Barichneumon derogator*, Wesm.?). Its association with the female is arbitrary.

Apæleticus bellicosus, Wesm.—The unique British female from Desvignes's collection is correctly named by Fred. Smith; and there is a male of *A. inclytus*, Wesm., from the same collection.

Ichneumon rufator, Steph.—I cannot yet place this male, which I again examined and confirmed as belonging to the Phæogenini.

Cælichneumon impressor, Zett.—The malformed specimen with the right areolet wanting (referred to by Bridg.-Fitch, Entom. 1880, p. 297; cf. Ichn. Brit. i. 37) has nothing to do with this species, which is a misnomer. It is certainly a *Cratichneumon*, and can be nothing but an extraordinary freak

of *C. coruscator*, Linn., male, though the metathorax is curiously convex.

Ichneumon memorator, Wesm., 1844.—The female which led Marshall to a knowledge of this species as British (*cf.* Ichn. Brit. i. Addenda 292) is in his collection, and was captured by him at Govilon, a village on the River Usk, near Abergavenny. It is entirely typical, except that the third segment is broadly black on the disc, and is new to Britain.

Platylabus volubilis, Grav.—There are three males in the Collection: one from Stephens's, one from Desvignes's, and one from the Linnean Society's collections. The last was named *Cryptus volubilis* by Gravenhorst himself, and there can be no doubt that it is correctly assigned to the genus *Platylabus*. The metathoracic spiracles, however, are distinctly elongate, and the red abdomen combined with large gastrocæli, punctate frons, elliptic spiracles, and pale marked anus, leave little doubt that it is synonymous with *P. orbitalis*, Grav. The differentiation of authors rests on the supposititious shape of the metathoracic spiracles, which were erroneously stated to be circular by Bridg.-Fitch. (*Entom.* 1881, p. 208). *P. volubilis* must, I think, sink as a mere synonym of *P. orbitalis*.

CRYPTINÆ.

Ichneumon canaliculatus, Desv. Cat. No. 22.—Three males standing under this name are certainly *Plectocryptus leucopsis*, Grav. *et* Morl. (Ichn. Brit. ii. 8): possibly Gravenhorst's earlier name should stand for this species, since the present males exhibit, though typically Cryptid, distinct carinæ on the second segment.

Cratocryptus (Phygadeuon) tarsatus, Bridg. Trans. Ent. Soc. 1881, p. 150 = *Plectocryptus pectoralis*, Thoms. Opusc. Ent. xxi. (1896), 2383, male and female, and should be relegated to the latter genus (*cf.* Ichn. Brit. ii. 17). It is very closely allied to *P. digitatus*, Gmel.; and the types of both sexes are in the National Collection.

Phygadeuon ambiguus.—The two male Cryptids thus named by Desvignes, upon the strength of which he brought forward this Gravenhorstian species as British, are *de facto* referable to nothing rarer than *Microcryptus abdominator*. I can at present say nothing more respecting Bignell's example (*cf.* Ichn. Brit. ii. 93); but, if retained, *P. ambiguus* must be regarded as extremely doubtfully indigenous.

Phygadeuon curvus, Steph. Illus. Man. vii. 299, is nothing but the male of his *P. (Acanthocryptus) 4-spinus* (*l. c.* 298), and quite distinct from *Ichneumon curvus*, Schr.; a co-specific specimen in his collection bears the MS. name "*P. 4-dentatus*."

Hemiteles melanopygus, Grav.—No doubt can remain that Marshall's inclusion of this species in his 1872 Catalogue rests

entirely on the single female Cryptid in the National Collection, from that of Desvignes; I have no previous knowledge of this species, but the example in question agrees admirably with the short description of authors (Ichn. Brit. ii. 170).

Pezomachus rotundiventris, Fst.—This female has, I believe, not been mentioned in literature since first described from a German specimen in the Wieg. Archiv. 1850, p. 129; it has hitherto been unknown with us, and is certainly not in my own collection. One female was detected by Mr. Ernest A. Elliott among Rev. T. A. Marshall's insects, incorrectly named by the latter *P. pumilus*. The species is, comparatively, very distinct, and came from Deal.

Mesostenus transfuga.—This species (finally instated as British at E. M. M. 1907, p. 273) is represented by four females, none of which I had seen when writing my notes (*l.c.*). Two are from Marshall's collection, and were taken at Milford Haven about 1870; one is from the collection of Desvignes, who labelled it "*Phygadeuon nov. sp.*"; and the last was named for the Linnean Society by Gravenhorst himself, and may consequently be considered a subtype. With these was mixed a small female *Pyncocryptus peregrinator*, Linn., labelled "*transfuga*" by Stephens, showing it to be the type of that species in his collection. In Marshall's own collection I found a single pair, evidently taken at the same time and place as his two females above, and agreeing with them *ad amussim*, but labelled "*albinotatus*"! Here is the solution of the introduction of *M. albinotatus* as British: *M. transfuga* was mistaken for it by Marshall; and it must be omitted from our fauna.

Mesostenus maurus, Marsh. E. M. M. ix. p. 241.—Marshall did not examine the five females in the British Collection (from Dr. Heysham's, and taken, presumably, in the neighbourhood of Carlisle), but simply added a name to Fred. Smith's meagre description. It was the latter, doubtless, who erroneously referred them to *Mesostenus*, as I pointed out in 1903 (Ichn. Brit. i. 220), though the position I there tentatively assigned the species is also incorrect—since I had not then time to examine the hypopygium, which does not extend to the terebral base. Consequently, this species must be referred to *Hoplismenus* (which had already been done in MS. in the Collection by Buchecker), wherein it can be but the unknown female of *H. cornix*, Kriech., among the known species. The latter was bred in Austria by Dorfmeister from *Pararge mæra* (*cf.* Ann. Nat. Hofmus. Wien. 1890, p. 481 *et* Berth. Ann. Soc. Fr. 1894, p. 514, male). Unfortunately we know nothing of the origin of these Heysham specimens; but I possess a female myself from the collection of Alfred Beaumont, which he took at Courten, in Ireland, on September 1, 1893, and I have seen others or another in Bignell's, from South Devon. It is, of course, not an addition

to our fauna, except in so far that its position has not previously been decided.

Relegating species to their correct location is no simple task in the Ichneumonidæ. *Microplites splendidulus* is treated as an Ichneumonid by Bridg.-Fitch; Stephens's figure of it looks like an *Atractodes* (Cryptid); Berthoumieu tells us it is a Tryphonid, and the two specimens standing under this name in Desvignes's collection certainly belong to the *Exochini*. *Mesoleptus Mulleri* (White) Butler, Voy. Erebus, 1874, p. 27, pl. vii, fig. 2, is a *Lissonota*, as I am enabled to say from an examination of the typical single male and female in the General Collection.

PIMPLINÆ.

Rhyssa leucographa.—The specimens in the British Collection from that of Desvignes, which I have mentioned (Ichn. Brit. iii. 29) as our only possible representatives of this species, have the clypeus produced and the central segments not apically emarginate; they are nothing but somewhat small *R. persuasoria*, and the former must, consequently, be expunged from our indigenous fauna.

Xorides albitarsus must also be deleted from the British List: the only representative being a female *Crypturus (Endurus) argiolus*, Grav., which is not yet recorded elsewhere as British, and probably crept in by accident, since it bears no resemblance to any *Xorides*, nor hint of its origin, beyond the simple number "23" (of lost meaning) on the pin. It is a native of Southern Europe, said by Giraud to attack *Polistes diadema*, and is very unlikely to extend so far north as Britain.

The above shows the species to be added and omitted to our indigenous fauna to be as follows:—

DELECTI.

Platylabus histrio, Wesm.
Hoplismenus maurus, Marsh.
 =? *H. cornix*, Kriech.
Ichneumon memorator, Wesm.
 [*Phæogenes eques*, Wesm., male.]
Notosemus albibuccus, Kriech.
Pezomachus rotundiventris, Fst.

DELETI.

Platylabus volubilis, Grav.
Hoplismenus uniguttatus, Grav.
Ctenichneumon cæruleator, Zett.
Ctenichneumon plicatus, Morl.
Mesostenus albinotatus, Grav.
Rhyssa leucographa, Grav.
Xorides albitarsus, Grav.

March 10th, 1910.

ON NEW SPECIES OF *BETHYLINÆ* FROM BORNEO.

By P. CAMERON.

Epyris kuchingensis, sp. n.

Black; the flagellum, clypeus, mandibles, palpi, the tarsi, anterior tibiæ, the apex of the others and the tegulæ, rufo-testaceous; wings hyaline, tinged with fulvous at the base, the nervures rufo-testaceous.

Metanotum closely, somewhat strongly transversely striated; the central keel straight, the lateral with the basal half roundly dilated outwardly, the sides dilated at the apex into a blunt tooth, below which is a rounded incision. Metapleuræ, except at the top, closely longitudinally striated; the base and lower part of the mesopleuræ bordered by a keel, inside of which is a distinct furrow. ♀. Length 4 mm.

Shining; the head weakly but distinctly punctured, the punctures clearly separated. Ocelli in pits, forming a triangle; the pubescence is moderately thick. Pro- and mesothorax covered sparsely with pale pubescence. Parapsidal furrows curving towards each other at the apex. Scutellar foveæ deep, oblique, oval. The sides of the metanotum are bordered by a keel, inside of which is another, the two uniting at the base; the space between them, except at the base, is striated; there is a large depression at the base of these two keels.

Goniozus borneanus, sp. n.

Black; the antennæ yellowish-testaceous, the tibiæ and tarsi of a more reddish testaceous colour; the wings hyaline, clearer behind the stigma than beyond it, the nervures pale testaceous, the stigma and parastigma dark fuscous, the former pale at the base, the apical margin ciliated. ♀. Length 2 mm.

Kuching, Borneo (John Hewitt).

Scape thickened, narrowed at the base, as long as the following two joints united; the latter are longer than wide, thinner and longer than the others, which are wider than long, the last conical, longer than the preceding. Head distinctly longer than wide, bearing scattered shallow punctures above, the temples smooth and shining; the part below the antennæ is bluntly triangularly produced, that above them indistinctly keeled. Temples obliquely narrowed, the occiput transverse; the hinder ocelli are placed close to the edge of the latter, behind the eyes, from which they are separated by about the same distance as they are from each other. Pronotum wider than long, longer than the mesonotum. The top of the thorax is smooth, shining; the apex of the propleuræ finely striated; the mesopleuræ shagreened; the metapleuræ finely, distinctly, closely longitudinally punctured. Sternum thickly covered with white pubescence. Abdomen as long as the thorax, smooth and shining, sharply pointed at the apex; the basal three segments of almost equal length, longer than the fourth.

There are no keels on the centre of the metanotum; the sides of the apical slope are keeled; it has a straight, oblique slope; the top part of the metanotum is shorter than the mesonotum and scutellum united. The transverse discoidal nervure leaves the basal shortly above the middle of the latter, and is as long as the upper part of the latter. Eyes large, placed on the middle of the head. There are no parapsidal furrows; the scutellum large, wider than long, almost as long as the mesonotum.

Isobrachium kuchingense, sp. n.

Black; the basal three or four basal joints of the flagellum, tegulæ, and the legs, except the coxæ and the greater part of the femora,

testaceous, the head, thorax and legs sparsely covered with fuscous pubescence; wings hyaline, iridescent, slightly but distinctly tinged with fuscous, the stigma and nervures black. ♂. Length 3·5 mm.

Kuching, Borneo (John Hewitt, B.A.).

Head and pronotum covered with shallow, clearly separated punctures, the latter more sparsely and weakly than the former and having a distinct row of transverse punctures across the apex. Basal half of mesonotum smooth and shining, the apical irregularly, rather strongly aciculated; there are no parapsidal furrows. Scutellum smooth, its basal furrow wide, deep. Middle of metanotum irregularly transversely striated; there is in the centre a straight keel extending to the apex; there is a shorter one on either side of it, about three-fourths of its length; outside these, one which roundly converges towards the apex, and which reaches to the apical transverse keel; the outer part of the metanotum is irregular, striated to near the apex, which is entirely striated and with a stout keel down the middle. Propleuræ aciculated. On the lower basal half of the mesopleuræ is a curved furrow, its straight lower branch divided by keels; beyond this is a rounded, curved, crenulated furrow, extending from near the tegulæ to the lower part of the apex; beyond this, on the upper half, is a shorter, wider, deeper oblique furrow, without striæ. The mesopleuræ are weakly reticulated, the vertical striæ stronger than the longitudinal. The antennæ are stout, shortly densely pilose.

SOME NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

By A. E. WILEMAN, F.E.S.

(Continued from p. 139.)

Chionæma subalba, sp. n.

♂. Head and thorax white, the latter with three reddish bands, the posterior one short; abdomen whitish, tinged with reddish before the white anal segment. Fore wings white with four reddish bands; the subbasal not extending to inner margin; the antemedial nearly straight, but slightly turned inwards on the costa; the postmedial outwardly curved below the cell; the submarginal curved and almost parallel with the outer margin. The costal tuft with a black spot at its outer edge, and two black spots below it, the outer one linear. Hind wings white suffused with pale reddish except on the costal area; a faint fuscous lunule at end of the cell. Fringes white. Under side white, the costa of fore wings streaked with reddish from the base to the sexual mark; the reddish bands show but faintly; the lunule at end of cell of the hind wings is more distinct than on the upper side.

♀. Similar but with three black spots; the bands are rather

narrower, and the antemedial has a slight inward angle above the middle.

Expanse, ♂ 42 millim., ♀ 52 millim.

Collection number, 1788.

Two male specimens and one female from Rantaizan (7500 ft.), May, 1909.

Chionæma propinqua, sp. n.

♂. Head and thorax white, the latter spotted with reddish; abdomen whitish, mixed with reddish hairs on the anal segment. Fore wings white with three reddish bands, and a narrow border on outer margin; sexual mark of moderate size with three black spots below it; the first of the bands is broadly angled below the costa, the second is inwardly angled below the middle, and the third is outwardly angled above the middle. Hind wings reddish. Under side reddish, the fore wings with a whitish streak along the inner margin, and a blackish patch in the cell. Fringes of all the wings whitish, those of the hind wings tinged with yellow on both surfaces.

♀. Except that the postmedial band of the fore wings is rather wavy, this sex agrees with the male in colour and markings.

Expanse, ♂ 32 millim., ♀ 40 millim.

Collection number, 760.

A female specimen, May 15th, 1906, and a male, August 2nd, 1906; both from Kanshirei (1000 ft.).

Somewhat similar to *C. interrogationis*, POUJADE, but easily recognized by the characters indicated.

Chionæma quadripartita, sp. n.

♂. Head and thorax white; collar, two bars across thorax, and tips of the patagia crimson; abdomen whitish. Fore wings white with three slightly oblique, almost parallel, crimson bands, the antemedial rather nearer the basal than to the postmedial; three black spots; outer margin bordered with crimson. Hind wings reddish, inclining to whitish towards the base; fringes yellow tinged. Under side reddish, inner margin of fore wings and fringes of all the wings whitish.

♀. Agrees with the male, except that there are only two black spots on the fore wings, and the inner edge of the antemedial band is marked with black.

Expanse, ♂ 34 millim., ♀ 40 millim.

Collection number, 759.

A female specimen, May 1st, 1907, and a male, August 21st, 1908; both from Kanshirei (1000 ft.).

This species is rather like *C. flavicincta*, Hampson, but the male sexual mark is different.

Chionæma pusilla, sp. n.

♂. Whitish, thinly scaled, with reddish markings. Fore wings have four transverse lines, the first not extending to the inner margin; a submarginal line represented by three spots; a narrow and interrupted marginal line; a spot in the cell and two spots at end of

the cell; the sexual mark is well developed both above and below. Hind wings have a small dusky spot at end of the cell.

♀. In this sex the markings are paler.

Expanse, ♂ 18 millim., ♀ 22 millim.

Collection number, 758.

One male specimen, April 22nd, 1906, and a female, May 2nd, 1907; both from Kanshirei.

Very close to *C. effracta*, Walk., of which species *C. pusilla* may prove to be a small local form.

Ilema pulverea, sp. n.

♂. Head, thorax, and fore wings fuliginous, dusted with pale grey; hind wings and abdomen pale fuscous grey. Under side as above, but the fore wings are not dusted with grey.

Expanse, 40 millim.

Collection number, 1791.

One male specimen from Rantaizan (7500 ft.), May, 1909.

This species comes near to *I. moorei*, Leech, from Central and Western China.

Chrysorabdia taiwana, sp. n.

♂. Head and thorax pale yellowish buff, the latter with a large blue-black spot on the back; abdomen yellowish buff. Fore wings pale yellowish buff, the costa edged with blue-black, narrowly on basal two-thirds and rather broadly on apical third; a broad blue-black streak above the inner margin, the inner end pointed and upturned, but not extended to the base of the wing, the outer end rounded before the hind margin. Hind wings pale yellowish buff. Under side similar to the upper side, but the markings on fore wings are without blue tint.

♀. Differs from the male in the patagia being blue-black; the costa of the fore wings is broadly blue-black, and the streak above the inner margin is longer.

Expanse, ♂ 44 millim., ♀ 54 millim.

Collection number, 750.

One male specimen from Arizan (7300 ft.), August 20th, 1908, and a female from Rantaizan (7500 ft.), May 9th, 1909.

In colour and markings of the fore wings the female of this species is very like the same sex of *C. viridata*, Walk.

Campylotes maculosa, sp. n.

♀. Head and thorax black; abdomen black above, greyish banded with black beneath. Fore wings black, the veins bluish; a whitish streak on the inner margin from the base to beyond the middle, and two whitish streaks in the interspaces above; a short red streak from base under the costa, this is crossed by the black subbasal line; in the cell are two streaks divided transversely by an undulated black line; the inner portion of the upper of these streaks is red, and that of the lower marked with red, the outer portions of both are white, and there is an elongate white spot above; a postmedial curved

series of four white spots and eight others (four dot-like) beyond. Hind wings white; veins, submarginal line, and margins black; the upper part of the cell and the outer extremity of the lower part, also the internervular spaces within the submarginal line, from vein two to costa, red. Under side similar to the upper.

Expanse, 49 millim.

Collection number, 1214.

One female specimen from Suizan (8000 ft.), August 8th, 1908.

Heterusia formosana, sp. n.

♂. Fore wings dark green, with three large creamy-white spots (two in the cell and one below), and an irregular series of nine similar coloured marks before the outer margin; the latter marks are small in size, two, three, and eight are linear, the others round. Hind wings pale yellowish, black at extreme base; outer border blue, broad on costa, tapered towards anal angle, enclosing three creamy-white spots (the largest at end of the cell), and an irregular series of black marks. Under side of the fore wings blackish; the central area suffused with bluish; outer area of hind wings blackish suffused with bluish; markings are similar to above, except that those on the outer area are larger.

♀. Agrees with the male, but it has a creamy-white patch at the base of the fore wings, and there is less blue and more black on outer area of the hind wings.

Expanse, ♂ 58 millim., ♀ 66 millim.

Collection number, 658.

One male specimen from Suisha (Lake Candidius (2000 ft.)), October 1st, 1907, and a female taken July 26th, 1908, in the same locality.

The close similarity of the female of *H. formosana* to that of *tricolor* suggests that the former may possibly be a local form of the latter.

Ourapteryx taiwana, sp. n.

♂. Head white, face and palpi brownish; thorax white; abdomen greyish brown. Fore wings white, apical third blackish; ante- and postmedial bands oblique, blackish, slightly approximating on the inner margin; the inner edge of the blackish apical third parallel with the postmedial band; blackish streaks on costal area between the bands and towards the base; fringes dark brownish on outer margin, white on the inner margin. Hind wings white shaded with blackish grey on outer area; a black ringed golden-brown spot on the outer margin above the tail, and two blackish spots below the tail; fringes golden-brown, preceded by a black wavy line. Under side similar to above, but the shading on the hind wings is darker and the marks on the outer margin near the tail are absent.

Expanse, 62 millim.

Collection number, 1666.

One male specimen from Arizan, September, 1908 (7300 ft.).

ON A NEW GENUS AND SPECIES OF PARASITIC
CYNIPIDÆ (EUCOILINÆ) FROM CAPE COLONY.

BY P. CAMERON.

STIRENCÆLA, gen. nov.

♂. Antennæ fifteen-jointed, the third joint as thick and slightly shorter than the fourth, not incised; the other joints a little longer and thinner than the third or fourth. Scutellum prominent, roundly gradually raised from the base; the cup small, broadly ovate, placed on the apical slope above, the lower margin projecting as a rim. Post-scutellum large, projecting roundly above, obliquely sloped inwardly from near the top to the bottom; the post-scutellum is below the scutellum; both project over the metanotum. Mesopleuræ margined below; the apex of the metapleuræ broadly margined, the top roundly projecting. Base of pronotum stoutly margined round the top. Radial cellule closed on basal margin, the rest open; completely separated from costal cellule; the areolet obsolete, as is also the cubitus; an oblique nervure runs into the costal close to its base and another near its apex, the latter being bullated and longer than the space between it and the areolet; the margins are not ciliated, the wings being quite bare; the apex broadly rounded. Base of abdomen with a broad hair girdle. Malar space distinct, half the length of the eyes.

The ocelli are prominent and are placed on the margin of the vertex. Parapsidal furrows obsolete. The first abscissa of the radius is rounded and is distinctly shorter than the second, the costal nervure is bullated at its apex. Scutellar foveæ large, deep, divided by a distinct keel; the lateral partition is transparent in the middle.

Comes nearest to *Diranchis*, Foer., which may be known from it by the antennæ in the male having the first joint of the flagellum one and a half times longer than the second, the scutellum rugose not smooth and shining, and the wings pilose with a long ciliated border.

Stirencæla striaticollis, sp. n.

Black, shining, the flagellum of antennæ, legs and abdomen bright red; smooth, except the basal half of the pronotum which is distinctly, closely obliquely striated, wings brownish black to the radius and areolet, clear hyaline beyond; the nervures black; the cubitus very faint, almost obsolete. ♂. Length 4 mm. Antennæ bare, tapering towards the apex, longer by about one-third than the body. The hair on the metathorax sparse, long and white; the hair girdle of a darker white colour, tinged slightly with fulvous. The mandibles are dark rufous.

NOTES AND OBSERVATIONS.

EMERGENCE OF THE SECOND GENERATION OF EUSTROMA (CIDARIA) SILACEATA.—In my note upon this matter (*antea*, p. 32) I find that I omitted to enter a male specimen that emerged on December 15th,

1909. This addition extends the period of emergence of the second generation to some twenty-three weeks. With regard to imagines resulting from the October pupæ mentioned in the note referred to, I may state that a male emerged on January 3rd last, another example of the same sex on March 4th, and finally a male on 27th of that month. I might add that I am again rearing the species from a fresh batch of Huntingdonshire ova. Larvæ from these commenced to hatch out on May 18th.—RICHARD SOUTH.

GYNANDROUS SATURNIA PAVONIA (CARPINI).—On April 26th a gynandrous *S. pavonia* emerged from a Denbighshire cocoon which had lain over two winters. The right half of the moth (antenna, thorax, and wings) male, the left half female. The rest of the insect also appears to be a compromise between the sexes. Another curiosity is a cocoon from last year's larvæ which is entirely round, and without vent for the emergence of the perfect insect.—J. ARKLE; Chester.

ERRATA.—P. 136, l. 19, for "almost black. Markings" read "almost black, markings." P. 139, line 9, for "basal two outer" read "basal and outer."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, April 6th, 1910.*—Mr. H. Rowland-Brown, M.A., Vice-President, in the chair.—Mr. Horace B. Browne, M.A., of 118, Sunny Bank, Hull; Mr. William George Dawson, of 31, King's Gardens, West End Lane, West Hampstead, N.W.; Mr. Alfred Nander Hedges, of 42, Kensington Park Gardens, W.; the Rev. Hubert George Stanley, of Marshfield Vicarage, Cardiff; and Mr. Rupert Stenton, of Southwell, Notts, were elected Fellows of the Society.—Mr. W. G. Sheldon exhibited several series of the butterflies taken by him last July in the Hohe Tatra region of the Carpathians, Eastern Hungary. They included examples of *Melitæa dictynnoides*, Hormuzaki, with *M. aurelia* and *M. dictynna* for comparison; *Brenthis pales* var. *arsilache* from the forest zone at 3000 ft., and a form of *B. pales* from 5000 ft., with the upper side approaching in colour and markings to var. *arsilache*, but of smaller size, the under side being typical; also Swiss examples for comparison; *Parnassius apollo* var. *carpathicus*, Aigner, *Erebia medusa* var. *hippomedusa*, *E. ligea*, and *Cenonympha hero*.—The Rev. G. Wheeler expressed a decided opinion that *M. dictynnoides* constitutes a good species, and is not a form of *M. aurelia*.—Mr. P. Harwood brought for exhibition an example of *Strangalia revestita*, taken on a flower-head near Andover in 1909.—Mr. W. F. H. Rosenberg exhibited (a) a "combination" consisting of a Nymphaline butterfly, *Euphædra ruspina*, and three species of moths belonging to as many different families, viz. *Phægorista similis* (Hypsidiæ), *Xanthospilopteryx poggei* (Agaristilæ), and a Geometer, *Aletis helcita*. These insects bear a close superficial resemblance to each other in colour and pattern of markings, the wings being tawny orange, with black marginal borders and white apical and marginal spots; (b) a pair of the Nymphaline butterfly, *Harma theodota*, a

strikingly dimorphic species, the female of which bears some resemblance, especially on the upper side of the hind wings, to a moth, *Myctemera hesperia*, of the family Lymantriadæ; and (c) five species of *Planema* (family Aræida) and an equal number of species of *Pseudacrea* (family Nymphalidæ) mimicking them, the superficial resemblance being very close in each case. Special attention was called to the specimens of *Planema plagioscia*, the males of which, with tawny bands on the fore wings, are mimicked by the males of *Pseudacrea hobleyi*, whilst the females of the *Planema* with white bands are mimicked by the females of the same species of *Pseudacrea*. A discussion followed, in which Mr. J. W. Tutt, Mr. G. A. K. Marshall, and other Fellows joined.—Mr. H. St. J. Donisthorpe exhibited examples of *Methoca ichneumonides*, parasitic on the larva of the tiger-beetle, taken by him in the Isle of Wight. He said that it is apparently unknown in this country that *Methoca ichneumonides* is parasitic on this larva. But he had taken it at Blackgang Chine, where it would be parasitic on *C. germanica*. With these examples he also showed the hosts, *C. campestris*, *C. sylvatica*, *C. germanica*, and a tiger-beetle larva. Mr. Donisthorpe also exhibited an example of *Ptinella britannica*, Mat., found in a mole's nest at Burwell Fen last month. This is only the third British specimen that has yet been recorded, and apparently the fourth only in Europe, one having been reported from France.—Mr. Norman H. Joy, M.R.C.S., read a paper "On the Behaviour of Coleoptera during Floods," and exhibited living specimens to illustrate the remarkable power of *Dianous cærulescens* in "skimming" on the surface of water. The following papers were also read:—"A Revision of the genus *Diplatys*, Serv.," by Malcolm Burr, D.Sc., F.L.S., F.Z.S., &c; "On the Geometridæ of the Argentine Republic," by Louis B. Prout—H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 14th, 1910.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. Ashdown exhibited a large number of Coleoptera taken in Switzerland during July, 1909, including *Staphylinus fossor*, *Tricodes albæarius*, *T. apiarius*, *Spondylis buprestoides*, *Endomychus coccineus*, *Molorchus minor*, *Strangalia attenuata*, &c.—Mr. R. Adkin, long series of the various forms of *Hepialus humuli*, including some very fine Shetland specimens.—Mr. Cowham, portions of ash-stems showing extensive marks of the depredations of a species of *Scolytus* beetle.—Mr. Dennis, a long series of photographs of British lichens.—Mr. Turner, a number of species of Lepidoptera sent him from Saskatchewan and Vancouver by Mr. Croker, and commented on their British-like appearance; included were *Argynnis bremneri*, *Polygonia marsyas*, *Cænonympha elko*, *Notolophus badia*, *Malacosoma pluvialis*, *Thanaos persius*, &c.—Mr. Newman, larvæ of *Dryas paphia*, *Melitæa cinxia*, *M. athalia*, *Argynnis adippe*, *A. aglaia*, and *Agriades corydon*, which he had been forcing. *Argynnis adippe* and *A. aglaia* had scarcely responded to the treatment, but the rest were practically all full fed.—Mr. Coote, a bred series of *Nyssia hispidaria* from ova laid in 1909.—Mr. Sich, the two species of *Adela* with entire yellow fasciæ—*Adela cræsellæ* (*sulzellæ*) and *A. degeerella*—and pointed out their differences.

April 28th.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. W. West (Greenwich) exhibited numerous rare and interesting specimens taken mainly by himself forty or fifty years ago. Many were of local interest to entomologists of S.E. London. Included were *Pieris daphidice* (Folkestone), *Agrius convolvuli* (Greenwich Park), *Hippotion celerio* (Greenwich), *Deiopeia pulchella* (St. Margaret's Bay), *Spilosoma urticæ* (Greenwich), *Æ. cynipiformis* and *Æ. myopæformis* (Greenwich), *Æ. culiciformis* (Darent), *Æ. ichneumoniformis* (Lee), *Colias hyale*, *C. edusa*, and var. *helice* from the Brockley railway-banks.—Mr. R. Adkin exhibited specimens of *Anthrocera*, including the form supposed to be a hybrid between *A. achilleæ* and *A. filipendulæ*, and stated that an examination of the genitalia by Mr. Pierce had shown that the example in question was the latter species.—Mr. Turner, a large number of Diptera, Ichneumonidæ, and other Hymenoptera, sent to him from Waroona, West Australia.—Mr. Sperring, specimens of *Amphydasis strataria* bred from ova, all having extremely dark bands.—Mr. Sich read a paper entitled "The Legs of Lepidopterous Larvæ."—HY. J. TURNER, *Hon. Report. Sec.*

RECENT LITERATURE.

Catalogue of the Lepidoptera Phalænæ in the British Museum.
Vol. ix. By Sir GEORGE F. HAMPSON, Bart. Pp. i-xv, 1-552.
London. Printed by Order of the Trustees. 1910.

THE present volume concludes the Acronyctinæ, subfamily of the Noctuidæ. Including those in the Addenda, 727 species are here catalogued and described, and these are distributed among some 187 genera, of which sixty are new. The British species included are the following:—

Gortyna, Treit. (1825), t. *leucostigma*, Hübn. (also type of *Helotropha*, Led., 1857). *Apamea*, Ochs. (1816), t. *nictitans*, L. *Xanthœcia*, Hampson (1910), t. *flavago*, Schiff. *Hydrœcia*, Dup. (1844), t. *micæa*, Esp. *Pyrrhia*, Hübn. (1827), t. *purpurina*, Esp., includes *umbra*, Hufn. *Ipimorpha*, Hübn. (1827), t. *retusa*, L., in which is sunk *Platenis*, Bois. (1840), t. *subtusa*, Schiff. *Meristis*, Hübn. (1827), t. *trigrammica*, Hufn., also the type of *Grammesia*, Steph. (1829). *Calymnia*, Hübn. (1827), t. *trapezina*, L., also of *Euperia*, Guen. (1839); the other British species in the genus are *diffinis*, L. (t. of *Eustegnia*, Hübn. (1827)), *pyralina*, Schiff., and *affinis*, L. *Dicycla*, Guen. (1852), t. *oo*, L. (also type of *Eugramma*, Steph. (1850)). *Enargia*, Hübn. (1827), t. *paleacea*, Esp. (also type of *Euperia*, Guen. (1841)). *Phragmatiphila*, Hamps. (1910), t. *typhæ*, Thnb. (also type of *Nonagria*, Hübn. (1827)). *Arenostola*, Hamps. (1910), t. *phragmitidis*, Hübn.; the other British species included in this genus are *lutosa*, Hübn., *brevilinea*, Fenn., *elymi*, Treit., *fluxa*, Hübn., = *hellmanni*, Ev., *pygmina*, Haw., = *fulva*, Hübn., *bondii*, Knaggs, = *morrisii*, Tutt, and *extrema*, Hübn., = *concolor*, Guen. *Archana*, Walk. (1866), t. *Nonagria polita*, Walk. (E. Asia); the British species referred to this genus are *geminipuncta*, Haw., *dissoluta*, Treit., = *neurica*, Hübn., figs. 659-661, *neurica*, Hübn., fig. 381, = *edelsteni*, Tutt, *sparganii*, Esp., *algæ*, Esp., = *canne*, Ochs.

Cænobia, Steph. (1856), t. *rufa*, Haw. *Nonagria*, Ochs. (1816), t. *maritima*, Tausch (also type of *Chilodes*, H.-S. (1845)). *Oria*, Hübn. (1827), t. *musculosa*, Hübn. (also type of *Synia*, Dup. (1844), and of *Tapinostola*, Led. (1857)). *Panemeria*, Hübn. (1827), t. *tenebrata*, Scop. (also type of *Heliaca*, H.-S. (1852)).

The South London Entomological and Natural History Society, 1909-1910. With Thirteen Plates. Pp. i-xvi, 1-133. The Society, Hibernia Chambers, London Bridge.

CONSIDERED either from the literary or from the pictorial point of view, the present volume of 'Proceedings' must be acknowledged as one of the best, if not *the* best, this eminently progressive Society has produced. In addition to the instructive matter detailed in the "Abstract," there are nine papers (of which we can only enumerate the titles) of considerable interest:—"Stray Notes on the Variation and Distribution of *Boarmia repandata* in Britain" (pp. 1-4, plate i.), and "Notes on the Earlier Stages of *Nola albulalis*" (pp. 41-42, plates xi., xii.), by Robert Adkin, F.E.S.; "Resting Attitudes of Lepidoptera," by A. E. Tonge, F.E.S. (pp. 5-8, plates ii. iii.); "Notes on Diptera," by H. W. Andrews, F.E.S. (pp. 34-40); "Larval Stages of *Chrysopora hermannella*, Fab.," by Alfred Sich, F.E.S. (pp. 43-49, plate xiii.); "Stray Notes on Ticks," by F. Noad Clark (pp. 29-33, plates ix., x.); "The Scotch Fir (*Pinus sylvestris*)," by W. J. Lucas, B.A., F.E.S. (pp. 9-13, plates iv., v.); "Fruits," by Hugh Main, B.Sc., F.E.S. (pp. 14-20, plates vi.-viii.); "Our Authorities: an Introduction to the Early Literature of Entomology," by Henry J. Turner, F.E.S. (pp. 21-28).

All the plates (except xiii., which is from drawings) are from photographs by the authors of the respective papers they illustrate, and are of great merit.

The President (Mr. A. Sich) devotes a large portion of his address to the interesting subject "Lepidopterous Evolution."

Catalogue of British Hymenoptera of the Family Chalcididæ. By CLAUDE MORLEY, F.Z.S., F.E.S. Published by the Trustees of the British Museum. 1910.

MR. MORLEY has published the first complete synonymic Catalogue of the British species of this well-known though little-worked family of Hymenoptera, uniformly with the defunct 'General Catalogue of the Insects of the British Isles,' begun by the Entomological Society. In the preface he tells us that this Catalogue completes our lists of the indigenous Hymenoptera, a vast order of insects, which numbers some 4830 species in Britain alone. Of these, the present list includes references to a hundred and forty-eight genera, comprising 1424 species, as is indicated in the summary, corrected to March 15, 1910. The whole is comprised in seventy-four pages, with index to the correct and the synonymic genera. A catalogue is the precursor of a monograph; with this basis we trust some student will ere long arise and give us a detailed account of these multitudinous and beautiful parasites.

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Vol. XLIII]

JULY, 1910.

[No. 566.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.	W. F. KIRBY, F.L.S., F.E.S.
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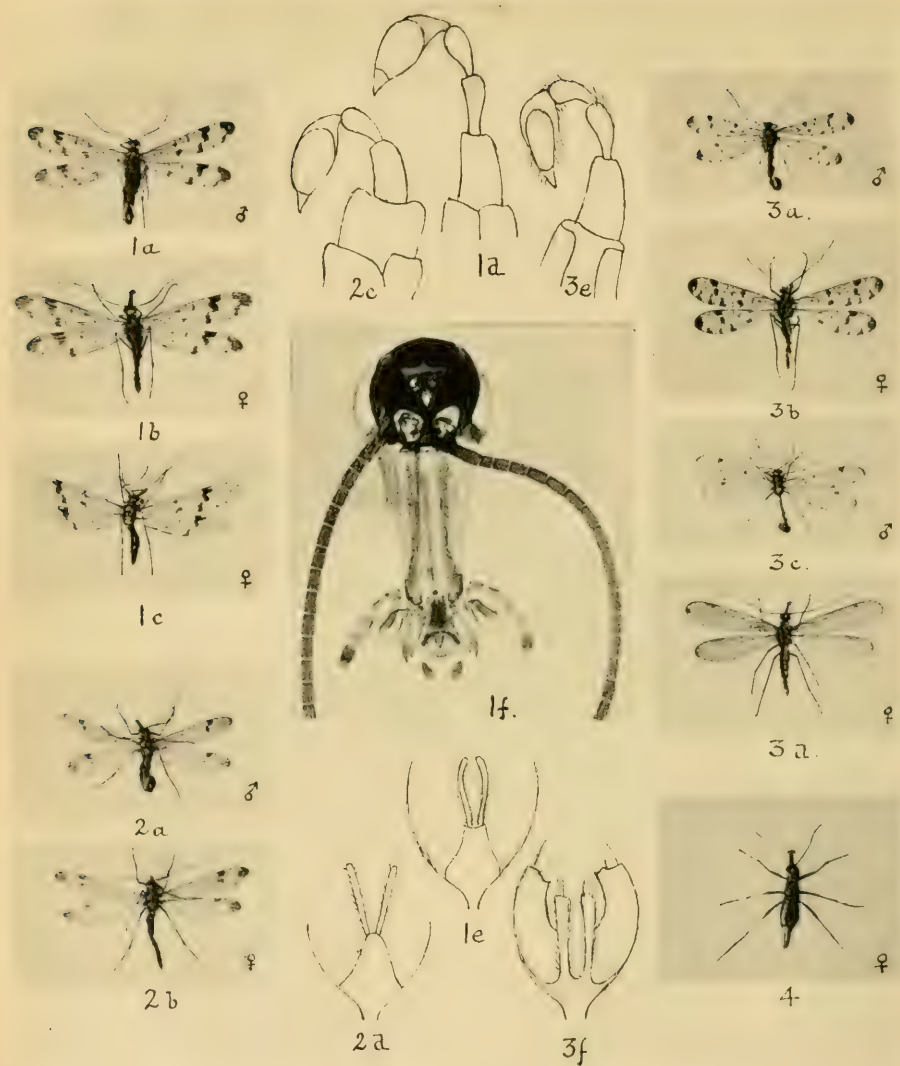
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BRITISH SCORPION-FLIES.

THE ENTOMOLOGIST

VOL. XLIII.]

JULY, 1910.

[No. 566

BRITISH SCORPION-FLIES.

By W. J. LUCAS, B.A., F.E.S.

(PLATE IV.)

WITHIN the natural order Neuroptera is to be found a distinct little group of insects, the typical members of which are most appropriately named "Scorpion-flies." McLachlan, in his monograph of the British Planipennia* (Trans. Ent. Soc. Lond. 1868), designates them Panorpina, thus giving them more than family rank, while some systematists go the length of constituting them a distinct order under the name of Mecaptera; but this seems scarcely necessary for ordinary purposes. In Britain we have, so far as is known, but four representatives of the group—three belonging to the typical genus, *Panorpa*, the scorpion-flies proper, and one species representing the peculiar genus *Boreus*.

Carnivorous habits characterise both of the active stages of these insects. The larvæ somewhat resemble those of sawflies, since they possess prolegs as well as true ones. Besides the scorpion-like tip to the abdomen of the male, perhaps the most distinctive feature of the imago is the beak-shaped head (Plate IV. fig. 1*f*), which is turned downwards when in its normal position. At its distal extremity are the mandibles and maxillæ, while the eyes and long antennæ are at its base. The wings are long, and in shape not unlike those of many dragonflies. It seems clear that the eggs are laid in moist soil, and that they hatch in about seven days. After feeding for about four weeks they become quiescent, but it is only after a further period of some weeks that they change into pupæ, which are motionless, although their limbs are free.

For much of what is known concerning the life-history of the scorpion-flies we are indebted to Brauer's two papers in Sitz. Akad. Wissensch. of Vienna, 1851, and in Verh. zool.-bot. Gesell. of Vienna, 1863. McLachlan has given a translation of part of

* = Neuroptera (Entom. xlii. p. 271).

the latter paper in the monograph referred to above. Another paper on the scorpion-flies of very general interest is one by E. P. Felt, D.Sc. (Report of New York State Entomologist, 1894, x. 96), in which he gives a full account of the habits and life-history of a North American species, *Panorpa rufescens*.

Though these writers are able to tell us something about the curious insects under consideration, still we know really very little about them, and entomologists who observe any points in connection with their economy should record them whether they study the Neuroptera or not. It seems clear that the larvæ are carnivorous, and as they are subterraneous they probably live on larvæ, worms, and so on. Whether they are predaceous, in the true sense of the word, we would like to know. It is perhaps established that in the imago stage they suck the juices of dead or injured animals, but do not hunt them down themselves.

Prof. E. B. Poulton, in his paper "Predaceous Insects and their Prey" (Trans. Ent. Soc. Lond. 1906), gives five instances of scorpion-flies with their prey: *P. meridionalis* surrounding and sucking a dead worm; *P. communis* with a Telephorid beetle; and three cases of *P. germanica*,* one with an Empid fly, and two each with a Bibionid fly. The *P. meridionalis* were clearly feeding on dead prey; as regards the others no inference may be drawn. Only once have I myself come across a scorpion-fly with its prey. On June 14th, 1908, near Oxshott, Surrey, one had possession of what appeared to be a whitish grub, which it seemed to be sucking. On my attempting to make a capture both dropped and could not be found. These insects always seem sensitive of one's approach, and often drop in this way. If followed, they usually dive into the matted herbage on the soil.

When handled, scorpion-flies eject a dark brown fluid and emit a somewhat offensive smell, the former perhaps being the cause of the latter. As further weapons of offence they possess the scorpion-like forceps at the extremity of the abdomen, with which they are able to give a very effective nip.

As regards distribution, we again have very incomplete evidence, though probably *P. germanica* and *P. communis* are universal and common, while *P. cognata* is equally scarce. My own casual records, with dates, follow:—

P. COMMUNIS.—May 2nd, 1903, one male, Hurst Hill, New Forest; May 27th, 1903, a specimen with markings reduced, Horsley, Surrey; June 1st, 1901, Byfleet Canal, Surrey; June 7th, 1903, June 5th and 12th, 1910, Oxshott district, Surrey; June 6th, 1903, Horsley; June 19th, 1909, between Ashtead and

* Fig. 3d in the Plate accompanying this note represents one of these, its prey being *Empis tessellata*.

Burford Bridge, Surrey; June 20th, 1896, a fair number at Byfleet Canal, common on June 24th, 1903; June 24th, 1908, near Hindhead, Surrey; July 9th, 1904, a female near Ashtead; July 25th, 1903, one only, Byfleet Canal; August 8th, 1906, New Forest; August 27th, 1903, a male with rather suffused appearance to wings, New Forest; a female, August, 1907, High Cliff, Hants (from A. L. Simmons); a large bright female, September 3rd, 1907, New Forest.

P. GERMANICA.—One female, May 10th, 1905, between Claygate and Black Pond, Surrey; one male, May 12th, 1906, between Horsley and Clandon; two males, May 15th, 1897, near Claygate, Surrey; a female, May 16th, 1897, and a male, May 19th, 1902, Esher Common, Surrey; a pair, May 17th, 1902, near Effingham Station, Surrey; a male, May 18th, 1910, near Oxshott; a male, May 18th, 1907, New Forest; rather common near Oxshott, May 20th, 1910; May 22nd, 1897, near Horsley; May 25th, 1910, Netley Heath, Surrey; a male, May 25th, 1907, Tetcham Common, and a specimen, May 28th, 1910, near the same place; one male, May 28th, 1908, Bude, Cornwall (from Dr. T. A. Chapman); a male, June 1st, 1901, Byfleet Canal; June 2nd, 1897, Oxshott; a male, June 4th, 1904, Bookham Common; June 6th, 1903, Horsley; a female, June 10th, 1902, Kew Gardens, Surrey; June 12th, 1910, between Claygate and Oxshott; a male,* June 13th, 1906, near Haslemere, Surrey; a female, June 19th, 1909, between Ashford and Burford Bridge; June 20th, 1896, one, Byfleet Canal, and some specimens in the same locality, June 24th, 1903; June 24th, 1908, near Hindhead; two females, July 6th, 1904, near Hindhead; Swanage, Dorset, August 15th, 1902; a female, August 17th, 1907, New Forest, and the species again in New Forest, at Hurst Hill, August 19th, 1906; a few, August 23rd, 1899, between Lynmouth and Brendon, Devon; August 26th, 1897, and August 29th, 1900, Bagley Wood, Berks; September 10th, 1900, the Coverts, near Claygate.

P. COGNATA.—On one occasion only have I taken this species—a female, July 23rd, 1904, at Byfleet Canal, Surrey. Folkestone, Kent, is another locality; while McLachlan thought it was most frequent in the New Forest. Perhaps it is a later insect than the other two.

Although it involves a considerable amount of repetition, I have given the list almost without condensation in order to shew the time of the year when the imagines appear to be most frequent. Perhaps other naturalists may be able to supply similar dated locality lists, and so add to our knowledge of the distribution and period of flight of these insects.

* Almost immaculate, the chief markings being a black apex to all the wings, and a spot on the costa at the pterostigma.

P. COMMUNIS.	P. COGNATA:	P. GERMANICA.
1. Size larger.	1. Size intermediate.	1. Size smaller.
2. Markings on wings arranged more or less in bands.	2. General appearance of markings rather suffused.	2. Wings have the appearance of being spotted, rather than banded.
3. Colour of markings on wings approaching black.	3. Ditto, brown.	3. Ditto, as <i>P. communis</i> .
4. Antepenultimate segment conical. (Plate IV. fig. 1 <i>d</i> .)	4. Ditto, cylindrical. (Plate IV. fig. 2 <i>c</i> .)	4. Ditto, conical (last two joints and forceps hairy.) (Plate IV. fig. 3 <i>e</i> .)
5. Appendices of male linear, curved. (Plate IV. fig. 1 <i>e</i> .)	5. Ditto, linear, straight. (Plate IV. fig. 2 <i>d</i> .)	5. Ditto, flattened, dilated and truncated at apex. (Plate IV. fig. 3 <i>f</i> .)
6. Rostrum castaneous, with two longitudinal blackish stripes.	6. Ditto, reddish, with scarcely darker stripes.	6. Ditto, testaceous, with two longitudinal indistinct fuscous stripes.

[No. 6 can scarcely be relied upon; but the species may be distinguished with certainty by means of Nos. 4 and 5.]

BOREUS HYEMALIS (Plate IV. 4), the remaining British representative of the group, I have never succeeded in finding, although I have occasionally made search for it. Mr. K. J. Morton, who finds it near Edinburgh, once (*in litt.* Nov. 20th, 1908) sent me suggestions with regard to searching for the elusive little creature, and no doubt he will not mind my publishing them. He says:—"Boreus may be a little local, but it is certainly widely distributed. I suppose the mode of taking it is that adopted by coleopterists for catching moss-frequenting beetles. Try moss-covered walls, both top and base, mossy banks, and open woods where there is a good growth of moss around the foot of the trees. The best moss is not that which grows in close cushions, but the more luxuriant sorts which allow of a good handful being torn away from the earth. This should be carefully separated with the hands and shaken, the operation being performed over a newspaper. If the little beast is there, he usually shews his presence by jumping."

Compared with the scorpion-flies, *Boreus* is a tiny creature, the figure (Plate IV. 4) being magnified about two and a half times. The wings are quite rudimentary, but the beak-like head reveals its relationship with *Panorpa*. Again we have to look to Brauer

(Verh. d. zool.-bot. Ver. in Wien, 1855, pp. 711-712, and 1862, pp. 320-323) for much of what little we know of the insect. The larva lives in earth or amongst moss. Pupation takes place also in the earth early in the autumn, and the imago is found in the winter from about October till March. The northern part of Great Britain seems to be its headquarters, though it has been taken in the London district—at Southgate and near Croydon, for instance—and there is little doubt that coleopterists who work in the winter could without difficulty supply us with fresh localities.

EXPLANATION OF PLATE.

1. *Panorpa communis*. *a*, typical male (nat. size), Byfleet, Surrey, June 1, 1901; *b*, typical female (nat. size), Oxshott, Surrey, June 21, 1901; *c*, female with aberrant wing coloration (nat. size), Castle Howard, Yorks; *d*, extremity of abdomen of male (magnified); *e*, appendages of ventral surface of forceps of male (much magnified); *f*, head ($\times 11$).

2. *P. cognata*. *a*, male (nat. size), Folkestone, Kent, August 16, 1895; *b*, female (nat. size), Folkestone, August 10, 1895; *c*, extremity of abdomen of male; *d*, appendages of ventral surface of forceps of male.

3. *P. germanica*. *a*, typical male (nat. size), Bookham Common, Surrey, June 4, 1904; *b*, typical female (nat. size), Swanage, Dorset, August 15, 1902; *c*, var. of male (nat. size), Huddersfield, Yorks; *d*, var. of female, Tongue, Sutherlandshire (nat. size); *e*, extremity of abdomen of male; *f*, appendages of ventral surface of forceps of male.

4. *Boreus hyemalis*, female ($\times 2.4$).

[Figs. 1 *d*, *e*; 2 *c*, *d*; 3 *e*, *f*, are after McLachlan.]

I have to thank Mr. G. T. Porritt for the loan of the insects numbered 1 *c*, 2 *a*, 2 *b*, 3 *c*, and Prof. E. B. Poulton for that of 3 *d*.

28, Knight's Park, Kingston-on-Thames:
June, 1910.

SOME NEW LEPIDOPTERA-HETEROCERA FROM
FORMOSA.

By A. E. WILEMAN, F.E.S.

(Continued from p. 179.)

Chrysæglia magnifica taiwana, ab. n.

The ground colour is paler than in typical *magnifica*, and the markings are bluer and more metallic; the spot on the inner margin of the fore wings unites with the costal border.

Collection number, 751 *a*.

A male specimen from Kanshirei (1000 ft.), August 13th, 1908.

Diacrisia clava, sp. n.

♂. Head and thorax brownish buff, the latter with a black dot on each side; abdomen reddish above, suffused with blackish, except at the base, and barred with black. Fore wings brownish buff with

a faint pinkish tinge on the basal two-thirds, and a fuscous suffusion on the outer third; the costa black on basal third; a small black mark, with spot below it, on the middle of the costa; a black club-like mark on middle of the inner margin, the end nearest the base of the wing surmounted by a black dot; from the other extremity a dusky shade runs to a series of five black dots from the apex. Hind wings paler buff, suffused with reddish towards the base; a black spot in the cell, one above the middle of outer margin, and two towards the anal angle. Under side as above, but the basal half of the fore wings clouded with reddish.

Expanse, 54 millim.

Collection number, 1786.

One male specimen from Rantaizan, May 10th, 1909.

This species is near *D. abdominalis*, from the North-west Himalayas.

Gargetta (?) *nigra*, sp. n.

♂. Head, thorax, and fore wings fuliginous, the latter with some white scales on the discocellulars. Hind wings smoky grey.

Expanse, ♂ 42 millim., ♀ 40 millim.

Collection number, 705.

One example of each sex from Arizan, September 11th, 1906.

The antennæ, which are two-thirds the length of costa, are bipectinated in both sexes, but in the female the branches are only about half the length of those of the male.

Opisthograptis punctilineata, sp. n.

♂. Canary-yellow. Fore wings with two sinuous, dusky lines before the middle, and an obscure dentate line beyond the middle; the outer line is dotted with chocolate-brown at the veins, and the others commence in small purplish brown marks on the costa; a purplish brown mark at the base, and a larger one on the costa just beyond the middle; from the costal mark a somewhat pyriform spot, outlined in chocolate-brown, extends downwards to the median nervure, and encloses a transparent crescent. Hind wings have a blackish discal mark, a dusky central line, and traces of a faint submarginal line. Fringes of all the wings dotted with chocolate-brown at ends of the veins, but not below vein three on fore wings. Under side as above, except that the submarginal line of the hind wings is more distinct, and the central line very faint.

Expanse, 50 millim.

Collection number, 1671.

One male specimen from Rantaizan (7500 ft.), May 11th, 1909.

Near *möllerii*, Warr, but differs chiefly in the maculation of the postmedial line.

Tristrophis (?) *ramosa*, sp. n.

♂. Fore wings yellowish white; ante- and postmedial bands narrow, blackish, the first oblique from costa to inner margin, along which it is continued to the curved second band; the bands are also united by blackish along the median nervure and its third branch;

the costal area between the bands and the outer area beyond the postmedial streaked with blackish; marginal band and fringes blackish. Hind wings whitish, with the dark markings of the under side showing through; outer area with dark greyish striae, the veins yellowish, and two black spots near the margin. Under side similar to above, but the hind wings are yellow tinted and irregularly spotted with blackish.

Expanse, 44 millim.

Collection number, 1672.

One male, Arizan, 1908 (7300 ft.).

Odonestis ochreipuncta, sp. n.

♂. Fore wings red-brown, paler and sprinkled with violet-grey on the outer area beyond the oblique line; the latter, which is blackish faintly edged inwardly with violet-grey, runs from about middle of the inner margin to the costa just before the apex; the submarginal line is blackish and serrated; discoidal mark pale ochreous, minute. Hind wings brown, the inner area clothed with red-brown hair. Fringes of all the wings paler, and faintly chequered with darker. Under side brown, inclining to reddish on inner area of all the wings, veins reddish; the hind wings have a diffuse, dusky, median shade, and the oblique line of the fore wings is represented by a dusky shade.

♀. Similar, but on the upper side there is less red in the general colour, and on the under side the reddish tint is entirely absent.

Expanse, ♂ 48 millim., ♀ 60 millim.

Collection number, 719.

A male specimen from Arizan (7300 ft.), September 13th, 1906; and a female from Jujimichi (6500 ft.), September 17th of the same year.

A common species, near *albomaculata*, Brem.

Odonestis nigropuncta, sp. n.

♂. Fore wings pale ochreous brown, clouded with darker brown at the base, and between the veins on outer margin; the costal area is broadly suffused with darker brown, inclining to reddish; a dark oblique band runs from about the middle of inner margin to the costa near apex—it is composed of an outer series of brown spots between the veins, and an inner series of blackish lunules; discoidal spot black, with a dusky mark before it and another above it; a double series of black submarginal dots (failing towards the costa), those of the inner series are under the veins, and those of the outer series are above the veins; fringes dark brown, paler at ends of the veins. Hind wings brown with a slight cupreous tinge; fringes paler. Under side pale brown; fore wing suffused with darker brown on costal area, oblique postmedial band dusky; hind wings with a dusky curved postmedial band.

Expanse, 46 millim.

Collection number, 1192.

Three male specimens from Kanshirei (1000 ft.), June 7th, 1907, April and August, 1908.

An extremely common species at light.

Crinocraspeda (?) *excisa*, sp. n.

♂. Antennæ with long dark brown branches, graduated to the tip. Fore wings brown, tinged with reddish on the central area, mottled and suffused with greyish, especially on the costal area; a pale, wavy, transverse line on the outer marginal area is deeply incurved about the middle, and again before the inner margin; this line is inwardly bordered by a fuscous shade; apical half of the outer margin clouded with fuscous; a black discal dot, beyond which the veins are finely marked with blackish. Hind wings deeply excised on the middle of costa, crenulate on the outer margin, and deeply notched above vein six; brown with a blackish patch, outwardly edged with white, on middle of costal area; the veins beyond the patch black flecked with white; abdominal area clothed with pale brown hairs. Under side of the fore wings much as above, but rather paler, veins clearly defined; hind wings pale brown, mottled and clouded with blackish; a black antemedial line, veins beyond the line black flecked with white.

Expanse, 46 millim.

Collection number, 1675.

One male specimen from Arizan (7300 ft.), August 23rd, 1908.

Metanastria arizana, sp. n.

♂. Fore wings reddish brown; a whitish dot at end of the cell; ante- and postmedial lines black, serrate, the latter curved, the former angled about middle and inwardly edged with whitish; space between the lines dark red-brown; submarginal series of blackish marks connected by a dusky line, and outwardly edged with greyish, most distinct towards the inner margin; on the middle of the outer margin is a dark red-brown cloud. Hind wings pale reddish brown, with narrow central bands of a darker hue on each wing.

♀. Much darker brown, the reddish tint only in evidence on the basal area and beyond the postmedial.

Expanse, ♂ 54 millim., ♀ 62 millim.

Collection number, 720.

One example of each sex from Arizan (7300 ft.); the male taken in September, 1906, and the female in August, 1908.

A common species at light.

Miresa fulgida, sp. n.

♂. Face and antennæ red-brown, head and thorax golden yellow; abdomen yellowish, edges of the segments tinged with red-brown dorsally. Fore wings red-brown, darker on costal area; a diffuse patch of silvery scales in the cell, and a triangular silvery patch beyond the cell—the latter has its base on the silvery postmedial line between veins three and five, which at this point and inwards are also silvery;

the area beyond the postmedial is suffused with greyish, and outwardly edged with silvery. Hind wings ochreous brown. Under side ochreous brown, veins paler; costal area of the fore wings suffused with reddish brown.

♀. Similar, but the silvery patch in the cell is less diffuse, and the under sides of all the wings are rather darker.

Expanse, ♂ 34 millim., ♀ 40 millim.

Collection number, 666.

One example of each sex from Kanshirei (1000 ft.); the male was captured April 24th, 1908, and the female June 17th, 1907. Allied to *M. bracteata*, Butl.

Chelura pica, sp. n.

♂. Antennæ black, branches rather long; head and thorax blackish, the latter brown tinged in front. Fore wings black, with four white spots in the cell, one at the outer end of the cell, and a series of four white spots between veins two and six; the spaces below vein two white, except on the outer marginal area, each broken by a blackish line. Hind wings white, outer margin with a rather diffuse blackish border; veins blackish. Under side similar to the upper side.

Expanse, 43 millim.

Collection number, 1678.

A male specimen from Arizan (7300 ft.), July, 1908.

(To be continued.)

MELITÆA BRITOMARTIS AND ITS ANCILLARY APPENDAGES.

BY T. A. CHAPMAN, M.D., F.Z.S., &c.

It is no doubt somewhat rash to differ from Mr. Wheeler on a question affecting the Melitæas, and I do not write this to do more than call attention to the fact that Mr. Wheeler ('Entomologist,' p. 163, 1910) does me rather less than justice in citing my opinion on *M. britomartis* (Reazzino) as an instance of founding an opinion on the characters of the male appendages alone.

This is far from being the case. I did not recite at length the whole question as to the claims of *britomartis* to specific rank, but perhaps I ought to have mentioned my own position in the matter. I also failed to say that I am fully assured of the extent of my own ignorance, and that my opinion is open to revision by myself or anyone else, on the appearance of any new evidence. I often make some such statement, but with a feeling that it is rather absurd to do so, since it is only under such conditions that either I or anyone else can make any

statement, either as to fact or opinion, and to recite these conditions is, as mathematicians use the word, not significant, and is mere verbiage. It clearly, however, possesses uses on occasion, as I might thereby have avoided ruffling my friend's amiable serenity.

My position in the matter is, however, more apposite; it was this: Examining the specimens and taking into account all that Mr. Wheeler has told us about them, I was strongly of opinion that *britomartis* (Reazzino) was a form of *dictynna*, not of course identical with *dictynna*, but a special form or race. I had doubts about it, founded rather on deference to Mr. Wheeler's opinion than on my own weighing of the facts. I wanted some further evidence, and felt that further evidence one way would strengthen these doubts; the other way, would do away with them.

The new item was the structure of the male appendages, and as these agreed with those of *dictynna*, I was satisfied that, so far as I could form an opinion, *britomartis* was a form of *dictynna*.

That I was fully justified in my attitude of doubt, pending this reference, may be deduced from the opinion of Mr. Wheeler himself, given to the Entomological Society. He is reported in the 'Entomologist,' vol. xli. p. 94, as saying that "the close affinity with *M. dictynna* made separation superficially very difficult, and until all forms were reared from the ovum it would be impossible to determine whether *britomartis* constituted a separate species or not."

There can be no doubt, of course, that definite evidence from the early stages would put the question on a new and firmer basis.

I was unable to accept, on the facts Mr. Wheeler advanced, that *britomartis* is "undoubtedly double-brooded." He took it in June and in July in different seasons, and considered the June season a late one, and that these were first and second broods. The season 1907 was possibly not so late south of the Alps, as in the Rhine Valley; on the Riviera, it was fairly average. Assuming it to be double-brooded, this is an important fact, but far from conclusive as to the specific position of *britomartis*. I do not know whether Mr. Wheeler intended to describe the palpi and antennæ of the two forms as different; he uses different phrases, and seems to imply that we have here good specific characters. My observation is to the effect that the antennæ and palpi in the two are identical. I might go over the other items; but this is unnecessary, since the point we are discussing is that they left me fairly satisfied that *britomartis* is *dictynna*.

I may mention, however, that in Mr. Lang's series of *dictynna*, which I have, are several specimens, curiously without

data, but which agree very closely indeed with *britomartis*, showing that Lang was of opinion that this form was only one of *dictynna*. Tutt has also expressed a similar opinion as to *britomartis*.

I cite this, since Mr. Wheeler's datum seems to be that the proof that *britomartis* was a good species was so strong that nobody could possibly be of a contrary opinion; and that when I cited the last straw as determining my views, I was making it outweigh the whole of the rest of the load, instead of merely adding a trifle to it.

On the general question on which I am held up to censure, my position has always been that the male armature presents useful characters, just as any other part of the insect does, and that these characters are to be valued at neither more nor less than any others. They have the advantage of being those of hard chitinous parts, with none of the indecision of wing markings and colours. They often present decisive characters when others fail; they also fail sometimes where other characters leave us in no doubt. The only ground on which they *appear* to claim superior value is that they are often the last referred to, and seem therefore to be regarded as decisive in a way that would not at all occur had they been taken into account at first instead of last.

Betulia, Reigate.

DESCRIPTIONS OF THREE NEW SPECIES OF INDIAN RHYNCHOTA.

By W. L. DISTANT.

HETEROPTERA.

Fam. PENTATOMIDÆ.

Subfam. ASOPINÆ.

Anasida orientalis, sp. n.

Black; a central castaneous spot on basal margin of head; head rugosely punctate, about two-thirds the length of pronotum, lobes of equal length, lateral margins moderately concavely sinuate, ocelli reddish, the basal area less rugosely punctate than the anterior area; antennæ slightly pilose, with the first joint short, not reaching apex of head, second shorter than either third or fourth, which are subequal in length, fifth scarcely shorter than fourth; pronotum rugosely punctate, the lateral margins remotely crenulate and somewhat strongly sinuate, the posterior lateral angles prominent and inwardly longitudinally depressed, before anterior margin two transverse obscurely opaque slightly punctate cicatrices; scutellum transversely rugosely punctate; the apex truncately rounded; corium opaque, finely punctate, the costal area more coarsely and thickly punctate; membrane moderately passing the abdominal apex; rostrum reaching the inter-

mediate coxæ; sternum coarsely and somewhat sparingly punctate, the abdomen thickly and rugosely punctate; legs unarmed, tibiæ above longitudinally sulcate. Long. ♂ 17 millim., ♀ 18 millim.

Hab. Bombay Province; Dharwar.

This first discovered Oriental species of the hitherto regarded Ethiopian genus *Anasida* was found by Dr. Harold Mann among stones in a railway cutting.

This species is allied to *A. funebris*, Dist., from Natal, and is the first species of the genus described from outside the Ethiopian region.

HOMOPTERA.

Fam. JASSIDÆ.

Subfam. LEDRINÆ.

Petaloccephala granulosa, sp. n.

Pale virescent; vertex shorter than breadth between eyes, finely punctate, centrally longitudinally finely subcarinate, the lateral margins oblique from a little in front of eyes, and narrowing to apex which is subacute; eyes brownish; pronotum with the basal area a little darker in hue, where it is finely granulose, the lateral and anterior margins distinctly narrowly darker, the posterior margin strongly concave before scutellum, which is somewhat thickly finely punctate; clavus thickly punctate, and with a few fine granules; tegmina subhyaline, thickly finely punctate, the apical margin narrowly black, inwardly narrowly longly dentate; body beneath and legs virescent. Long. incl. tegm. 8 millim.

Hab. Bengal; Pusa (Lefroy).

Most nearly allied to *P. nigrilinea*, Walk.

Mr. Maxwell-Lefroy, in forwarding me specimens of this species, says:—"We have reared this from nymphs which are fixed to mango-leaf, very tightly pressed down on to it so as to be very difficult to see; they are more or less transparent, and sit motionless very much as a scale-insect does. They are not common."

Subfam. TYPHLOCYBINÆ.

Empoasca thea, sp. n.

Bright pale olivaceous green; eyes black; tegmina either with the apical area greyish white, or greyish white with the basal area and costal margin green; body beneath and legs pale olivaceous green; vertex rounded, more than twice as broad than long; scutellum strongly transversely impressed before apex; tegmina considerably passing abdominal apex, with a distinct elongate discal cell before the apical cells. Long. incl. tegm. 4 millim.

Hab. Cachar (Antram).

Mr. Charles B. Antram sent me this species, found as a very destructive pest to tea-gardens in company with *E. flavescens*, Fabr.

I use the genus *Empoasca* in the comprehensive sense explained in my 'Indian Rhynchota,' iv. p. 401.

NEW HYBRID BISTONINÆ.

BY J. W. H. HARRISON, B.Sc.

I HAVE succeeded in producing several "*Biston*" hybrids, and in order to secure leisure for an extended and detailed study of their early stages, and at the same time to protect myself from being forestalled, I am publishing this preliminary statement of their names.

Before doing so I must point out that Mr. L. B. Prout has shown that our ordinary English applications of the various generic names are incorrect, and that the following are the valid names:—

- (1) *Biston* is inapplicable to *hirtaria*; as *strataria* was selected as the type, *Amphidasys* sinks to this as a synonym.
Lycia, Hübner, 1826 (type *hirtaria*, selected by Hulst in 1896), must be accepted.
- (2) *Apocheima*, type *hispidaria*, cannot be used for *zonaria*, which is generically distinct.
Ithysia, Hübner (1826), must be used, therefore, instead.
Type *zonaria* (Hulst, 1896). *Nyssia*, Duponchel, sinks to *Ithysia*.
- (3) This leaves the three species, *pomonaria*, *lapponaria*, and *rachelæ* without a generic name.
In anticipation of my detailed paper, I propose the name *Pæcilopsis* for the rough-haired, red-speckled forms named above, with type *pomonaria*.
- (4) Although I am not dealing with the species usually known as "*Biston*" *gracaria* and "*B.*" *alpina*, as they also require a generic name, I propose *Melanocoma*.
Type *alpina*.

The hybrids, of which a list appears below, are without exception named after those who have taken an interest in and have supplied material in the past for their production. In England my special thanks are due to Messrs. Denham and Smallman for help with *zonaria* and *lapponaria*, whilst for *pomonaria* I have to thank my esteemed friend Herr Lange, of Freiberg.

Ithysia, hybrid *langei* = *I. zonaria* ♂ × *Pæcilopsis pomonaria* ♀.

Ithysia, hybrid *harrisoni* = *I. zonaria* ♂ × *Lycia hirtaria* ♀.

Pæcilopsis, hybrid *smallmani* = *P. lapponaria* ♂ × *Ithysia zonaria* ♀.

Pæcilopsis, hybrid *helenæ* = *P. pomonaria* ♂ × *Ithysia zonaria* ♀.

Lycia, hybrid *denhami* = *L. hirtaria* ♂ × *Ithysia zonaria* ♀.

The bulk of the specimens reared were wasted in further experiments with practically no result. In one case *Ithysia*, hybrid *harrisoni* ♂ × *Lycia hirtaria* ♀, two ova proved fertile, and of these one hatched and may feed up. For convenience I call this hybrid larva hybrid *goodwini*.

I have not attempted to repeat Mera's experiments with *Ithysia zonaria* ♂ × *Pæcilopsis lapponaria* ♀ (= hybrid *merana*, Burrows), but have reared several very large broods of the *hirtaria-pomonaria* hybrids. These are:—

Lycia, hybrid *pilzii* (Standfuss) = *L. hirtaria* ♂ × *Pæcilopsis pomonaria* ♀.

Pæcilopsis, hybrid *hunii* (Oberthür) = *P. pomonaria* ♂ × *Lycia hirtaria* ♀.

I have found it so very difficult to obtain the former cross that I have often thought that the original specimen taken wild by Pilz might have been a specimen of the latter hybrid.

NOTES ON THE VARIETIES OF *PERONEA CRISTANA* LATELY IN THE COLLECTION OF THE LATE MR. J. A. CLARK.

BY SYDNEY WEBB.

CAPUCINA GROUP.

THE variety which gives its name to this group of pale coloured forms *P. cristana* was captured by the late Rev. Mr. Johnson, and described by him in Ann. Mag. Nat. Hist. 1842, three years before Desvignes discovered the far commoner *subcapucina*. Both are well known to collectors, and it is therefore unnecessary to go into further details concerning these two aberrations.

Curtisana, Desv.—The very rare examples that have stood so long in our cabinets under this name are similar to *subcapucina*, but the vitta is very pale yellow. Desvignes gave the name, it would appear, to a variety with a faint fulvous streak from the base to the button, which is of the same colour. He does not mention the vitta, but inasmuch as he speaks of the moth as similar to the last (*subcapucina*), we may presume it to be pure white. I know of no specimen that answers his description, and evidently our old collectors thought there was an error in description, or they would not one and all* have adopted the mistake, particularly as each one prided himself on his accuracy of nomenclature. The *curtisana* recently sold (Clark sale 3, lot 327) was *tolana*, of which Desvignes writes: "Between *curtisana* and *desfontainiana*."

* S. Stevens, Shepherd, Burney, Mason, Vaughan.

Tolana, Desv.—The last curt description is not sufficient. *Tolana* has a few—from three to five—short pale striæ on the inner third of the costa, of which we see no trace in *desfontainana*, and there is a marked difference in the subsidiary small tufts of scales towards the end of the wings, which we all know are arranged two above longitudinally (occasionally seen in *desfontainana*, but always in *tolana*), and white in colour, and three perpendicularly near the anal angle, also conspicuously white in *tolana*, but if present at all, and that very rarely, fuscous in the other moth. There may also be noticed a white streak near the apex of the wing of *tolana*, never seen in its compeer, and of course the distinguishing white vitta. The central tuft of scales, too, is somewhat paler. It would seem then that the comparison between the two moths by Desvignes was very superficial, adopted only from a casual resemblance of the upper part of the wing, possibly to avoid difficulties of expressing the coloration.

Masoniana.—Clark, n. ab., fig. 17. There were two specimens under this name in the collection quite dissimilar, the lower being an example of the *curtisana* of our cabinets, but the ends of its wings are more mottled with white, which runs down in a series of spots touching each other, so forming a line to the anal angle, whilst the tuft is also pure white. It is labelled "New Forest."

The type specimen, however, is sufficiently described, except in one or two minor particulars; thus, writing of the darker ends of the wings, paler clouds would better have expressed the markings than white spots, and "the fine orange-coloured line which extends along the margin towards the apex" should have been omitted, as it refers to the coloration of the cilia alone, and is not a wing marking. The pin is an ordinary white one, slanting backwards, and no clue is given whence the specimen was derived. A combination of unfortunate circumstances connected with a newly named moth, which we have, however, gathered was formerly in Dr. Mason's collection.

Charlottana, Clark.—Unless this should prove to be identical with the original *curtisana*, now lost to knowledge, we must recognize it as a good variety, and the most beautiful of all. It differs from those forms usually called *curtisana* by an absence of the fascia from the costa before the button, by the white striæ and paler clouds along the costa, and the substantial reddish orange streak from the base to the central tuft, which under no conditions could possibly be called a "faint fulvous one." A few specimens only are known.

Gumpiana, Clark.—Specimens have hitherto been incorporated with our series of *subcapucina*, more uniformly sprinkled with grey and white, of a smoother aspect, and wanting the two white square blotches towards the hind margin, whilst the

central tuft was either very small or entirely wanting. These were pointed out to friends years ago as deserving a varietal name, but it was a great surprise, I suspect, to others as well as myself when Mr. Clark gave it this one. Of course he was in error when he said this plain coloured moth had been known many years in our sale-rooms under this name, and Clark afterwards ('Record,' vol. xvi. p. 145) corrects the impression his first article may have made upon his readers by giving Mr. Johnson's definition of *gumpinana* as originally described, but unfortunately he does not withdraw his own erroneous name, so that this well-marked and distinctive variety still awaits a befitting title, and I would propose that it be known as ab. *clarkiana*.

The *gumpinana*, not *gumpiana*, of our older collectors has the central tuft, vitta, and smaller five tufts white, the < angle enclosed between the apex and anal angle, narrowing to the tuft, of the palest violet slate colour, with a narrow red line from the central tuft to near the apex, and an interrupted white dash dividing into two lines below it. The basal part of the wing tinged with reddish brown, and the first two-thirds of the upper part of the wing towards the costa a dirty yellow; this is divided from the central tuft by an extremely pale inconspicuous yellow fascia which seldom crosses the wing. All the colours are very subdued, and the moths thin scaled generally. Head and thorax white. Totally unlike any other form excepting the next, which is somewhat like it.

Two specimens, of which one was labelled "New Forest, 2.10.05," were in Mr. Clark's cabinet as *tolana*; they constituted lots 325, 326 in the catalogue at his sale. Smaller than *gumpinana*, Johnson, they are very strongly coloured. The basal half of the wings of a dirty yellow, with a few reddish markings at the base; the red line from the button terminates on the costa before the apex, and is strongly pronounced; it is continued towards the base after having been interrupted by the central white tuft and pale fascia, then along the top of the nether end of the white vitta to the base of the wing. The white clouds in the hinder third of the wings are distinct and well-defined, as they are in *subcapucina*, and the ends of the wings are red-brown; hence this handsome variety has a much more mottled appearance than *gumpinana*. The button and vitta are pure white, as are the small subsidiary dots towards the hind margin. Of course they have no affinity with *tolana*.

A similar variety to that named *gumpiana* by Clark, but with darker scaling, thus making a slaty-grey or roan-coloured insect of uniform coloration, but large white tuft and vitta, lots 337, 338 were sold as "*gumpiana* or new var.;" they were unlabelled, but captured at Folkestone by Mr. William Purdey, who alone has taken this form. As there are now seven specimens known, all precisely similar, it is well they should possess a varietal

name, and I propose to call them after their captor. The good work Mr. Purdey has done for entomology in clearing up points of difficulty and original research in the life-histories of many of our Lepidoptera deserve this slight recognition of his services, and the variety will henceforth be known as *purdeyana*.

(To be continued.)

NOTES AND OBSERVATIONS.

OUR readers will learn with interest that Mr. Selwyn Image, M.A., Fellow and Member of the Council of the Entomological Society of London, has been elected to the Slade Professorship of Fine Art in the University of Oxford, where, as an enthusiastic disciple of John Ruskin, he graduated in 1872; Ruskin being the first occupant of this particular Chair. Latterly, as Master of the Art Workers Guild, he has done much to develop a taste for art among the more highly educated members of the community, while his love for entomology finds continual expression in the work of designing, upon which his energies are largely concentrated. A poet and an artist, he has among other charming subjects embodied *Hybernia leucophaearia* as the ideal "Spring Usher"; and, at the moment, is putting the finishing touches to the beautiful new seal of the Entomological Society—a labour of love, which, we are sure, will be as much admired as it will be appreciated by all his colleagues and friends who are also of "the brotherhood of the net."

RETARDED EMERGENCE OF *ACRONYCTA MEGACEPHALA*.—On September 4th, 1907, a single larva of this species gnawed out a hole in a piece of virgin cork, and therein formed its cocoon. As no moth had emerged by October, 1908, I partially opened the cocoon, and found the chrysalis alive and healthy. Throughout 1909 I frequently looked in the box, but only to find a healthy pupa. On May 27th last the moth emerged—a fine female, it having lain over three winters, and been in a cocoon for a period of two years and eight and three-quarter months. The box containing same was kept in a cold room, and in the same position, throughout this period. As Barrett in 'Lepidoptera of the British Islands' says "this species sometimes remains in cocoon through a second winter," I have thought the above worth recording.—W. A. ROLLASON; "Lamorna," Truro, June 10th, 1910.

ABERRATION OF *E. ADVENARIA*.—Among some insects taken for me by my brother near Godalming, Surrey, which I received June 5th last, is an almost unicolorous male of this species; it is very much the colour of worn *H. muricata*, and has white fringes. It is of smaller size than usual, and must be very similar to the specimen mentioned by Mr. Oldaker (Entom. xli. p. 157) as having been bred by him in 1907 from ova obtained near Haslemere. The insect seems to swarm in that part of the country, where there is a good undergrowth of bilberry, and I took a series of it there lately. But for

the cabinet it should be bred, as really fine specimens are few and far between.—(Captain) P. A. CARDEW; 50, Melbury Gardens, Cottenham Park, Wimbledon.

PARASITE OF CALLOPHRYS RUBI.—Somewhere in Switzerland—I think in the Val d'Herens—I picked up a larva of *C. rubi* last year, which this spring produced an ichneumon fly. I ought perhaps to say that the pupa of *C. rubi* is so distinct that the determination of the species is not in the least doubtful. The fly emerged by cutting a lid off, consisting of the front of the pupa-case. The specimen is now in the collection of Mr. C. Morley, who says the parasite "is a true ichneumon (*Anisobas platystylus*, Thoms., Ann. Soc. Fr. 1888, p. 122), and is the first parasite ever bred from *Thecla rubi*, so far as I am aware. It was only known from Sweden and France."—T. A. CHAPMAN; Betula, Reigate, June 17th, 1910.

EPHEMERA DANICA (EPHEMEROPTERA).—On May 28th last this may-fly was emerging near Slyfield, Surrey, and a few sub-imagines were taken home. One male I watched for a quarter of an hour or so as it was trying to emerge. The thorax-skin split longitudinally, and, as in the Odonata, emergence commenced in that region; next appeared the head. Wings, abdomen, and legs seemed to be coming out more or less together, the legs being perhaps a little behind the rest. The abdomen was arched up, and apparently stuck. Ultimately I tried to help, but without success as regards fore wings and some of the legs. Just before emergence commenced the wings were spread horizontally, while the insect twitched and jerked its abdomen, &c.; it seemed clear that a change was going to take place. Throbbing was noticed in the freshly exposed and shining dorsal part of the thorax. If this emergence was normal, it is clearly a very gradual process, and in some ways resembles that of a dragonfly.—W. J. LUCAS.

TRIECPHORA VULNERATA (HOMOPTERA).—At the beginning of June, in the coverts between Claygate and Oxshott, Surrey, this rather strikingly coloured froghopper seemed fairly abundant.—W. J. LUCAS.

THE CAPTURE OF SOME CICINDELIDÆ IN BORNEO.—While on a collecting expedition in the early part of this year in the upper waters of the Limbang—one of the great rivers of Sarawak—I witnessed a curious method of capturing Coleoptera, which may perhaps be of interest to entomologists in England who still use the prosaic net. It came about in this way. After a hard day's work paddling up the river against a strong current, we (*i. e.* my five Dyak collectors, six Bisaya coolies, and myself) arrived at a native house, where we determined to pass the night. Accordingly, the two boats were hauled up on to a high sand-bank at the river's edge and we proceeded to disembark. I noticed at once several Cicindelidæ flying over the sand, and soon discovered there were three species, *viz.* the ubiquitous *Cicindela aurulenta*, Fab.—about the commonest beetle in Sarawak—a smaller, red-spotted species, *Cicindela crespignyi*, Bates, and a third species, new to me, which turned out to be *Cicindela opigrapha*, Dejean, a rather local species. After seeing me

catch several with my net, a young Bisaya began to do so too, but using a diminutive fishing-rod. His "apparatus" consisted of a thin stick some three feet long, to the end of which he had tied a long hair (it is the custom of the Bisaya men to wear their hair long, and sometimes it reaches well below the waist); to this hair was fastened a bait, made from a small grasshopper. Armed with this, he slowly walked across the sand-bank, dangling his bait carefully over or near any Cicindelid he saw. Whereupon, in nine cases out of ten, the Cicindelid, with feminine curiosity, would walk slowly towards it, and, after slight hesitation, seize the morsel, and thus fall an easy prey to my native entomologist. He had to exercise great care in drawing up the rod evenly, so as to prevent any jerks which might frighten the insect away. In this way he caught quite a number for me, and once the insect had seized the bait, he seldom failed to bring it to the killing-bottle. They told me they had learnt it as a game which they used to play when they were children. I tried it, but without much success; and I warn intending disciples that it is a game that wants practice.—J. C. MOULTON; Sarawak, May 11th, 1910.

CAPTURES AND FIELD REPORTS.

SPRING BUTTERFLIES IN NORTHANTS., BUCKS., AND MIDDLESEX.—After the miserable experience of last year's summer, followed by a wet, cool autumn, and an open winter, it is something of a surprise to find butterflies generally so plentiful both here and the one or two localities which I have had an opportunity of visiting so far. Insects of all kinds were late in making an appearance in this part of Middlesex—among the hibernators in the house the death-roll was unusually large—but once the warm days began they quickly responded, and, compared with the dates of previous years, one or two butterflies are even early. For example, I was on the Bucks. Chiltern Hills for an hour or two last Saturday (June 4th), and although there was not much sun, the commoner sorts were well in evidence—*Euchloë cardamines* and *Nisoniades tages* in even greater profusion than usual; as also the three ordinary "whites." *Callophrys rubi* was swarming, every hawthorn bush and sapling oak when tapped distributing a multitude of worn males, while the females were as common, flitting over the low herbage. *Cænonympha pamphilus*, a large form and brightly coloured, was also much in evidence; but of the Lycænids, *Polyommatus icarus* did not seem fully out, though I took a specially finely marked female. *P. astrarche*, on the other hand, was well emerged; while I was most pleased to turn up two or three perfect examples of *Cupido minimus*, which for some years has been getting scarcer and scarcer in the several localities hereabouts where the *Anthyllis* blooms freely, and where I am accustomed to look for it.

In a wood on the borders of Northamptonshire and Hunts. a week previously (May 28th) I had the good fortune also to note a similar abundance of ordinary butterflies, the glades being particularly affected by *Satyrus* var. *egeoides* and *Gonepteryx rhamni*, with occa-

sional *Argynnis euphrosyne*. *Cyclopides palæmon* was also seen in such numbers as to promise a plentiful season for this loveliest and rarest of our "skippers," while the last capture of a very short day's work—due to a disappointing change of weather—was a perfectly fresh male *Nemeobius lucina*.

Two days previously, in Oxhey Wood (Herts.), *Hesperia malva* was as common as ever I have known it, though I fear all collecting on this once "happy hunting-ground" is doomed, as the builders are at work, and Civilization in the form of a three-foot sewer has invaded this last surviving part of the primitive woodland of our Middlesex north border! Lastly, it is satisfactory to find that *Celastrina argiolus* still holds its own, and despite the drenching of ivy and holly-buds last year made a welcome reappearance in our garden on May 22nd; the females a couple of days later.

It is, perhaps, worth recording also (though scarcely a "field" report!) how extremely common were *Pieris brassicæ* and *P. rapæ* in the streets of London on the day of the King's funeral, May 20th; from quite an early hour these butterflies crossing and recrossing unmolested above the thousands of close-packed humanity in Piccadilly, where I happened to be stationed.—H. ROWLAND-BROWN; Harrow-Weald, June 6th, 1910.

AMPHIDASYS BETULARIA ab. DOUBLEDAYARIA IN ESSEX.—I have to-day, May 21st, taken here a fine female specimen of *A. doubledayaria*. This is perhaps a record for Essex, but some of your readers will know better than I.—(Rev.) W. CLAXTON; Navestock Vicarage, Romford.

LEPIDOPTERA AT WEST WICKHAM.—It may be of some interest to record that on June 6th I took a specimen of *P. piniperda* at sugar at West Wickham. This seems a very late date for this species, but in spite of that it was in very fair condition. The same evening I also took by "lamping" *N. dodonea*, *C. fluctuosa*, *L. dictæoides*, *T. batis*, *B. consortaria*, and *M. albicillata*. I have had some opportunity of working this once famous locality during the past few years, and amongst the better captures the following may be mentioned:—*H. bicolorana*, *A. flavicornis*, *A. leporina*, *O. suspecta* (sugar), *N. neglecta*, *N. stigmatica*, *B. parthenias*, *N. hispidaria* (larvæ), *C. glabraria* (one larva), *E. dolobraria*, *P. bajularia*, *T. luridata*, and *M. notata*. But my experience is that you have to work pretty hard for what you get. Sugar, for the most part, has been a dismal failure, and more often than not the trees sugared have failed to produce a dozen insects altogether.—(Rev.) E. MANNERING; 74, Bolsover Street, W., June 9th, 1910.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, May 4th, 1910.*—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—The decease was announced of Mr. G. S. Saunders, F.L.S., a Fellow of the Society.—Mr. J. J. Ward brought for exhibition an example of

the ichneumon-fly, *Rhyssa persuasoria*, female, together with a photograph of the living insect. The specimen was captured at Coventry; but whether that place was its natural habitat is doubtful, as some packing straw from Geneva was lying in the vicinity.—Mr. H. St. J. Donisthorpe exhibited, on behalf of Dr. Nicholson, Mr. Dollman, and himself, examples of a beetle new to science, an *Olophrum* and Scotch specimens of *Olophrum fuscum*, the species to which it comes nearest, for comparison. The new beetle had been discovered by him and Dr. Nicholson in Wicken Fen under sedge refuse, and subsequently by Mr. Dollman in some numbers in the same locality.—Mr. Donisthorpe pointed out the characters in which it differed, and said he had described it, and proposed for it the name of *Olophrum nicholsoni*.—Mr. H. Eltringham stated that in reference to his previous paper describing experiments on the edibility of certain lepidopterous larvæ (Trans. Ent. Soc., 1909, pp. 471–478), the caterpillars there referred to as *Boarmia rhomboidaria* had proved to be *Odontopera bidentata*. Further, that some of the moths had been bred from larvæ fed exclusively on ivy, and though similar larvæ had, as explained in the paper referred to, proved extremely distasteful to the lizards with which he had experimented, the moths were found to be palatable. His lizards having failed to survive the winter, he had sent the moths to the Zoological Gardens, where Mr Pocock had given one to a bird and two to some lizards (*Lacerta viridis*), and all of the moths were devoured at once. The result appeared to show that the distastefulness of the larvæ was due to the particles of the food plant contained in the digestive tract.—Mr. E. Meyrick, B.A., F.R.S., communicated a paper entitled “Descriptions of Micro-Lepidoptera from Mauritius, and the Chagos Isles.”

Wednesday, June 1st, 1910.—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—The President proposed that an Address of Condolence and Congratulation should be presented by the Society to His Majesty King George V. on his accession to the throne. The proposal was seconded by Mr. H. Rowland-Brown, one of the Hon. Secretaries, and carried unanimously, all Fellows present standing.—Mr. Arnold Whitworth Boyd, The Alton, Altrincham, Cheshire; Mr. Emile Garcke, M.I.E.E., Witton House, Maidenhead; Mr. Henry Oliver Holford, Elstead Lodge, Godalming; Count Briger Morner, Consul for H. M. the King of Sweden, Sydney, New South Wales; Mr. C. W. Mason, S.E.A.C., St. Denis, Shaftesbury, Dorset; Mr. Martin E. Mosely, 13, Addison Road, London, W.; Mr. Robert Tait, junior, Roseneath, Harboro' Road, Ashton-on-Mersey, Cheshire; Mr. Frank Wray Terry, The Planters' Association, Honolulu, Hawaiian Islands; Mr. F. V. Theobald, M.A., South Eastern Agricultural College, Wye Court, near Ashford, Kent; Mr. Charles Henry Rudge, Assoc.M.Inst.C.E., 15, Newton Road, Bayswater, W.; and Miss Carlotta Rudge, 15, Newton Road, Bayswater, W., were elected Fellows of the Society.—The President announced that the Conversazione, postponed from Friday, May 27th last, by reason of the general mourning for his late Majesty King Edward VII., would be held during the forthcoming session on some date not earlier than the last week in November.—Commander J. J. Walker

exhibited examples of *Ceuthorrhynchideus mixtus* and *C. pilosellus* taken by him during May last at Tubney, Berkshire.—The Rev. F. D. Morice showed a specimen of the Pompilid *Clavelia pompiliformis*, Luc., male; probably the only fossorial wasp with pectinated antennæ, taken by him this spring in the province of Oran, Algeria; also examples of the saw-fly *Phymatocera aterrima*, Klug, with photographs of the insect in the act of ovipositing on "Solomon's Seal," and gave an account of the way in which the saws are employed for the purpose. Instead of cutting vertically the saws are turned sideways.—Mr. H. Main brought for exhibition an empty larva skin of a male *Lamproloma noctiluca* with a living pupa, which was seen to be intermittent luminous.—Mr. L. Newman showed a long and varied series of *Ematurga atomaria*, bred from a melanic female taken in cop. with a dark typical male at Bury, Lancashire. It was noticeable that the melanic and semi-melanic forms predominated in the offspring.—Mr. Newman also exhibited a male and female of (?) hybrid *Agriades thetis* (*bellargus*) \times *A. corydon*, taken wild in North Kent, June, 1909, by Sergt.-Major W. Crocker, and ova *in situ* of *Sesia andreniformis*, of which also Mr. A. E. Tonge handed round a photograph, \times 26.—Mr. O. E. Janson showed a remarkable gynandromorphous example of *Goliathus giganteus* and other *Cetoniidæ* recently collected by Mr. E. Brown in Uganda, British East Africa, including both sexes of the rare *Formasimus rufus*. Nearly all the species exhibited were West African forms, proving the great similarity of the central African fauna, extending over a district of two to three thousand miles across that continent.—The Rev. G. Wheeler brought for exhibition a case containing many examples, bred from identical parents, of *Smerinthus populi*, taken in Lancashire, showing a wide range of variation; also a curious pale dwarf example of *S. ocellata* from the same locality.—Mr. C. O. Waterhouse exhibited specimens of a beetle of the family Chrysomelidæ, *Crosita altaica*, found by a poulterer at Bournemouth in the crop of a pheasant from Russia. He remarked on the brilliancy of the metallic coppery-red and green colours, held by some to be warning-colours.—Dr. T. A. Chapman exhibited specimens of the spring emergence of double-brooded *Agriades corydon*, taken in April and May last in the Riviera, at various dates from April 23rd to May 11th, displaying considerable variation, but all apparently of one race. He also showed larvæ of *Thestor ballus* in the last instar, feeding on flowers of *Ulex europæus*; a larva of *Agriades corydon* var. *constanti*, from eggs laid at Ste. Maxime at the beginning of May, and now in the third instar; and a living imago of *Callophrys avis*, Chpmn., a somewhat belated specimen, emerged June 1st, 1910; the delay no doubt due to an unsuccessful attempt at forcing in February.—Dr. K. Jordan exhibited a live male specimen of a species of *Truxalis* obtained by him at Portimão, South Portugal, and also showed living larvæ and the cocoon of a moth, *Diplura loti*, found on *Cistus* in the Serra de Monchique, Algarve, South Portugal, on May 13th. They resemble the caterpillar of *Eriogaster lanestris* so closely that a generic separation is hardly justified.—Mr. H. H. C. J. Druce communicated some notes received from Mr. J. C. Moulton, of the Sarawak Museum,

on the association of a Homopteron with a Lycænid butterfly observed in Borneo. The following papers were read:—"Mr. A. D. Millar's Experimental Breeding of *Euralia*," by Roland Trimen, M.A., F.R.S., F.L.S.; "Notes on the Scoliidae," and "New Fossorial Hymenoptera from Australia," by Rowland E. Turner, F.E.S.; "On the position of the Rhopalosomidae, with Description of a Second New Species," by Claude Morley, F.E.S.; "Descriptions of Malayan Micro-Lepidoptera," by Edward Meyrick, B.A., F.R.S., F.Z.S.; "On the Specific Distinctions between *Achraea lycoa*, Godt., and *Achraea johnstoni*, Godm.," by Harry Eltringham, M.A., F.Z.S.—The following Fellows will represent the Society as delegates to the International Congress of Entomology at Brussels: Dr. F. A. Dixey, M.A., M.D., F.R.S., President; Mr. H. St. J. Donisthorpe, F.Z.S., Mr. F. Merrifield, and Mr. R. Trimen, M.A., F.R.S., F.L.S.—H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

RECENT LITERATURE.

A Natural History of the British Butterflies. By J. W. TUTT, F.E.S.
Vol. iii. London: Elliot Stock, 62, Paternoster Row, E.C.

THE third volume of Mr. Tutt's monumental work on the British Butterflies will appeal not only to native collectors and students of the rather limited butterfly fauna of these islands, but to the many who are extending their researches to the wider sphere of the palæ-arctic region generally. For example, there are two species, now for the first time exhaustively treated, which have proved something of a stumbling-block to most of us—*Everes argiades* and *Plebeius argus* (*ægon*). Continental authorities have expressed their suspicions about var. *alcetas*, Hb. (*coretas*, O.), for some time; and M. Charles Oberthür has already pointed out the main differences between the hitherto so-called variety and the type. Mr. Tutt completely diagnoses both as separate species; and we can only say that we wish *E. argiades* had a better claim to be regarded as an indigenous species. So elaborately is the subject treated, however, that no entomologist who has read these closely printed pages of life-history should fail to recognize his capture at whatever stage effected; and it is to be hoped that something of the meticulous industry displayed by the author in the study will communicate itself to the observer in the field on the look-out for what, with fine insular exclusiveness, we have dubbed "the Bloxworth Blue." Yet the confusion, hitherto existing in the case of the two Everids, is as nothing compared with that involved with *Plebeius argus* (*ægon*, Schiff.) and *P. argyrognomon* (*argus*, auctorum), though British writers have not been quite so hopelessly inconsistent in their classification of the two species as those of the Continent; for the good reason, probably, that so far *P. argyrognomon* has not turned up in the United Kingdom, even in the imaginative literature of the early Aurelians! Now we know, however, that structurally the two butterflies, which some have found so difficult to separate, present sufficiently striking differ-

ences; while all sorts of varieties and forms referred to one should by rights have been attributed to the other. Mr. Tutt, beginning from the beginning, considers these in detail; and, by the employment of scientific methods, disposes of the several errors, we trust, for good.

Throughout the three volumes published, also, he has been able to furnish us with first-hand life-histories of all his subjects, thanks in large measure to the diligence and skill of Dr. T. A. Chapman and the other scientific entomologists who have collected so much useful material for him in each instance. There has been no necessity, therefore, to draw upon doubtful foreign authorities, or to repeat slavishly what experience proves so often to be entirely inaccurate and fanciful. Of the association of *Agriades thetis* (*bellargus*) and *A. coridon* (alas! for the "y") entomologists are continually reminded; of the offspring of cross-pairings we have indubitable examples. Yet how close the association actually is we have never realized so completely as after a perusal of the pages devoted by Mr. Tutt to the "Clifden Blue." With *Cyaniris semiargus* (we have long since dropped the improper "*acis*," no doubt because the "Mazarine Blue" can no more be accounted British!), the four species mentioned complete this particular instalment of Mr. Tutt's work, and it may be said truly, therefore, that it represents quality as well as quantity. We may venture to suggest, however, that as there is to be an Entomological Congress in August at Brussels, Mr. Tutt should take the opportunity to impress upon his brother lepidopterists abroad their nomenclatorial shortcomings, and the desirability of some sort of fixity. As it is, we owe him a debt of gratitude for helping to unknit an extremely "ravelled skein"; while at the same time descanting on the British butterflies in something better than the pedantic spirit of the book-naturalist.

The fifty-eight black-and-white plates, moreover, are not entirely devoted to the very important but highly specialized subjects of the microscope. Mr. F. Noad Clark, Mr. A. E. Tonge, and Mr. Hugh Main excel as exponents of the art of photo-micrography, but to the average reader their studies of the "blues" and their surroundings, of their larvæ and pupæ—many of them now authentically illustrated for the first time, in the earlier stages—will commend themselves even more than the highly technical biological details. We are glad to observe, further, that Mr. Tutt is not content merely to catalogue and describe the multifarious aberrations of the larger *Lycænids*. Where possible, he adds a figure which leaves us in no doubt as to the accuracy of the letterpress—a test which cannot always be applied to other writers. Thus it will be seen that Volume iii. of the British butterflies is an altogether worthy successor to those already published, and it is to be hoped, therefore, that liberal support will be forthcoming to continue the series, both in the form of an increased subscription list and of extended co-operation by entomologists who have acquired material that may assist the solution of the many problems which arise when any species, however common, comes to be examined by other than the casual methods of the "mere collector."

(H. R.-B.)

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Vol. XI:II.]

AUGUST, 1910.

[No. 567.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

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THE ENTOMOLOGIST

Vol. XLIII.]

AUGUST, 1910.

[No. 567

A BLACK-TIPPED ABERRATION OF *GONEPTERYX* (*RHODOCERA*) *RHAMNI*, MALE.

By T. REUSS.



On June 6th last, two fine larvæ of *Rhodocera rhamni* pupated in a heated breeding cage. One of the two pupæ, which hung side by side, emerged on the 15th as a large male specimen with unusually elongated and pointed wing-tips. The other pupa had already on the 14th attracted my attention by "colouring up" in an unusual way, as shown in the first of the above figures. While the wing-cases grew opaque with the bright yellow pigment deposited beneath them in the normal way, the tips of the wings remained transparent in the same way as do the wing-tips in pupæ of *Pieris brassicæ* and other species when the colouring begins to show itself. The pupa did not emerge on the 15th but continued to develop. The wing-tips began to grow greyish and opaque—on the 16th they were nearly black and by the evening they were jet black as in figs. 2 and 3. Also the wing-bases turned black, though hardly more than normal, and the discal spot remained orange. Early on the morning of the 17th, the pupa which, except for the black wing-tips, looked quite normal and promised a fine specimen, emerged unexpectedly as a cripple. Compared with aberrations of other species, the black-tipped *R. rhamni* (ab. *nigriapicata* n. ab.) would perhaps rank in the category with forms which have been described of

Colias hyale, *Anthocharis belia*, and others in which the fore wings from the discal cell to the apex had changed to black. But these species are normally already marked with black, while in *R. rhamni* the black apical coloration marks a new departure in development.

ON THE OVIPOSITION AND INCUBATION OF THE
ICHNEUMONID *PANISCUS (PARABATUS) VIR-*
GATUS, FOURC.

BY RUPERT STENTON, F.E.S.

I BELIEVE it is generally thought that when a female ichneumon meets with a lepidopterous caterpillar fulfilling the necessary qualifications to serve as a pabulum for its own larva, the fate of that caterpillar is irrevocably sealed. Though this may be true as a rule, it is by no means invariably the case when the parasite is the above species and its intended victim *Cheimatobia boreata*, for the latter can and does fairly often come off victorious in the encounter.

In the first place, this caterpillar's habit of spinning together leaves and living between them is its best possible protection against an external parasite such as *P. virgatus*, which places its ova on and not in its host, having no long ovipositor wherewith to reach it in its habitation, and so evidently dependent on coming across it in the open. It was on supplying captive *virgatus* females on May 26th and onwards with *boreata* larvæ that I was able to witness the caterpillar's method of defence when attacked away from its abode; and on its tenacity in the battle which then takes place depends with which shall lie the victory.

It is the ichneumon's endeavour to place the egg as near as possible behind the head of its host, no doubt to prevent removal, which I found could sometimes be done if put too far towards the anal end. In this direction it faces after pouncing upon the caterpillar, who almost invariably then seizes one of its enemy's posterior legs; this is its main defence, but it will also lash itself to and fro and turn on its back, the parasite gripping tightly hold with its mandibles. To obtain sufficient force to drive in the ovipositor, or in a case like this merely to expel the egg, I have noticed that a female ichneumon exerts a strong upward pull, particularly with the powerful posterior legs, corresponding to the force it is necessary to put into the downward pressure of the abdomen, and so by holding one leg the caterpillar destroys the even balance of power, and renders the parasite utterly incapable of ovipositing. The matter is thus reduced to one of endurance, and should the caterpillar prove to

possess the greater share of this, the ichneumon will not again interfere for a long time; not at all, I suspect, in a state of nature, as they would go their separate ways.

That this seizing of the enemy by the leg is a strongly instinctive action I should think probable, from having seen a larva of *Hybernia defoliaria* do it every time a species of *Anomalon* I kept in the same box with it approached, though without any sinister intent on the parasite's part.

The ovum itself of *P. virgatus* is long, black, and shining, somewhat rounded at one end, and very pointed at the other, and is attached to the host at this pointed end by a fine foot-stalk. In this light red, semi-transparent parasite, the ova can be seen lying as a dark mass towards the apex of the abdomen; on dissecting a captured female I counted thirty-seven, but this may not represent the full batch, as it is likely some might have already been deposited. Those nearest to the apex and ready for ejection were quite dark, but higher up they were whitish, beginning to turn black at the blunt end, and higher still they were quite light.

Oviposition takes place upon *boreata* larvæ usually from one to two days before they are about to commence pupation, the ova hatching when they have spun their cocoon; until this time the egg has remained in a more or less perpendicular position, but the young grub, partly emerging from the rounded end, causes a top-heaviness, which bends over the foot-stalk, allowing the parasite's mouth to come in contact with its food. It does not emerge entirely from the egg-shell for some time, but continues to feed, growing rapidly, until the shell is merely attached to the apical segment. By this time death has overtaken the caterpillar, and the parasite, which has hitherto been lying round its neck, now alters its position, withdraws its last segment from the shell, and lies alongside its victim in the cocoon, continuing to feed on its body.

The length of incubation varies according to the state of advancement of the host towards pupation, the time of hatching being when the *Cheimatobia* has spun its cocoon, and before it has assumed the pupal state. Normally, as before mentioned, the ova are deposited shortly preceding the host's retirement to its cocoon; should they almost immediately do this, I found the ova would hatch on the morning of the third day after parasitization.

That the desire of the host for pupation does influence the parasite within the egg, and that it can and does await the psychological moment when to emerge is evident, as by substituting *Hybernia defoliaria* larvæ, not nearly full-fed, for those of *Cheimatobia boreata*, and thus compelling *Paniscus virgatus*, who were anxious to be rid of their ova, to reluctantly oviposit upon them, I found that the length of incubation could be

extended to fourteen days, and on the *defoliaria* showing a disposition to pupate, the ova duly hatched. Between the minimum length of time mentioned above and this maximum I found various degrees with *C. boreata*, *C. brumata*—which they would almost as freely parasitize—and *Oporabia dilutata*; though in one instance one of the last-named did manage to safely pupate, casting off the ova with the larval skin. The reason for the variability in the times of incubation is thus easily understood; but I have been unable to determine the cause which enables the embryo to await and choose with precision the correct time to split the shell.

P. virgatus females do not seem able to retain their ova for any length of time in the absence of a host; if deprived of the latter the ova are excreted, and cleaned off the apex of the abdomen with the posterior legs. I do not think, when at large, more than one egg at a time is deposited on a single caterpillar, and once only did one of my captives place two on a *boreata* without moving, though if a fresh supply of larvæ is not kept up they will continue to deposit ova at intervals on those already parasitized. One larva I had left for some time in a box with a female parasite had nine attached to its skin.

I have been unable to dip further into the economy of this interesting species owing to lack of material, the opening of a cocoon invariably occasioning the death of the parasite, partly, no doubt, owing to the drying up of its food, and with continual observations my stock has now almost reached the vanishing point.

[Mr. Stenton brings forward many interesting and novel points in the economy of this species, for which compare Newport (Trans. Linn. Soc. xxi. pp. 71–77, pl. viii. figg. 13–19); Westwood (Introd. ii. 145–7, figg. 76, 7–15); Adler (Ent. Nachr. v. p. 205); and Poulton (Trans. Ent. Soc. 1886, pp. 162–168 et 1888, p. 588). The first remarks that the larvæ “in the earlier stages of growth more resemble cotyledonous vegetables than animal organisms,” and regards them as the representatives among insects of the prematurely liberated fœtus of the kangaroo. None of Mr. Stenton’s three hosts has previously been noted for this species, his examples of which I have examined.—CLAUDE MORLEY.]

THE *ATHALIA* GROUP OF THE GENUS *MELITÆA*.

By Rev. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 163.)

[THE following portion of this paper was in print before Dr. Chapman’s explanation appeared in the July number of the ‘Entomologist,’ and I should be very sorry if either he or any other reader of the magazine should wrongly suppose that it had been

written, as might appear, as an implied refusal to accept that explanation. At the same time, I adhere to the general principles which I have expressed; and with regard to the particular case in point, Dr. Chapman must indeed be hard to convince if he does not consider the evidence sufficient for the double-broodedness of what I must continue to call *britomartis* at Reazzino. Nothing could be more misleading (unintentionally, I am sure) than the statement that I "took it in June and in July in different seasons, and considered the June season a late one, and that these were the first and second broods," especially with the implication that this was my sole reason. This might mean that I took it one year at the end of June and another year at the beginning of July, and considered *that* sufficient evidence of the insect being double-brooded! a madly rash conclusion, even though my entries of dates with regard to other insects show that the season *was* a late one. The facts, however, are very different. I first found this *Melitæa* at Reazzino on July 25th, 1904, in fair numbers on ground which I had hunted thoroughly on the 22nd without seeing a single specimen of this insect, though there was no lack of others. This would imply that in all probability the species, all the specimens of which were very fresh, had come out between the 22nd and the 25th. I had no opportunity of visiting the same ground till July, 1906, when *britomartis* did not become really common till the 24th, though both sexes were taken the previous day, and one or two males as much as nine days before. So far I had no idea of its being double-brooded, but finding myself at Reazzino at the end of June, 1907, I unexpectedly came across a few worn specimens of a *Melitæa*, the under side of which showed at once that it was the same species, whilst the condition and date combined, when compared with the late July specimens of 1904 and 1906, made it obvious that they could not belong to the same brood. But this is by no means all. The two broods, though so much alike on the under side, differ greatly in the appearance of the upper side, especially in the males; whilst in the matter of size the very great difference has already been remarked upon ('Entomologist,' xli. pp. 181, 269). Indeed, with the exception of one or two unusually large females of the second brood, it would be impossible to mistake the specimens of one brood for those of the other. I should add that the specimens taken in June last year by Mr. Lowe on the same ground were like those I took at the same time in 1907, and, like mine, were by no means freshly emerged. I think also that Dr. Chapman has overlooked the fact that all the June females which I kept for ova proved to have already laid their eggs, whilst I was able to obtain eggs by dissection from the July females, which died without laying, probably through my ignorance of their food-plant. I still cannot help thinking that this evidence for the double-broodedness of this *Melitæa* is, as I previously called it, not merely sufficient but overwhelming.

I certainly used the expressions to which Dr. Chapman refers with regard to the palpi and antennæ quite intentionally, and can only express surprise at his regarding them as identical in this insect and *dictyyna*. But this is nothing to the surprise I felt at the opinion attributed to me, as taken from my reported observations to

the Entomological Society on March 4th, 1908, which opinion I was at once certain that I had never expressed, because it was one which I never held, *viz.* that "the close affinity with *M. dictynna* made separation superficially very difficult, and until all forms were reared from the ovum it would be impossible to determine whether *britomartis* constituted a separate species or not." I observe that Dr. Chapman guards himself by saying that I am "reported as saying" so, but on looking up the reference, I see that even this is hardly the case; no quotation marks are used, and it may quite well merely represent the impression left on the mind of the secretary. I am well aware that I am to blame in the matter, as I never supplied the secretary with notes as to what I did say, but I cannot too forcibly repeat that this is an opinion which I never for a moment held, though I consider it very important that all forms should be bred from the ovum. What my real views on the matter are is set forth in the following paragraphs.]

It would seem to be the peculiar snare of the specialist, or at least of those who have made a long and detailed study of any one organ, that they are apt to magnify the importance of the special object of their study, and to regard it as the standard by which everything is to be measured, to the exclusion of other structures which may in numerous instances be of greater significance. One of the most unfortunate consequences of this tendency of human nature is that those who have not specialized in the same direction are apt to lose sight of the real value which often underlies exaggerated claims, just as one instinctively (and often quite wrongly) rejects for all purposes the patent remedies which profess to effect universal cures. Yet it would probably be impossible to make a careful and detailed study of *any* organ without discovering facts which were of some biological value, or which were in some cases of use for purposes of classification, and with regard to the genital armature this is peculiarly the case. But, as with all other structures, the knowledge acquired on this subject cannot stand alone, and it will often rather afford hints as to the directions in which further search should be made, than supply students with the means of delivering infallible judgments on questions of phylogeny or classification. Although it is always possible that similarity of structure may be reached along different lines of evolution, yet this will always be the exception and not the rule, so that similarity in these structures will always be *primâ facie* evidence for close relationship, and identity will be still stronger evidence in the same direction, and, unless contradicted by other facts, will argue strongly in favour of identity of species; but before such identity can be assumed, other circumstances must be taken into consideration, or wrong conclusions are likely to be reached.

Now it so happens that in this comparatively small group two cases occur which illustrate this fact somewhat remarkably;

these cases are *britomartis* and *dictynnoides*. If we trusted to the genitalia alone, we should consider the former (as represented by the Reazzino specimens) to be conspecific with *dictynna* and the latter with *aurelia*. I state this on the authority of Dr. Chapman, and on this matter I believe there is no higher. Now it appears to me unthinkable that any person acquainted with this group could see an upper side series of the Reazzino *Melitæa* side by side with a similarly set series of *dictynna*, and suppose on that evidence that they were the same species, or even believe it without indisputable proof; the same thing being equally true with regard to *dictynnoides* and *aurelia*. If only first brood specimens of *britomartis* were available (the second brood being much more distinctive), it would not be surprising if they were taken for *athalia*, and *dictynnoides* on the upper side might equally well in many cases be taken for *dictynna*, though the under side, especially in the case of *britomartis*, tends more to support the evidence of the genitalia. Now, if this evidence were final and conclusive, as some specialists would seemingly have us believe, we should be compelled to distrust the evidence of the wing-markings, size, shape, &c. (which, in default of any other facts, we should probably be justified in doing), and to regard the one as a variety of *dictynna*, and the other as a variety of *aurelia*. Indeed, we should probably go one step further, and speak of them as "local races" of these insects. But here facts would at once contradict us. At Reazzino there is a single brood of *dictynna*, which is also single-brooded everywhere else, and this single brood comes out, as we should expect, between the two broods of *britomartis* on the same ground. In the same way, both on Mt. Cecina, where Hormuzaki originally discovered *dictynnoides*, and on the Tatra, where Mr. Sheldon took it last year, specimens of *aurelia* indistinguishable from Swiss or South German examples are also taken, and though both insects are in this case single-brooded, the time of emergence is not identical for the two. In both these cases these facts appear to me to amount to an overwhelming proof that, the evidence of the genitalia notwithstanding, *britomartis*, as represented by the Reazzino specimens, is not a form of *dictynna*, nor *dictynnoides* of *aurelia*.

Unfortunately, neither of the two species under discussion has so far been bred *ab ovo*, but even if the earlier stages should be indistinguishable from those of *dictynna* and *aurelia* respectively, that fact would not seem to me, in this group, the larvæ of which are so similar, to outweigh the evidence already adduced for their specific distinctness, while if the earlier stages differed at all materially from those of their nearest relatives, the question would of course be settled to the satisfaction of everyone that they are good species. The only scrap of evidence on this part of the subject which I have been able to acquire

points, so far as it goes, in this latter direction. I cannot induce the female of the Reazzino *Melitæa* to lay on any of the usual food-plants of this group, though others of the group lay freely in captivity, which may point to some specialization in the matter of food-plant, or may have no significance whatever. These latter remarks apply only to the Reazzino insect, for Assmann has given a brief description of the larva of *britomartis* from Klarenkrantz, which, if trustworthy, is sufficiently distinctive, though in some points it approaches more closely to *dictynna*, and in others to *parthenie* or *aurelia*.

I must not, however, be taken to suppose that the anatomical evidence is in these cases of no importance, merely because I believe that a wrong deduction has been drawn from the facts; on the contrary, I believe that they give a valuable indication of the phylogeny of the species in question, and in the absence, so far, of any evidence compelling us to believe the contrary, we may at present assume that the connection between *britomartis* and *dictynna* on the one hand, and *dictynnoides* and *aurelia* on the other, is much closer than the double-brooded habit of the first-named species and the general appearance of each pair of species would lead us to suppose. The scarcity of *dictynna* at Reazzino and of *aurelia* on the Cecina and Tatra gives some slight support to the same theory, since it is well recognized that the struggle for existence is most severe between the most closely related species.

(To be continued.)

SOME BEES OF THE GENUS *CROCISA* FROM ASIA AND AUSTRALIA.

By T. D. A. COCKERELL.

THE beautiful parasitic bees of the genus *Crocisa* abound in the tropics of the Old World, and extend in diminished numbers into the warm temperate regions north and south. Their study has been considered difficult, owing to the supposed wide range and great variability of many of the species. Having paid some attention to the genus for a number of years, I am convinced that the species are more numerous and restricted in range than has been generally supposed. The identification of the described forms is not altogether easy, owing to the brevity of most of the descriptions; in some cases, when I have not seen material from the type locality or its vicinity, I may have erred in my determinations, being obliged to suppose identity when there is substantial agreement with the descriptions, and nothing is known to the contrary.

The material on which this paper is based is all in the British Museum; it may be tabulated as follows:—

- First three abdominal segments each with four widely separated white spots; first segment also with a basal spot *C. albopicta*, Ckll.
- Abdomen not thus ornamented, but more or less banded 1.
1. Markings strongly metallic; wings very dark 2.
Markings not or hardly metallic 3.
2. Abdominal markings violet; first segment with a broad continuous, or almost continuous, basal band
C. quartinae, Gribodo, var. a.
- Abdominal markings blue; first segment with only lateral marks *C. verticalis*, Ckll.
3. First abdominal segment practically covered with blue hair *C. basalis*, Friese.
- First segment showing at least a large patch of black 4.
4. Scutellum with a pair of blue spots; abdomen with narrow bands 5.
Scutellum not or not clearly spotted; abdominal bands broad, or widely interrupted 6.
5. Apical and basal bands of first abdominal segment united laterally *C. rostrata*, Friese.
Apical and basal bands not united laterally *C. japonica*, Friese.
6. Basal band of abdomen complete or with a linear interruption 7.
Basal band of abdomen widely interrupted, or if not so, the median part hidden by scutellum 8.
7. Anterior margin of pleura entirely covered with light hair *C. ridleyi*, Ckll.
Anterior margin of pleura dark in middle *C. decora*, Smith.
8. Abdominal bands bright azure blue, wings very dark (Philippine Islands) *C. luzonensis*, Ckll.
Abdominal bands pale 9.
9. First abdominal segment with about middle third and hind margin dark *C. irisana*, Ckll.
First abdominal segment broadly dark 10.
10. Pleura with lower half black-haired *C. amboinensis*, Rads.
Pleura with the lower part pale-haired *C. massurii*, Rads.

Crocisa albopicta, sp. nov.

♀. Length about 12 mm., expanse $2\frac{1}{2}$; intense black, with white spots; scutellum W-shaped, but the median angle much greater than a right angle; wings dark fuscous, with the usual hyaline spots; mesothorax 9-spotted, the anterior lateral spots mainly on prothorax, the median anterior line short, four discal spots forming the corners of a quadrangle, and a small spot above each tegula anteriorly; scutellum unspotted, the hair projecting from under its hind margin black, except a little white in the middle; pleura with a broad zigzag transverse white band, and two spots below; sides of metathorax with a patch of white hair; tegulae black, with a patch of white hair pos-

teriorly; anterior tibia and basitarsus each with a large white patch on outer side, and long black hairs; middle femur with a pair of almost or quite contiguous white spots behind beyond the middle; hind femur with a large triangular white patch above at apex; middle tibia with a very large white patch on outer side; hind tibia with a smaller, subtriangular, median patch; hind basitarsus white on outer side except the basal fourth; anterior and middle basitarsi with a little white hair on outer side; abdomen with more or less round, widely separated, white spots, one at middle of base of first segment, four subapical on segments one to three, and two each on segments four and five; second and third ventral segments with a white spot on each side. In my table i. Bull. Amer. Mus. Nat. Hist. xxiii. p. 232, this runs out because of the different ornamentation of the tibiæ. Compared with *C. macleayi*, Ckll., it differs by the white spots not being stained with ferruginous, the ornamentation of pleura, the anterior wings dark practically to base, &c. The ornamentation of the face is rather peculiar, consisting of a large thick U in white (leaving the lower half of the clypeus dark), and small geminate white spots below the antennæ.

Hab. Mackay, Queensland (Turner, 450).

Crocisa ridleyi, sp. nov.

♀. Length about 12½ mm.; black with bluish-white markings, on face quite white, but on abdomen, legs, &c., a very delicate pale bluish; scutellum W-like, but the median angle much greater than a right angle; anterior wings dark fuscous, with the usual spots, the basal region largely hyaline, but the fuscous extending strongly along the basal nervure and the region of the transverso-medial, but a sharply defined hyaline line along the upper side of the anal nervure, the anal cell also mainly hyaline; posterior wings hyaline, slightly brownish; pygidial plate with a very sharp median carina; clypeus densely punctured; face covered with white hair, scanty on upper part, and wanting on lower third of clypeus; mesothorax with a light margin, broken (abraded?) behind; median mesothoracic stripe broad, narrowing posteriorly, ending about middle of disc, with a spot on each side; scutellum sparsely punctured, black, much white hair coming from beneath the notch; pleura light-haired, with a large central very strongly punctured bare patch; anterior and middle femora with light hair behind; tibiæ light-haired on outer side, anterior ones with a shining apical bare spot, hind ones with about the apical third black-haired; tarsi light-haired on outer side, even on the small joints; abdomen obscurely metallic, especially on first segment; first segment with broad basal and subapical bands, interrupted medially, the two joined by a vertical band on lateral margins; the other segments with broadly interrupted bands, that on the second having a lateral process extending to base of segment; ventral segments two to four with much light hair at sides.

Resembles *C. decora*, but known by the paler markings, the posterior band of first segment only rather narrowly interrupted, the light margin of mesothorax continuous laterally, &c.

The pattern of the abdomen is nearly as in the African *C. braunsiana*, Friese.

Hab. Penang (H. N. Ridley).

Crocisa irisana, sp. nov.

♀. Length about 10 mm., expanse about 21; black, the colour of the markings as in *C. ridleyi*; scutellum W-like, but the median angle very broad; wings brownish, only moderately dark, the colour nearly uniform on anterior pair; pygidial plate small; clypeus very minutely punctured; a strong keel between antennæ; face covered with light hair, but most of clypeus bare; mesothorax with six large spots, the anterior ones largest, transverse, about half on prothorax; median line reduced to a small inconspicuous isolated longitudinally elongated spot; a small patch above each tegula, the tegulæ minutely punctured, and with a white patch behind; scutellum dark, with some bluish-white hair above the notch, and long white hair (not at all bluish) projecting from beneath; pleura white-haired (very densely above), with a very broad transverse strongly punctured black band; anterior and middle femora with some white hair at apex behind; tibiæ and tarsi marked practically as in *C. ridleyi*; abdomen marked essentially as in *C. ridleyi*, except that the first segment is all light-haired at sides, except along hind margin, the light area notched on each side within.

Hab. Irian, Benquet Province, Philippine Islands, May 1st. Collector unknown to me. *C. emarginata*, *C. lamprosoma*, and *C. nitidula* have been listed from the Philippine Islands, but their presence there needs confirmation.

The following species have been previously described:—

C. quartinae, Gribodo, var. a. Markings of abdomen violet. Koepang, Timor. No. 483.

C. verticalis, Ckll. Amboyna.

C. basalis, Friese. Sema Island (off Timor). No. 430.

C. rostrata, Friese. Singapore (H. N. Ridley).

C. japonica, Friese. Japan.

C. decora, Smith. Singapore (H. N. Ridley); Tjigombong, Java (C. W. Andrews); Sadia (= I suppose Sadiya in Assam). This is *C. emarginata* of authors, but not the true *emarginata* of Lepeletier. Bingham ('Fasciculi Malayenses,' Zool., iii. p. 56) refers what I suppose to be the same insect to *C. decora*, and I follow him, not without recognizing a possibility that the true (Chinese) *decora* is different. The abdominal markings are of a fine turquoise blue, of the same colour as those of *C. basalis*.

C. luzonensis, Ckll. Irian, Philippine Islands, May 30th. Evidently obtained by the same collector as that of *C. irisana*. The blue of first abdominal segment is deeply squarely incised basally, and there are four broad entire bands.

C. amboinensis, Rads. Amboyna.

C. massurii, Rads. Dalhousie, N.W. India, July 7th, 1906

(H. J. W. Barrow); Kangra Valley, 4500 ft., October, 1899 (Dudgeon). The Kangra Valley specimen has the abdominal bands much more widely interrupted than the other, but it is of the opposite (female) sex.

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

(Continued from p. 193.)

Syntomoides catena, sp. n.

♀. Head and body blackish, a yellow patch on prothorax, and traces of a yellow belt on middle segment of the abdomen. Fore wings blackish, hyaline spots somewhat as in *S. finitima*, but smaller, and the outer series more uniform and chain-like. Hind wings have three hyaline spots, one below the cell, and two, separated by a vein, beyond end of cell.

Expanse, 22 millim.

Collection number, 20.

Two specimens from Garambi, October, 1904.

Possibly this may be the female sex of *S. finitima*.

Syntomoides finitima, sp. n.

♂. Head and thorax blackish, the latter marked with yellow; abdomen blackish, dorsally marked with yellow, and laterally with yellowish orange. Fore wings blackish with seven hyaline spots, separated by the veins and placed as follows: one in the cell, a smaller one below, a larger one in the interno-median interspace; a series of four beyond end of cell, the second minute. Hind wings have the central area hyaline, broken up by the blackish veins; margins broadly blackish.

Expanse, 22 millim.

Collection number, 20 a.

Two male specimens from Kanshirei (1000 ft.); one taken April 16th, 1906, the other (the type), July 21st, 1908. The 1906 example expands 25 millim., and the hyaline spots are larger than those of the type.

Syntomis interrupta, sp. n.

Head black, face yellow, antennæ black tipped with white above; thorax black, collar, patagia, and posterior edge yellow; abdomen black with seven yellow belts, the first incomplete, and the last three confluent above. Fore wings black; five hyaline spots—one near the base yellow tinged, a triangular one in the cell, one divided by vein two below the cell, two beyond the cell each traversed by a vein (the basal spot is separated from the spot below cell by a square patch of the ground colour, and both these spots are only divided from that in

the cell by the median vein). Hind wings hyaline with some yellow scales on inner margin; the rather broad black border projects inwards about middle.

Expanse, 37 millim.

Collection number, 24.

A male specimen from Garambi, November 5th, 1904.

Syntomis lucerna, sp. n.

♂. Head black, face pale ochreous; thorax black spotted with yellow; abdomen black with eight yellow belts, the first and last incomplete. Fore wings black, some yellowish scales at base; five hyaline spots—a triangular one near the base, one in the cell and one below, two beyond the cell, each divided by a vein. Hind wings hyaline with rather broad costal and outer marginal borders, the latter projected inwards about the middle; the inner margin edged with black and tinged with yellow at anal angle. Under side similar to above, but the fore wings have whitish apical spots.

♀. Agrees with the male, but the hyaline spots are somewhat larger; there are only seven yellow belts on abdomen, the first and last incomplete, and the latter broad.

Expanse, ♂ 46 millim., ♀ 44 millim.

Collection number, 24a.

A pair from Kanshirei (3200 ft.), May 9th, 1908.

Syntomis lucerna flava, subsp. nov.

Except that the hyaline spots and the hind wing are more or less covered with yellow scales this is almost identical with the type. It is, however, rather smaller, the eighth ring of abdomen is represented by a small yellow spot, and the apical spot is absent on the under side of the fore wings.

Expanse, 40 millim.

Collection number, 24b.

One male specimen from Banshoryo, September 15th, 1908.

Ilema arizana, sp. n.

♂. Fore wings pale whitey-brown, with a faint grey tinge in certain lights; costa towards apex ochreous tinted. Hind wings paler and slightly tinged with yellow. Under side of fore wings suffused with fuscous, costa narrowly ochreous.

♀. Fore wings paler than in the male; hind wings whiter.

Expanse, ♂ 38 millim., ♀ 40 millim.

Collection number, 753.

One example of each sex from Arizan (7300 ft.), September, 1906.

Allied to *I. deplana*, Esp.

Ilema tecta, sp. n.

Head and thorax pale ochreous grey, abdomen whitish grey, posterior segments and anal tuft ochreous. Fore wings whitish, rather

silky, costa yellowish tinged, inner margins suffused with dusky. Hind wings whitish, slightly tinged with ochreous grey. Under side of fore wings dark grey, almost black; a pale streak above the cell from near base to beyond middle of costa, thence along the costa itself to apex.

Expanse, 35 millim.

Collection number, 753 b.

One male specimen from Rantaizan (7500 ft.), May 8th, 1909.

Allied to *I. varana*; Moore, from Sikkim.

Ilema taiwana, sp. n.

Head and collar orange, thorax blackish grey; abdomen grey, terminal segments tinged with orange. Fore wings narrow, blackish grey, costal stripe orange, terminating in a point at apex; fringes tinged with orange. Hind wings pale whitey brown, costal area suffused with fuscous.

Expanse, 34 millim.

Collection number, 72 b.

One male specimen from Rantaizan (7500 ft.), May 9th, 1909.

In some respects this species resembles *Lithosia japonica*, Leech, but the fore wings are narrower, the costal stripe is deeper in colour, and extends to the apex.

Asura striata, sp. n.

♂. Head and thorax pale salmon-pink, the latter black dotted. Fore wings pale salmon-pink; antemedial band black, its outer edge nearly straight, its inner edge diffuse towards costa, and an inward projection about middle; a postmedial series of black streaks on the veins, the inner ends of the upper streaks connected by a short, irregular, transverse line, which represents the postmedial; black dots on the outer margin. Hind wings paler.

Expanse, 21 millim.

Collection number, 76 a.

One male from Kanshirei (1000 ft.), November 7th, 1908.

Eugoa grisea ab. *suffusa*.

Fore wings rather more violet tinted, and dark sprinkled; the dots on postmedial line are more directly one over the other, and the area beyond the line is much suffused.

Collection number, 696.

One male specimen from Rantaizan (7500 ft.), May 14th, 1909, and two males from Kanshirei (1000 ft.), April 18th, 1908.

Nola (?) *tripuncta*, sp. n.

♂. Head and thorax white, abdomen whitish. Fore wings white, sparingly flecked with fuscous indicating irregular transverse lines; three black dots on the costa, the middle one largest and triangular in shape; a linear blackish mark at end of the cell. Hind wings

whitish, tinged with fuscous. Under side of fore wings blackish, except on the margins.

Expanse, 22 millim.

Collection number, 1275.

One male specimen from Arizan (7300 ft.), August 18th, 1908.

Miltochrista convexa, sp. n.

Fore wings orange-red, costa and fringes black; basal dot and streak black; three black transverse lines, the first and third excurved; the second incurved, touching (or approximating) the third at each extremity, and united with the first above the middle; beyond the third line is a series of eight black streaks on the veins, the third and fifth longer than the others and touching the line; a black dot in the cell. Hind wings paler; fringes, and cloud on outer margin towards costa, blackish. Under side as above, but the markings are blurred.

Expanse, ♂ 23 millim., ♀ 28 millim.

Collection number, 762.

One example of each sex from Kanshirei (1000 ft.); the male captured in April, 1906, and the female in August, 1905.

Near *M. exclusa*, Butl.

Miltochrista connexa, sp. n.

Differs from *M. convexa* in having the first and third transverse lines obtusely angled below costa, and the third is also sharply angled before its termination on the inner margin; the black streaks on the outer area start from the third line, and the third and fifth of these streaks are continued inwards to a black dot in the cell. On the under side of the fore wings the black streaks towards the costa are confluent, forming a blackish cloud.

Expanse, 24 millim.

Collection number, 762 b.

One male from Arizan (7300 ft.), August, 1908.

This may prove to be an aberration of *M. convexa*.

Miltochrista dentata, sp. n.

Head and thorax orange-red; abdomen blackish, anal tuft orange-red. Fore wings orange-red, costa and fringes black; antemedial line black, indented and angled under costa, thence inwardly oblique to the inner margin; postmedial line black, sharply dentate, followed by a series of black dots; medial line black, almost straight. Hind wings crimson-red, blackish clouds on outer margin; fringes black. Under side similar to above in colour, but the fore wings have a black spot with dot below it towards apex, and the transverse lines are absent.

Expanse, 19 millim.

Collection number, 761.

One female specimen from Arizan (7300 ft.), September 19th, 1906.

(To be continued.)

DESCRIPTIONS OF THE LARVA OF *MELANITIS LEDA*, AND OF THE LARVA AND THE PUPA OF *PAMPHILA MOHOPAANI*.

By HERBERT A. GREEN, F.E.S.

Melanitis leda.

Larva. Ground colour yellow, a median dorsal green stripe and some narrower ones on each side from head to tail. The surface of the body is roughened. The head is the only variable feature in the numerous specimens I have had. In some cases this is entirely black except for two small white spots, one on either side of the head at the lower angle close to the mandibles; in others there is only a narrow black line from the base of the horns, or projections, down the side of the head to lower angle. In all cases there is a narrow white line immediately behind and touching black on the head. Horns black in front, reddish-brown behind, and covered with bristles. Caudal processes not as long as cephalic horns, very slightly divergent. Several have been "ichneumonated" by a common dipterous fly.

Pamphila mohopaani.

Larva. Pale green with two white lines, divided by an equal width of ground colour, dorsally narrowing gradually at head and tail until they disappear. Head black, with four whitish marks, two small at lower angle of head, two larger extending from crown to half way down head; these two spots are divided by a thin projection of the black. Length about two inches.

Pupa. The pupa is pale greenish white, the head prolonged to a point about an eighth of an inch in length. On the under side is a fine projection starting from the middle and extending nearly to tail. One curious feature about this pupa is that the white efflorescence is deposited on the leaf before pupation and not, as in *keithloa*, appearing after pupation on the pupa itself. Feeds on Bush Guinea Grass.

Durban (Natal).

NOTES AND OBSERVATIONS.

Ephemera PRODUCING LIVING YOUNG.—It seems by the following extracts from well-known books that information with regard to the first stages of *Ephemera* is still wanting.

Leland O. Howard in 'The Insect Book' says of May-flies, "In one case a female has been seen to deposit living larvæ."

Dr. Sharp in the 'Cambridge Natural History,' vol. v., pages 432-3, speaking of the description given by Sir John Lubbock of the metamorphosis of *Cloëon*, says: "His observations were made on

captured specimens, so that it is not certain that what he calls the first stage is really such." With regard to the eggs, Dr. Sharp says, on page 441, "The eggs are very numerous, and it is thought may sometimes remain in the water as much as six or seven months before they hatch."

In view of this want of information, perhaps an experience I had some years ago may be worth recording, although my ignorance at the time of its being anything worth special notice prevented my preserving any of the young in *the very first stages*, by mounting them as micro slides, or taking detailed notes of formation, which I much regret. I may mention that from 1871 I had been much interested in pond-life in Turkey—had several small aquaria always under observation, and as the larval forms of May-flies were to be found in every pond and ditch, I kept aquaria well-stocked with them as food for other forms of pond-life. Those most common agreed with what Wilson in 'Chapters on Evolution' called "*Cloe bioculata*," except that, in the figure given on page 266, the tail-hairs are shown all three-feathered on both sides: my Turkish larvæ had the middle hair feathered on both sides, but the other two only on the inside; the figure of *Cloëon dipterum*, given on page 432, vol. v. of 'Cambridge Natural History,' is *exactly* like the Turkish forms. I frequently had the flies (both male and female) emerge from my aquaria, so I knew them well by sight as *Cloe bioculata*. I find by my note-book that it was on September 27th, 1901, I caught a female May-fly (*Cloe bioculata*) on the glass of my window, by taking hold of her wings. She at once flicked her body round, and deposited a fairly large mass of something on my finger. Thinking it might be her eggs, I put a drop of water on it, and examined it with a pocket lens. To my great surprise I found it was a "squirming mass" of living young ones. I washed them off into a small aquarium, where they found plenty of food, as an hour later when I placed some in a small tank for examination under the microscope, I could see they had been eating freely. They had only *two* tail-hairs, no "gills," five dark spots on the head, two on each side near the top of the head, and one lower down in the centre of the head nearly over the mouth: this looked as if much deeper in the tissue of the head, the others seemed to be on the skin. The next day (28th), I caught another female, she did the same thing, but in this case only a small number were larvæ, the bulk of the mass being eggs; still, on putting some under the microscope, I could see they were on the point of hatching, and some did hatch while I had them under observation. I placed these in the same aquarium with the others. After about a week, in which no changes worth taking note of took place, pressure of business and absence from home prevented my making more observations until November 7th, when on examination of the aquarium I found plenty of the May-flies alive, and grown considerably. They had three tail-hairs and gills. I found a number of cast skins, and have reason to think that at least three moults had taken place since the centre tail-hair had developed, as I found skins with this hair of various lengths. Evidently, having come into the room, these flies were unable to find their way

out again, and, unable to find water, retained their eggs until they hatched in the body, but the speed with which this happened hardly agrees with the idea that, if laid in water, they would have taken "six or seven months to hatch."

I shall be much obliged by information as to name. Are *Cloe bioculata* and *Cloëon dipterum* synonyms? I notice that Miall in his 'Natural History of Aquatic Insects' gives the name as *Chloëon dipterum*. When Doctors and Professors differ, where does the poor student come in? — WILLIAM HARVEY; Eastbourne, July 8th, 1910.

PARASITES OF CALLOPHRYS RUBI.—In the July 'Entomologist,' Dr. Chapman, when recording the breeding of an ichneumon from this species, quotes Mr. Claude Morley as saying that it "is the first parasite ever bred from *Thecla rubi*, so far as I am aware." Mr. Morley was probably thinking of hymenopterous parasites only, as dipterous parasites have been recorded. Brauer and von Berganstamm in the 'Zweiflügler des Kaiserl Museums zu Wien,' part vii., p. 72, give *Exorista confinis*, Fall, and *Exorista tritaniata*, Rond.; and Mr. Verrall has a specimen of the latter species, the laconic label of which reads—if I remember rightly—"ex *rubi* Barrett." — COLBRAN J. WAINWRIGHT; 45, Handsworth Wood Road, Birmingham.

BRITISH SCORPION-FLIES.—I have paid but scant attention to this group of insects, but Mr. Lucas's note in the last number induces me to send you the following jottings from my collection, which is named by McLachlan and Morton. *Panorpa communis* occurs in Suffolk from May 21st, through June to July 5th (once on July 26th); it is abundant, but I have never seen it with prey, always sitting on bushes or swept from herbage at Bentley, Barnby, Assington, Southwold, Henstead, Lavenham, Stanstead, Barham, Woolpit and Monks Soham. Helpston Heath, near Peterborough, June 13th, 1908. On July 2nd, 1910, I saw one in my garden here, sucking blackberry flower and standing vertically in it; on August 8th, 1901, I took one sucking Angelica flower at Matley Bog, New Forest. *Panorpa germanica* occurs in Suffolk from May 11th to June 14th only (though once on August 24th); it is common, but I have never seen it with prey, always sitting on bushes or swept from herbage at Bentley, Bramford, Henstead and Assington. Helpston Heath, near Peterborough, June 13th, 1908; Knight Wood, New Forest, June 14th, 1907. *Panorpa cognata* is very rare, and I have but once met with it; two specimens were beaten from alder bushes in Barnby Broad, Suffolk, along with *P. communis*, on July 5th, 1906. Of *Boreus hyemalis*, I possess but a single female, given me some years ago by Mr. Albert Piffard, who took it at Felden, Boxmoor, Herts; it certainly does not occur about Ipswich, whence I have examined cart-loads of moss and debris, and I should be surprised to learn that it is to be found at all in the Eastern Counties.—CLAUDE MORLEY; Monks Soham.

CAPTURES AND FIELD REPORTS.

NOTES ON LEPIDOPTERA IN JUNE.—I was able to pay a short visit to Wansford on June 1st, but saw nothing of *Carterocephalus palæmon* until I was about to return to the railway station, when one example, just emerged, allowed itself to be taken. I saw no others. I paid an afternoon visit to Chippenham Fen on the 15th inst., and was very pleased to see and take for the first time *Emmelia trabealis*, one individual only occurring at the roadside just beyond the green road leading to the fen. *Bankia argentula* occurred freely; *Hydrelia uncula* sparingly; small larvæ of *Cucullia verbasci* were on the *Scrophularia*, but my efforts to find either larvæ or pupæ of *Plusia chryson* were quite fruitless. During the greater part of June I was sugaring in Eye and found things rather backward and Lepidoptera far from common. *Hypsipetes ruberata* occurred sparingly on trunks of willows; *Phibalapteryx lignata* at rest after dark and at sugar. The fine dark fen form of *Sericoris lacunana* was occasionally netted. *Argyrolepis schreibersiana* was very scarce on trunks of black poplar, *Eupæcilia notulana* was not uncommon. *Bacalatrix boyerella* was not common on elm-trunks. *Elachista cerusella* was taken commonly, flying over ditches, and *Nepticula rejella* occurred among hawthorn. Larvæ of *Teniocampa gracilis* appeared to be common in tops of *Spiræa*.—C. H. WHITTLE; 7, Marine Avenue, Southend, June 29th, 1910.

COREMIA QUADRIFASCIARIA IN SURREY.—On June 24th last, Mr. Norman Riley netted a male specimen of this species. It had been disturbed from a hedgerow by my beating-stick, so the captor very kindly gave it to me. In the Victoria History of Surrey (List of Lepidoptera, p. 126) *C. quadrifasciaria* is stated to be rare in the county, and the only localities mentioned are Gomshall, Guildford, and Whitley. To these may now be added—Byfleet (R. S., July 23rd, 1904), Oxshott (A. Scolliek, August 17th, 1907), Aldershot (B. Tulloch, Entom. 1908, p. 274), and Ockham (as above).—RICHARD SOUTH; 96, Drakefield Road, Upper Tooting, S.W.

NOTE ON EUPITHECIA ASSIMILATA.—In a previous note on this species (Entom. xlii. 261) I mentioned that, from larvæ collected from hop in the garden, one imago emerged on August 22nd, 1909. No other moth came up that year. One appeared on June 16th, two on June 20th, and one on June 24th this year. About May 3rd a moth that seemed to be *E. assimilata* was seen on the fence, but as capture was not effected, its identity was not established. A half-grown larva of the species was found on the under side of a hop leaf, quite close to the ground, on July 1st last; another, in last instar, on July 3rd; and a third, almost full grown, under a leaf of black currant, on July 17th.—RICHARD SOUTH.

ARGYNNIS LATHONIA AT FOLKESTONE.—Messrs. Watkins and Doncaster tell me you will like to know that I captured a fine specimen of *Argynnis lathonia* (Queen of Spain Fritillary) at Folkestone Warren, on June 27th last.—D. ALROY SALAMON; 86, Tower Hill, July 7th, 1910.

CAPTURES AT SUGAR IN YORKSHIRE.—On June 7th, 1902, I had the good fortune to take *Acronycta albi*, and on the same date this year another good specimen was secured. Two days later, June 9th, I again sugared in the same locality, and was successful in taking three more good specimens, one of them strongly inclined to melanism. I also took two *A. leporina* and missed another specimen of the same species. *Hadena thalassina*, *Euplexia lucipara*, *Xylophasia rurea*, and other common moths were very plentiful. I also took several melanic varieties of *A. psi* and *Agrotis segetum*. *Apamea unanimitis* was also plentiful.—GEO. BUNCE; 1, Johnston Street, Wakefield, June 12th, 1910.

PACHYS (AMPHIDASYS) BETULARIA ab. DOUBLEDAYARIA IN ESSEX.—In the 'Entomologist' for July, 1910, p. 204, the Rev. W. Claxton announces the capture of a fine specimen of this form at Navestock, on May 21st, and suggests it may be a record for Essex, but he is nearer the mark when he further suggests that some of your readers may know better than himself. Several years ago I put out an ordinary bred female on an apple-tree in my garden, and was not a little surprised to find a black male paired with it the next morning. Since then I have found similar pairings on trees hereabouts, and have bred many fine black and intermediate forms. The specimens obtained from wild larvæ and pupæ collected here are far finer than any I have received from northern correspondents. In recent years there has been such a demand for these larvæ that I have had very few left. This spring I had only three and these produced one ordinary male and two large, intensely black females. This black form is so frequently turning up here now that it appears to be gradually superseding the light one. If I remember rightly, there is a record by Paymaster-in-Chief Mathew, R.N., of the occurrence of *double-dayaria* at Dovercourt, and I have an impression that it has occurred to some of my other Essex friends elsewhere in the county. One of my black females paired in my garden with an ordinary male this year, and I have now a good brood of the resulting larvæ feeding on *Salix viminalis*.—W. H. HARWOOD; 94, Station Road, Colchester, July 4th, 1910.

PACHYS BETULARIA var. DOUBLEDAYARIA (LEPIDOPTERA).—On May 31st last, in Kingston-on-Thames, I found on the pavement a large female of the Peppered Moth. It was quite alive, but had received a little damage. In greatest expanse from tip to tip of the fore wings it measured 60 millim.—W. J. LUCAS.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—May 12th.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. Yonge exhibited a series of *Melitæa aurinia*, taken at Verney Junction about 1890, but apparently now it is extinct there.—Mr. Ashdown, a specimen of *Asphalia flavicornis*, from Mickleham, having a large dark blotch in the disc of the fore wings.—Mr.

Edwards, numerous species of the genus *Parnassius*, including *P. transiens*, *P. smintheus*, *P. gracilis*, *P. imperator*, &c.—Mr. Main, specimens of two species of scorpion, sent him from South France by Dr. Chapman.—Mr. Coulson, a very pale buff example of *Phigalia pedaria* from Epping Forest.—Mr. Hy. J. Turner, a number of species of Lepidoptera from Zermatt, and read a paper entitled "A Few Days with the Butterflies of Zermatt."

May 26th.—Mr. J. W. Kaye, F.E.S., President, in the chair.—Mr. Newman exhibited ova of *Sesia andræiformis* and two specimens of a blue butterfly, male and female, from the late Mr. Sabine's collection, supposed to be a natural hybrid between *Agriades corydon* and *A. thetis* (*bellargus*).—Mrs. Hemmings, a very fine gynandrous specimen of *Celastrina argiolus* taken in Surrey on March 10th, 1910.—Mr. Edwards, numerous species of the South American genus of Satyridæ *Taygetis*, and a number of under sides of *Melanitis leda*, showing extreme variation in colour and markings.—Mr. Adkin, the series of *Boarmia repandata* referred to in Proc. S. Lond. Ent. Soc. 1909, p. 3, and read further notes on them. He also reported an instance of a butterfly, *Pieris brassicæ* (?), being captured and carried off by a bird.—Mr. Step, a number of the carnivorous slug *Testacella haliotidea*, found by Mr. West in his garden at Ashtead.—Mr. Sich, the small winter tents of the hibernating larvæ of *Hyponomeuta cagnagellus*.—Dr. Hodgson, specimens of *C. argiolus* and *Pieris napi* recently bred or taken by him, as noteworthy in the colour investigations he has been carrying on for some years.

June 9th.—Mr. J. W. Kaye, F.E.S., President, in the chair.—Mr. Edwards exhibited a large number of species of American *Pierinæ*.—Captain Cardew, a short series of *Epione advenaria*, including a unicolorous specimen from Godalming.—Dr. Hodgson, the imagines bred from a brood of *Pieris napi* from ova laid in May, 1909. Some emerged in July–August, 1909, but most of the insects did not appear till the spring of 1910.—Mr. Harrison reported the assembling of twenty-one males of *Amphidasys betularia*, fourteen of which were var. *doubledayaria*, at Woodford.

June 23rd.—The President in the chair.—Mr. Ashdown exhibited a specimen of *Ægeria culiciformis* and the rare Coleopteron, *Anthraxia nitidula*, from the New Forest, in May.—Mr. Newman, a very long bred series of *Ematurga atomaria*, with a large proportion of melanic specimens.—Mr. West, specimens of Coleoptera and Hemiptera taken during the field-meeting at Ranmore on June 18th, including *Cryptocephalus coryli*, *C. morai*, *Stiroma albomarginata* (developed forms), *Deltocephalus abdominalis*, &c.—Mr. Carr, a collection of Lepidoptera taken in the Wye Valley during July and August, 1909, including *Leucophasia sinapis*, *Grapta c-album*, a fine series of *Cidaria picata*, &c.—Mr. R. Adkin, a series of *Endromis versicolor* and *Biston hirtaria*, reared from ova sent him from Aviemore in 1908, and read notes on the emergences in 1909 and 1910. Several of the former species, and many of the latter, were apparently going over another year.—Mr. Sich, a beetle reared from a yellow silken cocoon found at Ranmore Common on *Hippocrepis comosa*.—Mr. Cowham, a *Nyssia zonaria*, mainly female, but having

antennæ slightly pectinated, and unusually large wings. — Mr. Edwards, a number of large species of Coleoptera, among which were *Oxynterus audainii* (a gynandromorph) from N. Borneo, *Ceratohina morgani*, and *C. quadrimaculata* from W. Africa. — Mr. J. W. Kaye, numerous aberrant specimens of *Polyommatus icarus*, varying in ground colour, with confluent spots, developed marginal spots, &c. — Mr. F. Noad Clark reported that *E. tipuliformis* had been common in his garden at Wembley, the females "assembling" about half-past one to two. — HY. J. TURNER, *Hon. Rep. Secretary*.

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—*January 5th, 1910.* — Meetings held in the Manchester Museum, Owens College. — Election of officers for 1910: President, Mr. C. F. Johnson, F.E.S.; Vice President, Mr. W. P. Stocks, F.R.C.S.; Hon. Treasurer, Mr. W. Buckley; Hon. Librarian, Mr. B. H. Crabtree, F.E.S.; Hon. Secretary, Mr. A. W. Boyd; Council, the above, and Messrs. J. Ray Hardy, J. E. Cope, and A. E. Wright. Mr. J. Ray Hardy, Curator in Entomology to the University of Manchester, was elected an honorary member. — Mr. C. F. Johnson, F.E.S., gave the Annual Presidential Address:—"The Apparent Increase and Decrease of Certain Species of Lepidoptera during the last Fifty Years." Mr. Johnson took the works of Newman and Coleman as a basis, and showed in detail that many species had disappeared from old localities. He drew the conclusion that most of these cases were due to closer cultivation and the reclamation of land. In many cases, however, an adequate explanation seems to be impossible. On the other hand, he showed that a number of species (e.g., *P. moneta* and *C. ambigua*, &c.) have increased their numbers quite lately. Mr. Johnson expressed the hope that this interesting and important subject would receive greater attention in the future. — Mr. J. Watson made a most interesting exhibit of the newly described silk-moth, *Cricula andrei*. He explained that odd specimens had been bred previously from among the gregarious cocoons of *Cricula trifenestrata* from Assam, but were thought to be varieties of the latter. By selecting from a number of *C. trifenestrata* cocoons four or five which appeared to be slightly different, he had bred the moth, and two pairings had resulted in a fine series. *C. andrei* is of a rich crimson colour, while *C. trifenestrata* is a dull brown or buff. The larvæ, too (of which preserved examples were shown), are quite different. He also showed series of *Rhodia fugax* and *Caligula simla* and *japonica*, with fertile eggs of *fugax* and *japonica*. — Mr. A. E. Wright exhibited an example of *Luperina gueneei* var. *baxteri*, taken in the Fylde in 1909; and, for comparison, series of *Luperina testacea*, *Agrotis ripæ*, and *Aporophylla australis*. — Mr. J. E. R. Allen exhibited a fine aberration of *Abraxas grossulariata*, bred in 1908 from a wild Enniskillen larva. This was almost without black markings, having a few small spots only. — Mr. W. Buckley showed series of *Hybernia defoliaria* and *H. aurantiaria*, *Eupsilia satellitia*, *Orthosia rufina*, *Noctua dahlia*, and *Orthosia circellaris* (*ferruginea*), from near Stoke.

February 2nd, 1910. — Mr. Johnson, F.E.S., the President, in the chair. — The following exhibits were made: — Mr. R. Tait, Jr., long series of *Hybernia defoliaria* and *aurantiaria* taken in Delamere

last November. The *defoliaria* showed great variation, and included a dark specimen with black markings on a dark brown ground. He also showed a series of *H. pennaria*, bred from Monkswold larvæ, and taken in Delamere.—Mr. A. W. Boyd, series of *H. defoliaria* and *aurantiaria* from Delamere and Borrowdale, *C. boreata* from Delamere, *Epunda lichenea* from Penmaemawr larvæ, *Orthosia rufina* from Delamere larvæ, and *Hadena contigua* from Borrowdale.—Mr. J. Watson, specimens and live cocoons of *Attacus edwardsi* from Assam, and several examples of a dipteran bred from a moribund larva found in a cocoon. He pointed out the difference between *A. edwardsi* and *A. atlas*. He also showed several specimens of a species of *Colias* taken in Southern Uganda, at a height of 11,000 ft. on Mount Ruwenzori. These were very near *C. electra* of the Cape, and resembled our *C. edusa* closely.—Mr. A. E. Salmon read a note on *N. typha*, describing how imagines had emerged, on June 2nd, from pupæ found four days previously at Ashley, Cheshire. In the same locality he observed half-grown larvæ on July 14th, and new pupæ on July 31st, from which imagines emerged on September 4th. This seems to point to two broods in the year.

March 2nd, 1910.—Mr. Johnson, F.E.S., the President, in the chair.—Mr. J. Watson read a paper on the Saturniidæ, or silk-bearing moths. After dealing with the nature of silk, he gave a detailed account of the various families and species of the Saturniidæ, referring particularly to *Antheræa mylitta* (Tussore silk) and *Antheræa pernyi* (Shantung silk), which are of great commercial importance in view of the possible failure of degenerate *Bombyx mori*. He illustrated his paper with long series of many species, a number of live cocoons of *Rhodia fugax*, *Samia gloveri*, *Antheræa mylitta*, *T. selene*, and others, showing the various methods of emergence, and live larvæ of the new *Cricula andrei*. Mr. Watson also exhibited a specimen of *Antheræa mylitta*, showing the first known case of regeneration of the lost part of an insect. The antennæ and membranes of one wing had been cut in opening the pupa. After emergence one antenna was perfect, and of the other only half remained, with the pectinations partly regenerated; the wound in the wing also had healed.—Mr. B. H. Crabtree, F.E.S., exhibited specimens of *Lycæna corydon* with female varieties, *syngrapha* and intermediates.

April 6th, 1910.—Mr. Johnson, F.E.S., the President, in the chair.—Mr. Mansbridge, F.E.S., gave a paper on "Mendel's Theory of Heredity, with Special Reference to Lancashire and Cheshire Variation." By means of diagrams he showed his experiments in breeding *Aplecta nebulosa* and its black varieties (*thompsoni* and *robsoni*), which seemed to follow Mendel's theory exactly. He also gave in detail his experiments in breeding *Boarmia repandata* and its black variety. He exhibited these and other species to illustrate his paper.—Mr. J. Ray Hardy exhibited a drawer of Coleoptera to illustrate the new arrangement of the collection in the Manchester Museum.—Mr. J. Watson showed living Hymenoptera bred from pupæ of *Papilio medon*, from Sierra Nevada.—Mr. A. E. Salmon exhibited living *Bacillus rossi*, an Indian stick-insect.—A. W. BOYD, Hon. Sec.

RECENT LITERATURE.

A Synopsis of the Orthoptera of Western Europe. By M. BURR, D.Sc.
London. 1910.

"To work as a specialist is necessary; to think as a specialist may be dangerous" (Macfadyan). Burr's neat and handy volume on the Orthoptera of Western Europe is one that should help the naturalist, who likes to get a general bird's-eye view of that region of the field of Nature in which he works, as well as the specialist in Orthoptera, who will need to make a closer inspection of that small area he has chosen for his own. Almost of necessity our small total of some thirty-nine Orthoptera are contained in the four hundred or thereabout to be met with on the western fringe of the Old World; but who knows whether a British naturalist, armed with this "pocket" handbook, may not be able to add to our restricted list the names of some species which ought to occur with us, and possibly only need looking for to reveal their presence. I refer to such species as *Chelidura acanthopygia*, *Stauroderus biguttulus*, *Chorthippus longicornis*, *Tettix fuliginosus*, and several others. It goes without saying that the work would have been enhanced by illustrations, but so also would the price. A structural plate explanatory of terms used does, however, seem a desideratum, especially for such as do not make a speciality of the Orthoptera. The 398 species are distributed as follows:—Earwigs, 25; Cockroaches, 22; Mantids, 13; Phasmids, 4; Acridians, 134; Locustids, 164; Crickets, 36. An appendix brings the nomenclature up to date.—W. J. LUCAS.

Bulletin of Entomological Research Committee; issued by the Entomological Research Committee (Tropical Africa) appointed by the Colonial Office. Vol. i. pt. 1, pp. 1–88. 4s. London: Longmans, Green & Co. April, 1910.

IN this bulletin we have the first record of the doings of the Committee, of which the Earl of Cromer is chairman and Mr. Guy A. K. Marshall is scientific secretary, whose object is "to procure the fullest possible knowledge of the insects of tropical and subtropical Africa." That this is a formidable but at the same time most useful task can easily be imagined, and any doubt with regard to it will be removed after reading Dr. A. E. Shipley's admirable introduction to the part before us. Some of the richest tracts of Africa are almost closed to the white man by the presence of inimical insects and ticks. This state of things the Committee intend to alter, by means of the closest study of these animals and their life-histories, and of the organisms which prey upon them in their turn. Two experienced entomologists, Messrs. S. A. Neave and J. J. Simpson, have already left England to work upon the spot, while the Committee are further prepared to cope with the material which reaches them from Africa. In addition to the foreword the present part contains articles on African Fruit-flies (E. E. Austen), Blood-sucking Diptera (Dr. R. E. Drake-Brockman), Hemiptera injurious to Cocoa (G. C. Dudgeon), Parasites on Silkworms (*ibid.*), Scale Insects from Uganda (R. Newstead), Larval and Pupal Stages of Culicidæ (W. Wesché), &c. There are eight fine plates and other illustrations.—W. J. L.

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Vol. XLIII.]

SEPTEMBER, 1910.

[No. 568.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.	W. F. KIRBY, F.L.S., F.E.S.
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THE ENTOMOLOGIST

VOL. XLIII.]

SEPTEMBER, 1910.

[No. 568

THE INTERNATIONAL CONGRESS OF ENTOMOLOGY.

By H. ROWLAND-BROWN, M.A., F.E.S.

As the first Congress of Entomology ever held, the International Congress which met at Brussels on August 1st, and continued in session for the whole of the following week, marks an epoch in the history of our science. We owe, therefore, a deep debt of gratitude to Mr. Walter Rothschild, Dr. K. Jordan, and those others who took the initiative in the matter, and now that all is over we congratulate them heartily on the success which has attended their endeavours. The muster of members (260 men and 33 ladies) was in every way gratifying; the number of Universities, Museums, Institutes, and Societies (270 in all) who have given their names also as supporters, is agreeable proof that Entomology is recognized as entitled to rank with the progressive forces of the scientific as well as the economic and commercial world. Our only regret is that so comparatively few of the active field-workers in our own country should have found it possible to attend. But when we remember that the first week in August is usually the first—and sometimes the only—week's holiday vouchsafed to many of us, we are the better able to understand why so many faces familiar at our London, Birmingham, and Manchester meetings were conspicuous by their absence. The next Congress, we are pleased to hear, is fixed for Oxford in 1912; we trust that it may be convenient to select a date in September, when we are less loth to exchange the open country for the conference chamber.

Among those who assisted, however, Great Britain and Ireland achieved a large majority, including the following Fellows of the Entomological Society of London:—Messrs. G. J. Arrow, R. S. Bagnall, Dr. Malcolm Burr (an indefatigable International Secretary), G. C. Champion, E. M. Dadd, Dr. F. A. Dixey, H. St. J. Donisthorpe, H. Eltringham, C. J. Gahan, A. T. Gillanders, Sir Archibald Buchan-Hepburn, Bart., J. M. Howlett, A. H. Jones, Dr. K. Jordan, E. G. Joseph, Dr. G. B. Longstaff, G. A. K. Marshall, G. Meade-Waldo, F. Merrifield, Professor E. B. Poulton, Professor R. C. Punnett, the

Hon. Walter Rothschild, the Hon. N. C. Rothschild, H. Rowland-Brown, W. Schaus, Professor F. V. Theobald, R. Trimén, and C. J. Wainwright; while to these may be added the names of Dr. G. H. Carpenter, Dr. R. S. MacDougall, Sir Daniel Morris, Mr. W. B. Sturges, and Mr. R. Vaughan-Williams; and of the following ladies:—Mrs. Malcolm Burr, Mrs. Donisthorpe, Mrs. Longstaff, Mrs. Morris, Miss Merrifield, Mrs. and Miss Poulton, Miss Rowland-Brown, and Miss Trimén.

Proceedings opened on the evening of July 31st, with an informal gathering at the Taverne Royale, where Professor Lameere, Rector of the Free University of Brussels and President of the Entomological Society of Belgium, and Madame Lameere, received such members as had already arrived, with the charming grace which is characteristic of Belgian hospitality. Meanwhile, M. Severin, in whose hands the arrangements for the Congress had been largely confided, assisted by Madame and Mademoiselle Severin, handed to each of us the "orders of the day," and the prettily designed silver badges to be worn by those assisting, together with several invitation cards for reunions and receptions at the Museums, &c., with which Brussels is particularly well equipped.

At half-past ten next morning, August 1st, Professor Lameere, in a pleasant speech of welcome, declared the Congress open. M. Severin, the General Secretary, read his report, and M. Y. Sjöstedt, the famous Swedish explorer and orthopterist, speaking in German, explained the entomological work done by the Swedish Kilimanjaro Expedition, of which he was the leader, illustrating his remarks with many extremely interesting lantern pictures. Over eleven hundred new species of insects, he said, had been added to our knowledge of the insect fauna of Africa, as a result of the exploration of the great mountain and its surrounding districts.

In the afternoon, in the Economic Section, among other papers, Professor F. V. Theobald discoursed on the "Artificial Distribution of Insect Pests"; Dr. R. S. MacDougall read a paper on "*Galerucella lineola*," explaining the damage done to osiers by this particular beetle, and suggesting measures for prevention and cure; and Sir Daniel Morris detailed the excellent work done by his department in the West Indies to control the introduction of insect pests by means of insecticides, and precaution of quarantine and inspection after the admission of seeds and plants; paying a high tribute to the discoveries made by Mr. H. Maxwell-Lefroy, F.E.S., at present Entomologist to the Government of India. Meanwhile, Sections ii. and iii. were busy discussing Systematics and Nomenclature respectively.

On Tuesday the General Meeting listened with rapt attention to the oratory of Dr. R. Blanchard, of Paris, who spoke at great length, and with admirable clearness and force, upon the

relations of entomology to medical science, his speech being in fact a summing-up of our present knowledge of bacteriological medicine, and the part played by the mosquito and other insects in the dissemination of disease. Hardly less eloquent was Father Wasmann, on the popular subject of "Ants and their Guests," but, to the general disappointment, M. Forel, who was to have spoken on "The Geography and Phylogeny of Ants," was unable to be present. In the afternoon three Sections were again formed: one for the discussion of Insect Bionomics, Physiology, and Psychology; one for Economic and Medical Entomology; and a third for the further consideration of the vexed problem of Nomenclature. In the second, among others, Professor F. V. Theobald read a paper on "The Distribution of the Yellow Fever Mosquito, *Stegomyia fasciata*," and Dr. G. H. Carpenter "Notes on the *Cestridæ*"; being an account of experiments to elucidate the life-history of *Hypoderma bovis*, and the economic value of preventive treatment, with further observations on the warble-fly of the reindeer, *Ædemagena tarandi*. In the third Section Dr. K. Jordan assisted the discussion upon Nomenclature.

Wednesday was a field-day for the evolutionists, and here Dr. F. A. Dixey's address on "Mimicry" drew one of the largest audiences of the Congress. Indeed, it was early apparent that the arrangement whereby six speakers were put down to give their views on this and kindred subjects could by no means be followed out, and after Professor R. C. Punnett, of Cambridge University, had delivered his lecture on "Mendelism and Lepidoptera"—a lucid summary of Mr. Bateson's and his own researches in this highly technical branch of entomology—there was only time for Dr. Jordan to read his paper on "The Systematics of certain Lepidoptera which resemble each other, and their bearing on General Questions of Evolution," the afternoon being devoted to expeditions not strictly entomological—to the Tervueren Museum, replete with exhibits of all sorts exclusively from the Congo; to the field of Waterloo; and to the Forest of Soignes. A special Section was announced for Thursday, to supplement the day's unfinished programme.

Thursday, in consequence, was an exceptionally busy day, for, apart from the General Meeting of the morning, when Dr. Burr delivered Mr. H. St. J. Donisthorpe's address on "Ants and their Guests," and the President of the Entomological Society of France, M. Künkel d'Herculais, read a paper on "Locust Ravages and their Prevention," members of the Congress were invited to inspect the Natural History Museum of Brussels, and to be photographed thereat, as soon as the afternoon Sections had concluded their work.

So, after the veteran Mr. Merrifield had summed up with admirable lucidity and conciseness the results of his tempera-

ture experiments on *Araschnia levana* and *Selene bilunaria*, showing that by the control of the larva and not the pupa it was possible to produce "first-phase" forms in the second brood, Mr. W. Schaus opened the battle against Professor Poulton, F.R.S., basing his contrary views on the subject of mimicry and its meaning upon observations made during many years passed in the neo-tropical regions of America. Unfortunately, after Mr. Schaus had spoken there was no one to take up the cudgels for him. A one-sided contest terminated after further remarks from Mr. R. Trimen, F.R.S., Mr. G. A. K. Marshall, Dr. Dixey, F.R.S., and other recognized British and German authorities on the subject.

Meanwhile, other Sections were at work (1) upon Bionomics, Physiology, and Psychology, and (2) upon Systematics, many of the most distinguished Continental entomologists assisting, including Dr. W. Horn, of Berlin, M. E. L. Bouvier, of the Paris Zoological Museum, and M. P. Bachmetjew, of Sofia.

On Friday, August 5th, the morning was once more devoted to general business, M. Lameere, the President, giving a *résumé* of the work done by the Congress, and the important questions being settled of the time and place of the next meeting. By a large majority it was decided to hold a Triennial Congress, but as this year's proceedings clashed with those of the Zoological Congress, and it is undesirable that this should again occur, it was agreed to accept the kind invitation of the University of Oxford, conveyed through Professor Poulton, and to convene the next international assembly in 1912. The technical work of the Congress, however, was not quite finished, and in the afternoon Sections were at work on "Museology, and the History of Entomology," and Zoogeography; Mr. J. M. Howlett, F.E.S., among others, speaking on the "Preservation of Collections in Tropical Climates," and Dr. W. J. Holland, F.E.S., of Pittsburg, U.S.A., contributing a valuable paper "On the Conservation of Types in Museums."

In the evening a banquet at the Taverne Royale, attended by some two hundred members, was made the occasion of some pleasant after-dinner speeches, realizing in every particular that "brevity is the soul of wit," and this brought the formal proceedings to a close, although many of the foreign visitors remained to take part in the charming Saturday excursions to the old Flemish towns, arranged and led by members of the Entomological Society of Belgium, and the Sunday State reception at the historic "Hotel de Ville," by the Mayor and Corporation, His Majesty King Albert being of course prevented from receiving this or any other Congress by reason of the Court mourning.

In conclusion, the writer of this necessarily brief report would like to point out that space alone prevents him from enumerating more precisely the work of the Congress, and

from mentioning even the titles of the many valuable contributions made by authors other than those who are his fellow-countrymen. In a few months' time the "Transactions and Proceedings of the First International Congress of Entomology" * will make their appearance, and then it will be for the general public to decide how far entomology, from being the Cinderella of the Natural Sciences, has established a claim to take rank as a leading lady!

A NEW ANOPHELINE FROM SOUTH AFRICA.

BY H. F. CARTER.

Pyrethophorus transvaalensis, sp. nov.

Head with white scales in front, black behind; palpi with two broad apical white bands and a narrow basal band. Thorax grey in the middle, dark at the sides; covered with narrow-curved pale grey scales. Abdomen brown with golden hairs. Legs brown with very faint apical banding. Wings with light and dark scales; six costal spots, the first and fourth spreading evenly on the first long vein, the two basal ones small.

♀. Head dark, densely clothed with upright-forked white scales in front, black ones behind; a tuft of long white hairs projecting forward between the eyes; antennæ brown with white pubescence; palpi, thin, dark brown with two broad apical white bands and a narrow basal band.

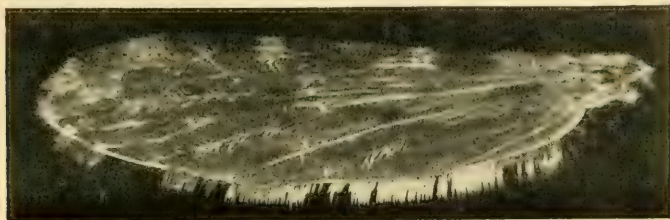


Fig. 1, wing of *Pyrethophorus transvaalensis*, n. sp.

Thorax grey in the middle with three longitudinal dark lines, deep brown at the sides, clothed with pale grey, somewhat elongated, narrow-curved scales; scutellum dark in the centre, greyish brown, laterally with scales similar to those on the thorax, border bristles missing. Abdomen deep brown with golden hairs. Legs brown, with very faint white apical spots, rather larger at the apices of the tibiæ.

Wings with six costal spots, the two basal ones somewhat small; the first and fourth spot spread evenly on to the first long vein, the second and third are larger than the others, and the corresponding

* A detailed account of the Congress and its work was published in 'The Times' of Wednesday, August 10.

area of the former on the first long vein is interrupted by a few yellow scales, the latter spot spreads evenly on to the sub-costal vein, but on the first long vein the end nearest the base of the wing is replaced by yellow scales; the upper branch of the first fork cell has two dark areas, one a short distance from the apex, the other a similar distance from the base of the cell, the lower branch also with two dark areas, the apical one small, reaching to the costa, the basal one large; the stem with a dark-scaled area just before and one just after the supernumerary cross-vein; third long vein with two spots, one large and reaching almost to the costa, the other small and situated just in front of the mid cross-vein; the fourth long vein with a dark area just after the base of the cell and one towards the



Fig. 2, wing of *Pyretophorus transvaalensis*, n. sp.

base of the wing; the cell has two spots on each branch, two being basal and two apical; on the fifth vein there is a spot at the base of the wing, and on the upper branch of the cell three dark areas, the first very near the apex, the third at the base and extending a short distance on to the stem, there is also a dark patch at the apex of the lower branch; the sixth vein has three small spots; fringe with pale spots where the veins join the costa; apex yellow; first sub-marginal cell longer than the second posterior, its stem about half the length of the cell; stem of second posterior cell rather longer than the cell; supernumerary cross-vein placed slightly in front of the mid, posterior about its own length distant from the mid.

Length 4 mm. (rather over).

Hab.—Leysdorp, Transvaal (sent by Dr. Copland to Mr. F. V. Theobald).

Observations.—Described from two females. It comes near *P. sergentii*, Theobald, but differs from it in the wing-spotting and the leg-banding.

SOME BEES FROM HIGH ALTITUDES IN THE HIMALAYA MOUNTAINS.

BY T. D. A. COCKERELL.

AMONG the various materials which pass through one's hands from time to time, some excite unusual interest on account of the place they come from. After reading the published account

of the adventures of the British Thibet Expedition in the higher passes of the Himalayas, it was naturally a great pleasure to be able to study some of the bees collected at those high altitudes, representing a hitherto unknown series of species, wholly different from those of the lower and well-known slopes of the mountains.

All the specimens are of course in the British Museum.

Bombus waltoni, sp. nov.

♀. Length about $17\frac{1}{2}$ mm.; expanse about 34; hair of head and thorax black, with a slight admixture of greyish on mesothorax and scutellum, only noticed under a lens; hair of first abdominal segment and base of second appearing a sort of grizzled black, the black hairs being tipped with greyish white; hair of apex of second segment, and all the following ones bright ferruginous tipped with dull white, giving an obscurely banded effect; legs black, with black hair, the middle and hind tarsi ferruginous, with ferruginous hair; hind tibiae with some ferruginous hairs. Head long; ocelli rather large; area below lateral ocelli smooth, with sparse very distinct punctures; third antennal joint long, a trifle longer than the next two combined; malar space smooth and shining, very long, though less than twice as long as apical width; clypeus convex, the disc smooth, with faint rudimentary punctures; mandibles with a straight cutting edge, apex covered with light yellow tomentum; wings translucent, reddish-tinged; last ventral segment with a delicate median groove.

This is quite different from all the Indian species. In Friese's table of European species it runs straight to *B. pomorum*, from which it is easily known by the much longer third antennal joint. In Friese's table of Arctic species it runs to *B. hyperboreus*, which it does not much resemble. The colour-arrangement is like that of *B. alpinus*, *B. lapponicus* v. *lugubris*, and *B. rufus*. The Chinese *B. rufus*, Friese, is evidently different by the short velvety hair, our insect having the hair long and loose, especially on the abdomen; *rufus* also has the malar space shorter. *B. alpinus* is considerably larger, with shorter malar space. *B. lapponicus* has the malar space much shorter.

Hab. Khamba Jong, Sikkim, 15-16,000 ft., July 15th-30th, 1903 (Thibet Expedition). British Museum.

Also from Khamba Jong were *Anthophora pulcherrima*, Bingham (variety), *A. khambana*, Ckll., and *A. megarrhiza*, Ckll. From Gyantse came *A. megarrhiza soluta*, Ckll. These are described in a paper dealing with the genus *Anthophora*, sent to 'Annals and Magazine of Natural History.'

Nomada waltoni, sp. nov.

♀. Length $9\frac{1}{2}$ mm., expanse about $17\frac{1}{2}$; head and thorax strongly punctured, black with light markings; pubescence scanty; head broad; eyes reddish grey; mandibles simple, labrum with a small tooth next to lower border; clypeus (except upper margin, especially

sublaterally), labrum, lateral marks, mandibles except tips, and a narrow band up posterior orbits (omitting upper quarter) all light yellowish ferruginous; lateral marks broad below, with an inner projection pointing toward upper end of clypeus, and above ending in a point, separated from orbital margin, at about the level of antennæ; clypeus with minute punctures, and the lower half, especially toward sides, with scattered large ones; scape in front and flagellum beneath yellowish ferruginous, but the latter becoming dusky beyond the basal third; upper side of antennæ dark, the second and third joints reddish; third joint longer than fourth, but not greatly so; mesothorax closely punctured, but shining between the punctures; scutellum pale yellow, flattened, not at all gibbous; postscutellum obscurely reddish; area of metathorax dull, minutely roughened; upper border of prothorax, tubercles, and a large transverse patch on pleura pale yellow, the pleural patch suffused with red around the edges; no metathoracic spots; sternum ending between the hind coxæ in a triangular shining process, which is truncate at the end; tegulæ pale reddish, light yellow anteriorly; wings rather dusky, slightly reddish, the slender stigma ferruginous, nervures fuscous; b. n. barely falling short of t. m.; second s. m. broad, receiving r. n. beyond the middle; third s. m. greatly narrowed above; legs bright ferruginous, the tibiæ a little suffused with yellow; outer side of hind coxæ yellow; anterior coxæ with stout spines; abdomen finely but very distinctly punctured, with entire cream-coloured bands on all the segments, that on the first with a ferruginous mark on each side, that on the second very broad laterally, but much narrowed in the middle; ground colour before the second band ferruginous, after it black or nearly; pygidial plate black, extremely broad; venter with four broad cream-coloured bands.

Hab. Gyantse, 13,000 ft., June, 1904 (H. J. Walton; Thibet Expedition). British Museum.

This is a typical member of the subgenus *Micronomada*, related to such species as the American *N. snowii* and *N. ridingsii*. In Schiedeknecht's table of Palæartic species it runs to *N. coxalis*, Morawitz, to which it appears to be allied, differing, however, greatly in coloration, and in the flattened scutellum. In the table of Indian species given by Nurse (Ann. Mag. Nat. Hist. June, 1903, p. 545) it runs nearest to *N. arida*, but differs in many particulars.

Melitta altissima, sp. nov.

♀: Length 13-15 mm.; black, with black and greyish white hair, the abdomen beyond the second segment covered with bright ferruginous hair; head and thorax shining, with close shallow punctures; a smooth space on each side of ocelli; clypeus densely punctured above, sparsely and irregularly, but more or less grooved, below, and with a median smooth line; labrum with a shining median tubercle; tongue slender dagger-shaped, formed, with the small paraglossæ, as usual in the genus, but rather longer than in *M. leporina*; first joint of labial palpi not so long as the next two together; antennæ black, the flagellum obscurely ferruginous beneath; hair of

head long and black, strongly mixed with pale grey on the face, of thorax also long and black, with a broad grey band (mixed with black) extending from tubercles across anterior part of mesothorax, and some long white or pale grey hair at sides of metathorax; middle of disc of mesothorax, anterior part of scutellum, and postscutellum smooth and shining; metathorax dullish; pleura closely punctured; tegulae small, piceous; wings a little dusky, especially along apical margin; nervures brown, stigma ferruginous; b. n. meeting t. m., or failing to reach it by a short distance; first r. n. joining second s. m. at end of first third; third s. m. narrowed more than half above, receiving second r. n. about as far from apex as first r. n. is from apex of second s. m.; stigma small; marginal cell pointed; legs black, with black hair, that on inner side of tarsi variably reddish, and sometimes orange on inner side of middle tibiae; claw-joints ferruginous; spurs ferruginous; abdomen finely punctured; first segment with mostly white hair, but black posteriorly, second with black, the others with appressed bright fox-red hair, but that on sides of fifth white; venter with black hair, white on sides of apical palpi; pygidial plate small.

This might be taken for an *Andrena*, but it has the *Melitta* venation, no facial foveae, and straight hairs, but no floccus, on hind trochanters.

Hab. Gyantse, 13,000 ft. June, 1904 (H. J. Walton; Thibet Expedition). British Museum. Two females.

Easily known from all other species by its coloration. The genus is now first recorded from the Himalayas, but years ago Colonel Bingham showed me an undescribed *Melitta* from this region.

Colletes sanctus, sp. nov.

♀. Length about 12 mm., expanse about 22; black, the head and thorax above covered with bright fox-red hair; at sides and beneath, and on legs, it is pale yellowish, but the bright red extends down beyond and over the tubercles. Abdomen shining black, finely punctured, with scanty pale hair at base, but beyond that with black hair, which is very inconspicuous; no indication of pale bands. Mandibles reddish at apex; antennae entirely black, the third joint not quite so long as the next two together; front densely punctured; facial foveae much as in *C. succinctus*, but narrower, and well-defined on the inner side; clypeus prominent, densely and coarsely striatopunctate; malar space large, but broader than long; mesothorax and scutellum with dense large punctures, except discally, where they become smooth and sparsely punctured (scutellum) or impunctate (mesothorax); pleura with close strong punctures; area of metathorax with coarse ridges bounded as usual by a transverse keel, the enclosed spaces small, irregular, longer than broad; sides of metathorax rough; tegulae piceous; wings dusky hyaline, nervures and stigma dark reddish; second s. m. very broad, receiving first r. n. a short distance beyond middle; legs normal, hind spur ciliate; first abdominal segment shining, with small scattered punctures; the others with minute, much closer punctures.

A species rather suggestive of the American *C. myroni*, Kll., but that is smaller, and has the malar space much shorter, and the face with black hair. The colour-effect is very like that of the South American *Biglossa thoracica*, Friese. I do not know any closely allied species among the Old World *Colletes*.

Hab. Gyangtse, 13,000 ft. June, 1904 (H. J. Walton; Thibet Expedition). British Museum.

While on this genus I take the opportunity to propose a new subgenus *Rhinocolletes* for *Colletes nasutus*, Smith. This species is not only remarkable for the long face, but the lobes of the tongue are excessively long and narrow, suggesting some Eumenid wasp.

Anthidium philorum, sp. nov.

♀. Length 10 mm.; black, with rather dull white hair, that on abdomen yellowish except first segment and sides of the following two; ventral scopa orange; head and thorax very densely punctured, their tegument all black except a small pyriform pale yellow spot above each eye, and sometimes two short marks on scutellum; mandibles with a long apical tooth and four very distinct inner ones; antennæ black; eyes green; tegulæ black; wings dusky but translucent, b. n. going basad of t. m.; legs without light markings, but the tarsi brownish to dark ferruginous, with orange hair on the inner side; no trace of pulvilli; abdomen with six entire cream-coloured bands, the first two having a black spot on each side, the others with an anterior notch, or the first band divided into four transverse spots, and the second notched like the third, while the second to fourth are much constricted in the middle; apical segment with a triangular tooth on each side.

An ordinary looking little species of *Anthidium*, s. str., resembling the American *A. emarginatum*. It is quite distinct from all the recorded Indian species, and also from the Palæarctic forms. In Friese's table it runs to 20 (*obscuratum* and *septemspinusum*), and runs out because of the orange scopa.

Hab. Gyangtse, 13,000 ft., June, 1904 (H. J. Walton; Thibet Expedition). British Museum. Two females.

ON THE ICHNEUMONIDÆ OF 'FAUNA BOREALI-AMERICANA.'

BY CLAUDE MORLEY, F.Z.S., F.E.S.

'FAUNA BOREALI-AMERICANA; or, the Zoology of the Northern Parts of British America,' by John Richardson, M.D., F.R.S., F.L.S., assisted by William Swainson, F.R.S.; F.L.S., and The Reverend William Kirby, M.A., F.R.S., F.L.S.; Norwich, 1837. Part the Fourth and Last:—The Insects, by the Rev. William Kirby.'

This is a rare book, and the *Insects* (vol. iv.) is now quoted by Quaritch at £5 10s. It was William Kirby's (thirty-fifth and) last publication, when in his seventy-eighth year, and it immediately followed his *Bridgwater Treatise* of 1835, so unnecessarily adversely criticised in the old *Ent. Mag.* Kirby had no especial knowledge of the Ichneumonidæ, which appears strange in view of his wide acquaintance with the Aculeata, till one remembers the chaos then obtaining in this family; and he was not a subscriber to Gravenhorst's work of 1829.

In Sir John Franklin's first and second expeditions to the Polar Seas, Dr. Richardson was associated with him and entrusted with the charge of the Natural History department, a feature of which was the insects collected during the brief summers of the Arctic regions. Richardson on his return applied to Sir W. J. Hooker to describe the insects, and the latter immediately wrote to Kirby and induced him to undertake the task. The insects were forwarded to Barham Parsonage, Suffolk. Richardson wrote to Kirby from Chatham on May 15th, 1829, that the majority of the collection consisted of Coleoptera, owing purely to the inconvenience of preserving the more fragile insects, and this probably accounts for the paucity of Ichneumonidæ, of which some two hundred species were known from the same district in 1842 (*cf.* Sir John Richardson's 'Arctic Searching Expedition,' ii. 352).

"The insects were presented, in the joint names of Dr. Richardson and Mr. Kirby, to the British Museum" (Freeman's 'Life of Kirby' [1852], 449); but there is no mention whatever of their reception in the official "Accession Book" nowadays. The specimens are, however, recognizable by the fact that they are ticketed with a small green, diamond-shaped label, bearing an MS. capital *R*. Only five species of parasitic Hymenoptera are enumerated by Kirby:—

Fœnus jaculator, Linn.

Ichneumon ferrugator, sp. n., p. 258; no sex nor number of specimens indicated.—Since my remark upon this species was published (*Entom.* 1909, p. 133), I have found in the General Collection four specimens of *Banchus ferrugineus*, Provancher (*Nat. Canad.* 1877, p. 14, &c.), bearing the characteristic green labels, and well representing Kirby's description. One of these is the type, and the species, which is merely referred to by Cresson (*Trans. Amer. Ent. Soc.* 1877, p. 207), must be known as *Banchus ferrugator*, Kirby.

Cryptus viduatorius, Fab., p. 259; one specimen taken in lat. 54.—I cannot find this in the British Museum; Fabricius' species is, I believe, unknown outside Europe.

Cryptocentrum lineolatum, sp. n., p. 260 (♀ *sic*). = *Rhyssa persuasoria*, Linn. ♂, var. *areola alarum nulla*.—In the Collection is a specimen of this species agreeing so entirely with Kirby's

description and figure, especially in its lack of areolet and dark hind femoral coloration, as to leave no doubt that the labels of this and that specimen regarded by me as the type (Entom. 1909, p. 133) had become accidentally transposed. This point, with Mr. Waterhouse's concurrence, I have rectified.

Bracon crocator, sp. n., p. 261.—Type in coll. Brit. Mus.

Dr. L. O. Howard tells me that he does not believe these species were known to Cresson when he wrote his 'Notes on Species of Ichneumon found in America North of Mexico' (Philad. 1877), and he also hardly thought Provancher knew them, which is now evident.

Clare Island, Co. Mayo: July 27th, 1910.

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

(Continued from p. 223.)

Miltochrista tricolor, sp. n.

♂. Head and thorax crimson, the latter marked with dark grey; abdomen cinereous, faintly tinged with reddish, anal segment pale ochreous brown. Fore wings crimson with yellow patches on the central and outer areas, and four dark grey transverse bands; sub-basal and antemedial bands curved towards each other, touching about middle; postmedial line curved, hardly separate from the sinuous and interrupted submarginal band. Hind wings pale ochreous, suffused with reddish.

Expanse, 28 millim.

Collection number, 762 a.

A male specimen from Kanshirei (1000 ft.), October, 1908.

Somewhat near *M. cuneonotata*, Walk.

Miltochrista tridens, sp. n.

♂. Fore wings orange-red, markings black; medial line almost straight, not reaching the costa; lower half of postmedial almost parallel with the medial line to the middle, where it is bent outwards, thence broadly dentate to costa; a dot at base of the wing, and another at end of the cell; from the latter is a dash, which with two teeth of the postmedial roughly represent a trident; three dots on outer margin towards apex, and one about the middle. Hind wings pale ochreous brown, suffused with pinkish; three dusky dots on outer margin near costa; fringes pink. Under side paler than above, the black dots on outer margin fairly distinct, but the other markings very faint.

Expanse, 32 millim.

Collection number, 763.

One male specimen from Kanshirei (1000 ft.), October 29th, 1908.

Diacrisia fumida, sp. n.

♂. Head and thorax brownish buff, face and palpi blackish; abdomen reddish above, buff beneath, an interrupted black dorsal line and black lateral spots, anal tuft brownish buff. Fore wings brownish buff, smoky tinged; discal mark and oblique postmedial line dusky, indistinct, marked with black towards apex and inner margin. Hind wings rather paler, a few reddish hairs towards the base; a large blackish spot at end of cell, a small one on outer area between veins five and six, a double one near anal angle, and one on the interspace above. Under side brownish buff; in addition to the markings of the upper side, which here are more distinct, there are a blackish streak above the inner margin and a small blackish cloud in the cell of fore wings; the hind wings also have a short blackish bar in the cell in addition to the other markings.

♀. Similar to the male, but the markings on the hind wings are larger, and there are four spots before the anal angle. A black spot on the back of each segment of the abdomen.

Expanse, ♂ 44 millim., ♀ 52 millim.

Collection number, 1787.

The female of this species was described by Hampson as the female of *Diacrisia neurographa* (Ann. & Mag. Nat. Hist. (8), iv. p. 361, 1909); the female of the latter species, however, has so far not been discovered.

Several specimens from Rantaizan (7500 ft.), May, 1909.

Diacrisia solitaria, sp. n.

♀. Antennæ black, apical fourth pale grey-brown; head and thorax, prothorax, edged with yellowish, a blackish central line on rest of thorax; abdomen yellow, barred and spotted with black, except on first and last segments. Fore wings pale grey-brown with a faint pink tinge; a black dot at base below costa; a black spot on costa at one-third, and a black spot below it on the inner margin; a black spot on costa at two-thirds, two below it in the cell, and four towards the inner margin—the upper two of the latter are much smaller than the others. Hind wings suffused with fuscous; a black spot at end of the cell and a dusky mark in the cell; a series of black spots, between the veins, on outer margin, the upper ones faint, and the others more or less quadrate.

Expanse, 52 millim.

Collection number, 765.

One female specimen from Kanshirei (1000 ft.), April 20th, 1906.

Diacrisia punctilinea, sp. n.

♂. Head and thorax orange-red, face paler; abdomen pale reddish, dotted on back and sides with black. Fore wings reddish orange; a black spot at base of the costa; ante-, postmedial, and submarginal lines represented by black spots between the veins, the first line curved, the second inwardly oblique, and the third undulated. Hind wings paler, a black spot on the outer area before the

anal angle. On the under surface, which is paler than above, the only distinct black marks on the fore wings are—a spot on costa, one at end of cell, and four upper spots of the submarginal series.

Expanse, 34 millim.

Collection number, 768.

One male specimen from Kanshirei (1000 ft.), April 18th, 1906.

Aloa vivida, sp. n.

♂. Head and thorax brownish buff; abdomen scarlet with medial and lateral series of black dots. Fore wings brownish buff with a faint pink tinge; a black dot on vein one before the middle, an obscure blackish shade-like streak runs from just beyond the middle of the inner margin almost to the apex, and on this are some black dots at each extremity; on the inner marginal area of the right fore wing there is a black dot on vein three, and on the left fore wing vein four divides an indistinct black dot; discal dot blackish, indistinct; fringes pale buff. Hind wings scarlet, paler towards the base; fringes yellowish buff. Under side deep pinkish buff, the fore wings suffused with scarlet.

♀. Similar to the male but larger; the fore wings have black dots on veins three and four; the hind wings have a distinct black discal spot, and two blackish dots towards anal angle.

Expanse, ♂ 46 millim., ♀ 62 millim.

Collection number, 1204.

The male described above was taken at Kanshirei (1000 ft.), April 19th, 1908, and the female at Rantaizan (7500 ft.), May 9th, 1909. Another male specimen from Kanshirei (March 7th, 1908) has the oblique streak on fore wings less distinct; and a second example of the female (Kanshirei, April 21st, 1908) has the black markings somewhat heavier, but the dots towards anal angle are absent.

Aloa postrubida, sp. n.

♀. Head and thorax pale buff, the latter with a central velvety black spot; abdomen yellowish buff with medial and lateral series of black spots. Fore wings pale buff, slightly tinged with pink; a black dot at base near the costa, two black dots placed obliquely on inner margin, a postmedial series of five black dots, and a sixth dot at upper angle of cell, and out of line with the postmedial series. Hind wings pinkish red, base, abdominal margin, outer extremities of the veins, and the veins pale buff. Under side buff, discal area of the fore wings between the veins pinkish red; a black dot at upper angle of the cell, and a smaller point above it; hind wings tinged with pinkish red towards base of the costal area; a black triangular discal spot, and two black dots on the inner margin before the anal angle.

Expanse, 50 millim.

Collection number, 1205.

One female specimen from Kanshirei (1000 ft.), July 27th, 1908.

Aloa contaminata, sp. n.

♂. Head and thorax whitish buff; abdomen scarlet with medial and lateral series of black dots. Fore wings whitish buff, streaked with fuscous between the veins, except on costal and inner marginal areas. Hind wings whitish buff suffused with scarlet, especially towards the abdominal margin; a blackish discal dot. Under side whitish buff, the fore wings strongly suffused with scarlet, and the hind wings slightly tinged with scarlet towards the abdominal margin.

Expanse, 48-52 millim.

Collection number, 1209.

Two male specimens from Kanshirei (1000 ft.), April 28th, 1908 (type), and May 5th, 1908.

Euproctis crocea, sp. n.

♂. Head yellowish; thorax and abdomen pale buff, the anal tuft tinged with reddish. Fore wings bright yellow; a bifurcate transverse band is indicated by three clusters of black scales in the cell, and three other clusters of black scales arranged obliquely below the cell; a postmedial band represented by scattered black scales; three black spots on the outer marginal area towards apex, one towards the inner margin, and some black scales between. Hind wings whitish, fringes yellow. Under side whitish, costa and outer margin of the fore wings, and the fringes of all the wings, yellow.

♀. The clusters of black scales forming the upper portion of the band on fore wings are less compact, the first and third of the apical black spots are larger, and the spot towards inner angle is double.

Expanse, ♂ 36 millim., ♀ 46 millim.

Collection number, 665.

A male specimen from Arizan (7300 ft.), August 15th, 1908; and a female from Kanshirei (1000 ft.), April 22nd, 1908.

Euproctis flexuosa, sp. n.

♂. Fore wings yellow; antemedial band slightly curved, but not extending to costa or inner margin; postmedial band flexuous, not reaching costa; both bands formed of scattered black scales, the first is followed by a pale line, and a similar line precedes the second; a black dot between the antemedial band and base of the wing; two black dots on the outer margin, one towards the apex, the other towards the inner angle. Hind wings rather orange tinted; fringes paler. Under side orange-yellow without markings.

♀. Similar to the male, but owing to condition of specimen only the central parts of the bands can be traced.

Expanse, ♂ 25 millim., ♀ 28 millim.

Collection number, 35.

One male specimen from Kanshirei (1000 ft.), April 29th, 1906; and a female from Tainan (on the plains), July 13th, 1904.

Euproctis striata, sp. n.

Fore wings yellowish buff, slightly mottled with russet; some irregular streaks, formed of black scales, between the veins on outer

marginal area; a few scattered black scales on the disc. Hind wings russet tinged, as also is the under side of all wings; fringes paler.

Expanse, 21 millim.

Collection number, 35 a.

A male specimen from Garambi, October 23rd, 1904.

(To be continued.)

NOTES AND OBSERVATIONS.

HORNETS AS ENEMIES OF ARBORICULTURE.—One of my neighbours, a Suffolk landed proprietor, is much interested in afforestation, and has planted several hundred acres with trees of various kinds. The other day, in the course of conversation regarding injurious insects, he informed me, much to my surprise, that the insects that did his trees the most harm were hornets, and that his men had been obliged to seek out and destroy all the nests of this species that they could find. The trees specially attacked are young ashes, when they attain the height of ten or fifteen feet, and that the same trouble had been experienced on the Duke of Grafton's estate at Euston. I visited the plantation indicated, and found several individuals of *Vespa crabro* at work, and evident signs of their depredations on the young trees. They remove the bark, at the height of ten or twelve feet from the ground, using it, no doubt, in the construction of their nests. Many of the young trees had three or four feet at the top entirely killed by the bark being gnawed off all round, and others had branches withered away from the same cause. The amount of damage was considerable, and there is no possible doubt as to the cause, as I saw the insects at their work, several of them removing and flying away with pieces of the bark while I watched them. I do not think it is generally known that hornets in this country do an appreciable amount of damage, and I think the matter is worthy of record.—(Lt.-Colonel) C. G. NURSE; Timworth Hall, Bury St. Edmunds, August 11th, 1910.

ON THE "ASSEMBLING" OF *ÆGERIA* (*SESIA*) *TIPULIFORMIS*.—In the report of the Meeting of the South London Entomological Society on June 23rd (*antea*, p. 230), Mr. Noad Clark notes the "assembling" of *Ægeria tipuliformis* as taking place between one and two o'clock in the afternoon. I had an opportunity of observing the same interesting fact this year, though previously unaware that *Æ. tipuliformis* was an "assembling" species.

On Sunday, June 26th, the morning was hot and sunny, and about 9 a.m. I found a fine female *Æ. tipuliformis*, newly-emerged, on a currant-leaf in the garden. I boxed her for observation purposes, meaning to liberate her later in the day. About 2.30 p.m. I carried her down to the same currant fence from which I had taken her, and was immediately aware on opening the box of some insects, which at first I took to be Diptera, flying around me, and backwards and forwards in a very excited state. I soon saw they were *Æ. tipuliformis* males, and almost immediately my female was seized upon

by one of them. I think the actual pairing took place in the air, but am not sure of this. The couple immediately settled down on a currant-leaf, and, to my surprise, on going to look at them an hour later, I found three other pairs within a couple of yards of the first, all quietly settled in the same position, *viz.* on the upper surface of the fourth or fifth leaf from the growing joint of the currant-shoot. The topmost shoots were in every case selected; I could not find any on the lower branches. The four pairs remained *in cop.* all the afternoon, though the sun shone brightly and continuously. By 6.45 p.m. one pair had separated, and I found the female resting underneath a leaf near by. Immediately afterwards, the pair first observed also separated; and at 7.20 this pair was still on the same leaf, but slightly farther apart. At 9.20 one of the two remaining pairs had separated; the other still remained *in cop.*, and it was too dark to make any further observations that night. The next morning was dull; at 8.45 the last pair had separated, the three other females being left alone, practically in the same positions as on the previous night. By 10 a.m. one of these had flown, and by 11 a.m., the sun having come out, all save the last separated female had disappeared. A little later, she too had gone, and though I looked for them many times later, hoping to see the females ovipositing, I never saw them again.—E. MAUDE ALDERSON, F.E.S.; Worksop, Notts, August 16th, 1910.

FECUNDITY OF *ARCTIA CAIA*.—On Aug. 11th a small boy brought me a battered female specimen of the garden tiger moth (*Arctia caia*) in a match box. As I noticed that she was ovipositing I left her, and by the evening of Aug. 12th she had laid some two hundred ova; a further batch of four hundred and fifty or so was laid on the 13th, and by the evening of the 14th the number had increased to 1150. On the 15th one hundred and thirty only were deposited, and on the 16th twenty-three, the insect then dying. I made a *post-mortem* examination, and found numbers of eggs still unlaidd, and had no difficulty in counting one hundred and fifty. Even supposing that no eggs were laid before the moth was brought to me, surely this huge number of 1453 approaches a record?—G. LYLE; Brockenhurst, August 17th, 1910.

AN UNRECORDED FOOD-PLANT FOR *EUPITHECIA VIRGAUREATA*.—In my "Notes on the Genus *Eupithecia*" I discussed (Entom. xl. pp. 210, 211) the various recorded food-plants of this interesting and probably much-overlooked species; but I have only just discovered to-day that I *ought* to have been able to add another from my own personal experience. On August 15th, 1902, I beat from oak at Forres a single larva, which I entered in my diary as *E. castigata*. This duly produced a pupa, very unlike that of *castigata*, and the moth emerged on May 6th, 1903. I was struck by its close agreement with my (few and poor) *virgaureata*, and even placed it among these at first; but my ignorance of this species was at that time, as Mr. Tutt would say, "colossal," and believing it to be exclusively a golden-rod feeder, I kept reproaching myself for what I felt must be an absurd misidentification. Then, by an unfortunate chance, I

discovered that the empty pupa-case closely resembled that of *E. vulgata*; and as the size and shape of my moth seemed to agree with that species, the date of emergence was about right, and remembering that its larva was similar to that of *castigata*, I transferred it to my series of *vulgata* as a fine "ab."! This was of course a gross mistake, and it is unpardonable that it has remained undiscovered until now; I can only plead in extenuation that it is notorious that Scottish *vulgata* are very different in colour and aspect from our southern ones. Now that I am more familiar with the facies of *virgaureata*, I can give the name of my long misidentified specimen with certainty. As it happens, it is a male, so that I was able to follow up my determination by the facies with an examination of the antennæ, and thus "make assurance doubly sure."—LOUIS B. PROUT; 62, Graham Road, N.E., August 22nd, 1910.

FORFICULINE MATERNAL CARE.—I recently noticed the following case. On the shore at Hayling Island I lifted a small stone—some 6–9 cubic inches—rather firmly fixed in the tenacious soil a little above the tide-line, and found under it a female earwig. The creature was covering a small cavity, and this cavity was filled with numerous minute young earwigs; only one young one was at large, and this was close to the mother. As the little family was evidently disturbed by the discovery I replaced the stone, and did not take possession of the mother. I feel pretty sure, however, that the species was *Forficula auricularia*, the common earwig. I noticed something of the same sort in the eastern Pyrenees many years ago, the species in that case being *Labidura riparia*. The psychology of these cases might give rise to interesting discussions. But at present I think all that can be considered certain is that association between mother and offspring is continued after deposition of the eggs, and is prolonged even after the hatching of the young.—D. SHARP; Brockenhurst, August 22nd, 1910.

CAPTURES AND FIELD REPORTS.

SYNIA MUSCULOSA IN WILTSHIRE.—In classifying up a lot of my last season's insects from your 'Moths of the British Isles,' I came across enclosed specimens. So far as I can judge, they agree with the illustration (plate 149, fig. 7) of *Synia musculosa*. I would like your opinion of same. I took six specimens last season, and have one this season "last night" at light.—H. HAYNES; 6, Nelson Road, Salisbury, August 13th, 1910.

[The specimens (three males) are certainly *S. musculosa*. In a letter dated August 17th, Mr. Haynes notes the capture of two other specimens.—ED.]

LOCUSTA VIRIDISSIMA (ORTHOPTERA).—During the last fortnight of July I found the nymph of this grasshopper in numbers at a certain spot on the cliffs at Beer, South Devon.—G. LYLE.

LEPIDOPTERA AT GAS LAMPS.—We have taken a good many specimens of *Drepana binaria* off the gas lamps during the last

fortnight. We also took a beautifully fresh specimen of *Pyralis costalis* at light, on August 16th.—CATHERINE HOLMES; Ruthven, Sevenoaks, Kent, August 18th, 1910.

TRIECPHORA VULNERATA (HOMOPTERA).—In mid-June last I took a specimen of this pretty scarlet-and-black bug, at rest on a grass-stem in Perry Wood, New Forest.—G. LYLE; Brockenhurst.

“A NEW NAME FOR THE ‘BUG’ HUNTERS.”—Whilst staying at a most comfortable hotel in Forfarshire with my friends Mr. Horn of Aberdeen, and Mr. Craske of Slough, our nets attracted considerable notice, evidently never having been seen on those hills before, although much frequented by botanists. Our worthy and kind hostess, when appealed to by them as to what we were catching, replied, “Oh! butterflies, ‘bumble’ bees and those kind o’ beasties!” “Ah!” said the botanists, “they have some scientific name, I think.” “Yes,” replied our most resourceful landlady, “but I forgot what it is. I believe they call themselves ‘Thessalonians.’” Evidently she was of a Biblical turn of mind, and never lacked a reply to all queries! Needless to say, we were known during our stay there as the “Three Thessalonians” (amusing, if not scientific).—J. P. MUTCH; 405, Hornsey Road, London, N.

COLEOPHORA HEMEROBIELLA.—On Tuesday last I was watching a very wasp-like creature (a species of *Cerceris*, I suppose) dragging a dipteran almost as large as itself along the base of an old cherry tree trunk, when I noticed at rest thereon a *Coleophora*, which upon examination proved to be the above-named local insect. Although it was not uncommon in this district many years ago I believe, I began to think it had reached the vanishing point. On referring to my note-book, I find that it is just twenty years (July, 1890) since I last met with *C. hemerobiella* in the perfect state. Upon further search I found another specimen on the same tree, but was unable to find any more; however, it is very satisfactory to know that the species is still to be found in this district.—A. THURNALL; Wanstead, August 4th, 1910.

COREMIA QUADRIFASCIARIA IN SURREY.—I took a fine male of this species on June 24th last at Godalming, but having to leave next day I had no opportunity of working for it. Although near Guildford and Gomshall, this locality is, perhaps, worth recording, as the soil is quite different.—(Captain) P. A. CARDEW; 50, Melbury Gardens, Cottenham Park, Wimbledon, August 16th, 1910.

SENTA MARITIMA IN SURREY.—I was surprised to take last evening on a lamp opposite the racecourse, Sandown Park, a fine male specimen of *Senta maritima* (*ulva*). My friend Mr. Warner, of Felixstowe, was with me. Possibly the insect may have flown from the Black Pond at Esher.—PERCY RICHARDS; Wellesley, Queen’s Road, Kingston Hill, August 10th, 1910.

[We believe that there is no previous record of *S. maritima* in Surrey. Until its occurrence in Sussex was noted in 1908 (Entom. xli. 204, 231), the species was supposed to be almost entirely confined, in Britain, to the Eastern Counties.—ED.]

GRAMMODES ALGIRA AT HACKNEY.—We are informed that at the meeting of the Chingford Branch of the North London Natural History Society held at Chingford on Friday, July 29th last, the Secretary, Mr. J. O. Braithwaite, exhibited a fine specimen of the above Continental moth, taken alive by him in the stores at Ash Grove Works, Ash Grove, Hackney, on July 12th. The insect was in perfect condition, and had evidently just emerged from the pupa. It had probably been imported in some cases of "Verdelli" lemons, about two hundred packages of which were in the stores at the time of its capture. It was subsequently identified by Mr. L. B. Prout, F.E.S.

PACHYS (AMPHIDASY) BETULARIA ab. DOUBLEDAYARIA IN ESSEX.—Referring to the communications from the Rev. W. Claxton in the 'Entomologist' for July last (p. 204), and from Mr. W. H. Harwood in this month's issue (p. 228), with regard to the capture of the above insect, I may say that I have taken ab. *doubledayaria* in Essex on three occasions: once at Brentwood, June 2nd, 1907, and twice here at Westcliff-on-Sea, in June last. I think the probability is that wherever *P. betularia* occurs in this part of Essex you may also expect to find ab. *doubledayaria* occasionally. How much more abundant this variety would now appear to be than formerly! Some thirty-five years ago, and for some years after, I used to dig the pupæ (under elm-trees mostly) of *P. betularia* commonly at Tottenham, Wood Green, and other localities in the North of London. I have a good series of the specimens so obtained still in my collection; some are somewhat darker in their coloration than others, but there is nothing approaching the variety in question among them, indeed I never saw ab. *doubledayaria* alive until I met with it at Brentwood, as above mentioned.—G. H. CONQUEST; 10, Meteor Road, Westcliff-on-Sea, Essex, August 19th, 1910.

COLLECTING AT KENDAL (WESTMORLAND), 1910.—Active work began on February 18th, for until this date the severe character of the winter prohibited collecting in any form. Our first visit to an oak wood after dark produced four specimens of *Hybernia leucophaearia* and one example of *Phigalia pedaria*, resting on the tree-trunks, whilst *H. rupicaprararia* was found commonly sitting on the twigs of the hedgerows. Subsequent search with the lamp between this date and March 5th resulted in a fair series of both the first-named species, though neither ever occurred plentifully. The number of "crippled" *H. leucophaearia* was astonishing, and so also was the total lack of females. Careful examination of the oak-trunks, lower branches, and the grass round about the tree failed to discover a single specimen. In this wood, strongly banded male *P. pedaria* and black females are fairly numerous. *Hybernia marginaria* appeared early in March, and some beautiful smoky and banded forms of the male (evidently the progeny of a cross between one of the lighter forms and var. *fuscata*) were obtained by careful picking. The var. *fuscata* appears to be more plentiful each year. On the evening of March 22nd examination of the rose and adjacent bushes of the hedgerow produced *Anticlea badiata*, resting after flight on the prominent twigs. This species is pretty active, and one has to be

ready with the net when attempting to pill-box it. On the same night young larvæ of *Noctua augur* were taken feeding on honey-suckle. A visit to a disused limestone quarry on the 23rd resulted in a few larvæ of *Agrotis lucerneæ*, all resting on the rock face, well away from the coarse grass on which the larva feeds. The local form of this insect is a dark and constant grey.

On March 25th I journeyed to the "Mosses," and there on the birches found *Asphalia flavicornis* in numbers, though the males were nearly all somewhat worn. With a single exception, all were resting on the slender upright stems of the dwarf bushes, and on the dark brown bark were easily seen. Several pairs *in cop.* were noted. Half a dozen pupæ of *Drepana falcataria* were discovered spun up in odd leaves that had braved the winter's blast and still remained attached to the trees. Sallows, on March 31st, were very productive of the commoner things. *Teniocampa stabilis* fell to our shaking, literally in hundreds; *T. instabilis*, *gothica*, *cruda*, and *manda* in more moderate numbers. *T. leucographa* I did not see at all, though it is present in the district. April 8th found *Anticlea badiata* still fresh, and several male *Selenia bilunaria* (one exceptionally large and richly coloured) were taken resting, newly emerged, in the hedge bottom. A long succession of cold wet days and nights interfered sadly with April collecting, but on the night of the 19th the larvæ of *Gnophos obscurata* were found about half grown, feeding on wild thyme at the extreme edge of the limestone quarry. The most inaccessible situations are chosen by the larvæ of *G. obscurata* and *Agrotis lucerneæ*, for although the food of both grows luxuriantly on the level ground at the top of the rocks, it is only the isolated patches situated on the narrow ledges of the rock-face that appeal to these larvæ, and creeping about by lamplight with a drop of thirty or forty feet below is somewhat risky work. Towards the end of April, night-hunting in the hedgerows with an acetylene lamp (what a blessing these bright lights are to the entomologist!) gave an abundance of larvæ of *Triphaena fimbria*, *T. ianthina*, *T. comes*, *Noctua triangulum*, *N. brunnea*, *N. augur*, *N. baia*, and *Boarmia repandata*.

May 1st was a fine bright morning, and I was early on the "carmelita" ground; but several hours' careful trunk-hunting went unrewarded. This interesting species was discovered here, resting on the birch, in the year 1903, but we have had many a barren search since. Unfortunately, the small plantation of old birches, the original habitat, has been cut down, and the young trees growing in the vicinity either do not offer sufficient attractions to the moths as resting-places, or else the task of finding them thereon is a more difficult one. This year, larvæ of *Satyrus semele*, generally plentiful on the fine grass which clothes the rim of the quarries, was nowhere to be found. May 14th, a scorching day, was spent on a heather-covered eminence of some thousand feet elevation, close to the town of Kendal, a veritable paradise for the lepidopterist. Here, on the bilberry, *Thecla rubi* abounded, and a long series was obtained. The best time to take *T. rubi* is undoubtedly towards evening, when they rest on the top of the heather preparatory to descending for the night into the inner recesses of the bushes. Looking around, one may see hundreds basking in the last rays of the departing sun; and so

quietly do they sit after the day's gambol, that a careful selection of the more perfect specimens is an easy matter. Ova were laid by several females on the leaves and stems of the bilberry, and the resulting larvæ, hatched in six days, were sleeved on the same plant until two-thirds grown, and then transferred to bramble. They took the latter food readily, but neglected the leaves for the unopened flower-buds, into which they burrowed after the manner of *Dianthæcia* larvæ. The same habit was noticed when on bilberry. The larvæ invariably sought out the seed capsule, entering it usually from the top, but sometimes boring through the side. I observed also that the upper and more succulent portion of the bilberry-stem was eaten readily. The most exciting feature of the day's sport was assembling with a newly emerged female *Saturnia pavonia*, which was found about midday at rest on the heather. About 5 p.m. she was placed on a prominent twig of heather and commenced calling almost immediately. From far and wide the amorous males responded, and we could have secured a hundred with ease. Helpless in their infatuation, they were readily caught without the aid of the net. After some time we allowed copulation to take place, but still more males crowded upon and completely covered the hapless couple; and even after the pair had been removed, the part of the bush where the female had been sitting proved equally attractive. *Ematurga atomaria* flew in abundance, and some nice banded females were secured. *Hadena glauca* and *Malanydris salicata* were both out, sitting on the alder-trunks, but we were a little early for *Acronycta menyanthidis*, which occurs here in quantity and nice variety. *Anticlea derivata* appeared on the 20th. It is not an early insect in this part of the country; I have never taken it before the 17th of May. On the 22nd a long series of perfectly fresh *Strenia clathrata* was obtained. A female *Pieris napi* with rich yellow under side, and a male *Pieris rapæ* with large discal spot, fell to the net on the 23rd. Dusking on the 24th resulted in a nice series of *Lampropteryx suffumata* with var. *piceata*.

In a fine open wood, abounding in oak, birch, willow, alder, heather, and bilberry—an ideal hunting-ground and a favourite spot for sugaring—I found *Chrysophanus phlæas*, *Cænonympha pamphilus*, *Euclidia mi*, and *Melanippe sociata*, all in excellent order, on May 26th, and on the same day beat larvæ of *Pseudoterpna pruinata* from the gorse. May was a grand month, nearly every day fine, and many of them gloriously hot, and by the end of the month our beautiful country looked luxuriant and attractive.

Things now began to move in the pupæ-cage. Each day saw emerging *Xylophasia rurea* with dark forms, *Amphidasys betularia*, *Odontopera bidentata*, and *Cidaria corylata*. Nearly all my *betularia* are var. *doubledayaria*, and all the larvæ were beaten from birch on the mosses, at least a dozen miles from any factory chimney! Var. *doubledayaria* is commoner here than the type, and so far from its sombre colour being a protection, it appears only to render it more conspicuous. I have frequently observed it resting in the daytime high up on the light limestone walls of the Kendal houses. Larvæ of *Geometra papilionaria*, beaten from birch last September, and wintered on cut birch twigs kept in a muslin-covered jam-jar outside (but pro-

tected from rain), were sleeved on a growing birch early in May, and pupated in the folds of the muslin on June 11th. Wherever possible, I sleeve all larvæ. Open-air treatment is the best preventive of disease. Baked in sunshine one day and nearly drowned with thunder-rain the next, my sleeved *papilionaria* stood the ordeal well, and fed up, pupated, and emerged early in July, in a most exemplary fashion.

Good sugaring was experienced on June 4th, captures including *Aeronycta ligustri* and *A. runcicis*, both with acceptable dark forms, *A. psi*, *Hadena adusta* (dark), *H. thalassina*, and *Xylophasia rurea*. On the 10th *Melanippe tristata* and *Nemeophila plantaginis*, together with a dozen beautiful var. *hospita*, were taken close to the town. Var. *hospita* is certainly not confined to the mountain-tops. It occurs in several places near to Kendal, and at no great elevation.

On June 12th fresh *Polyommatus icarus* appeared, several males and one female being netted. Our local *icarus* are large and bright, and the females are well splashed with blue. Sugar on the 15th produced, in addition to species mentioned before, *Thyatira batis*, *Habrosyne derasa*, *Rusina tenebrosa* (some nearly black), *Triphæna pronuba*, *Hadena gemina*, *Agrotis exclamationis*, *A. corticea*, *Aplecta herbida*, *Miana strigilis* (in endless variety), *Noctua plecta*, *N. augur*, and *Euplexia lucipara*. *Venusia cambrica* was taken resting on the stem of a mountain-ash. Honeydew has been entirely absent this season, a condition that contributes no doubt largely to our success at sugar. No such numbers of moths have been seen on the patches since 1899.

On June 18th *Canonympha typhon* was plentiful on the mosses, but even on this date wanted "picking." *Aspilates strigillaria* occurred at the same time in nice order. Sugar on the 23rd was again successful, the feature of the night being the abundance and variety of *Aplecta herbida*. Some of them were really handsome insects, the vivid green of the fore wings contrasting with the nearly black hind wings in a pleasing manner. New species observed were *Aplecta nebulosa*, *Xylophasia polyodon* in great variety (brown forms common and an occasional one almost black), *X. lithoxylea*, *X. sublustris*, *Miana fasciuncula*, *Leucania comma*, and *L. impura*, *Noctua festiva* (very variable), *N. c-nigrum*, *Boarmia repandata*, *Abrazas sylvata* (both sipping the sweets), and last, but not least, one *Cossus ligniperda* (we had no pill-box big enough!).

In the pupæ-cage *Drepana falcataria*, *D. lacertinaria*, *Notodonta dromedarius*, and *N. camelina* continue to emerge in a desultory fashion. *N. dictæoides* (beaten from birch last September) appeared on July 2nd, another on the 16th, and I have more to come. I should say that only the earliest emergences of these species produce a second brood. June 6th saw the first of my *D. falcataria* out, and they are still emerging, July 17th. My pupæ are kept out of doors all the time, exposed to natural conditions of temperature, but are protected from rain. With some few exceptions they are never damped, beyond the placing of a wet cloth over the gauze-covered lid of the pupæ-cage during the period of emergence. This last may easily be a superfluous precaution, but at any rate it can do no harm.—FRANK LITTLEWOOD; 10, Inyarn Road, Kendal, Westmorland.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 14th.*—Mr. W. J. Kaye, F.E.S., President, in the chair.—Mr. Scorer, of Chilworth, was elected a member.—There was a special exhibition of *Polygonatus icarus*.—Dr. Hodgson exhibited a large number of selected specimens, many of them being blue females and aberrant under sides.—Mr. R. Adkin, geographical series, the most striking of which were those from the West of Ireland.—Mr. Joy, long series of the spring and summer brood, illustrative of the seasonal dimorphism in size.—Mr. B. Adkin, some very fine examples from the Hebrides, Isles of Scilly, North Cornwall, Ireland, &c.—Mr. Kaye, selected examples from various localities.—Mr. Turner, a few aberrations in colour, including specimens from several Swiss localities.—Mrs. Hemmings, one or two remarkable aberrations, including a *thetis*-like male and an under side female, with the eye-spots showing extreme displacement.—Mr. Pickett, a drawer containing the results of many years' selection of forms. Mr. Tutt, in summing up the exhibit, considered it one of the finest and most complete ever got together, and stated that nowhere throughout its range was the species so extremely variable as in the British Isles.—Mr. R. Adkin, some bred examples of *Cyaniris argiolus* female, with much reduced borders.—Mr. Edwards, a box of exotic species of *Apatura*, *Adelpha*, and *Limenitis*.—Mr. Sich, specimens of *Prays curtisellus*, with var. *rustica*, from Westerham.—Mr. Pickett, an extremely fine bred series of *Angerona prunaria*, this year's result after twelve years' selection, crossing, and interbreeding. Many of the forms were extreme var. *pickettaria*.—Mr. Step read the report of the Delegates to the Guildford Congress of the South Eastern Union of Scientific Societies.—HY. J. TURNER, *Hon. Rep. Secretary.*

RECENT LITERATURE.

Annals of Tropical Medicine and Parasitology, Vol. iv. No. 1. Issued by the Liverpool School of Tropical Medicine. June, 1910.

In this number there is but one purely entomological paper—"The Mosquitos of the Amazon Region" (R. Newstead and H. Wolferstan Thomas)—consisting of nine pages illustrated by one coloured plate. In the other articles insects are referred to only as they effect diseases, in which connection, however, their influence is very great. The number is beautifully printed, and amongst the illustrations are thirteen fine plates.—W. J. LUCAS.

ERRATA.—Page 227, line 12, for "Eye" read "Ely"; line 17, for "*Baccalatrix*" read "*Buccalatrix*."

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Vol. XLIII]

OCTOBER, 1910

No. 569

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

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THE ENTOMOLOGIST

VOL. XLIII.]

OCTOBER, 1910.

[No. 569

BRITISH ORTHOPTERA IN 1909.

BY W. J. LUCAS, B.A., F.E.S.



W. J. Lucas, photo.

Tetrix subulatus, with wings expanded ($\times 3.25$).

NOTHING of first-rate importance seems to have been noted in connection with the British Orthoptera during the season of 1909; but the following short notes may nevertheless be of interest.

Forficulodea.—On August 3rd, in one of its known localities near Christchurch, Hants, I found three examples of *Labidura riparia*—two females and a poorly developed male, with callipers of a not very pronounced type. A pair I retained for observation, and noticed on the morning of August 10th that the female had eaten the greater part of the male. On December 24th Commander J. J. Walker gave me a fine pair of *Anisolabis annulipes*, taken at Queenborough on August 17th. It seems that both this species and *Labia arachidis* are found in this locality, not only indoors, but also in the open amongst old sacks. As, however, these sacks are to some extent decomposing, there is perhaps a temperature above the normal, just as

there would be in a manure heap. *A. annulipes* is common out of doors, whereas *L. arachidis* is more common in the works.

Blattodea.—*Ectobius lapponicus* was taken on July 15th in the Devil's Punch-bowl, at Hindhead, Surrey. On July 30th, at Aldridge Hill, in the New Forest, I captured a male of the same species, which readily took to flight, this being, I believe, the first time I had seen a cockroach of any kind upon the wing. On Beaulieu Heath, in the New Forest, a female *Ectobius panzeri* was taken on September 1st, carrying its ootheca. The wings of this species are rudimentary in the mature female, so there is nothing out-of-the-way in a short-winged insect, as was this one, possessing an ootheca. On September 29th I received from Kew Gardens a mature example of *Pycnoscelus surinamensis*, which was remarkable for its very small size.

Locustodea.—On July 7th I received from Mr. J. R. le B. Tomlin a "long-horned" grasshopper caught just previously at Streatley, Berks. It was probably a nymph of *Phasgonura viridissima*. When put in a breeding-cage it commenced to crawl up the vertical surface of the glass front, and repeatedly put its tarsi into its mouth, for all the world as if it was making them wet so that they might cling to the glass the better. A mayfly put into the same cage to mature was found afterwards to have its head much damaged, presumably having been attacked by the grasshopper, though whether the mayfly had previously died I cannot say. On September 3rd two females of *Metrioptera albopunctata* (= *grisea*), one of which had the dorsal surface of head and thorax rust-coloured, were taken at Chapman's Pool, Dorset. This species seems fond of a clayey sliding cliff-side, where its colouring assimilates well with that of the rough vegetation. On September 9th, near Claygate, Surrey, four specimens, including both sexes, of *Leptophyes punctatissima* were found on leaves of alder, some two or three feet from the ground, from which position they evinced very little desire to escape when the camera was brought into play. A female of *Pholidoptera griseo-aptera* (= *Thamnotrizon cinereus*) brought home from the New Forest at the beginning of September lived in captivity till October 6th.

Acridiodea.—*Gomphocerus maculatus* was the first grasshopper found mature, the date being June 15th and the place Oxshott, Surrey; a dark female was taken there on September 22nd. *Stauroderus bicolor* and *Chorthippus parallelus*, which shewed much diversity of colour, were taken on September 3rd, at Chapman's Pool, on the Dorset coast; and both sexes of the latter were taken on September 19th, in Ashtead Woods, Surrey, where the specimens varied much in colour, one being very rosy. Several colour-forms of *S. bicolor* have received varietal names, but it would be hardly an exaggeration to say that scarcely two are exactly alike in colour. One feels certain,

whatever may be the agency that brings about the result, that their colour, whenever the surroundings are sufficiently definite, assimilates—sometimes most accurately—to such surroundings. *C. parallelus* also varies much, but perhaps not so much as *S. bicolor*; on August 24th I took, in the New Forest, a green female with yellow-brown dorsal streak along thorax, elytra, and abdomen—this being a very striking form. The other British relatives of these two species do not appear to vary to the same extent, but perhaps this is because I have met with them in fewer localities, or the nature of their habitat is less varied. Of *G. maculatus* much the same may be said as of *S. bicolor*. On August 21st, near Holm Hill, in the New Forest, on dark soil which was not yet covered with vegetation after a fire, one or two very dark specimens of *G. maculatus* were noticed, while bright colours appeared to be absent; amongst heather, on the other hand, they are sometimes very prettily marked with crimson and green. *Gomphocerus rufus* is much more constant in the only locality in which I know it—Bookham Common, Surrey—where, moreover, it does not seem to be very plentiful.

In hot sunshine in the New Forest one hears much chirping. Is this always due to the wood cricket, *Nemobius sylvestris*, or is Tennyson incorrect, when he says:—

“For now the noonday quiet holds the hill;
The grasshopper is silent in the grass.”

On August 6th *Mecostethus grossus* was taken in the New Forest, and appeared to be but just becoming mature. It was not easy to secure females whenever I was in search of this species, though males were plentiful enough.

Of the somewhat scarce grasshopper, *Tetrix subulatus*, Messrs. D. Sharp and C. G. Lamb took two pairs by sweeping, at Holmsley, in the New Forest, and the latter writes (*in litt.* Oct. 3, 1909): “We have run across both *T. bipunctatus* and *T. subulatus* here (Padstow, Cornwall), where they vary enormously in size. The figure depicts one of Mr. Lamb’s specimens of *T. subulatus* ($\times 3\cdot25$) with wings expanded. Such ample wings are little suspected in so small an insect.

28, Knight’s Park, Kingston-on-Thames.

THE ATHALIA GROUP OF THE GENUS MELITÆA.

BY REV. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 216.)

THERE is a further point with regard to the genital armature to which it seems to me important to refer, because it is a case in which the defects are mechanical and well within the possibility of remedy. I allude to the utility (or in most cases the

lack of it) of illustrations comparing the armature of different species with each other. A few weeks ago I should have said little or nothing on the subject, because I believed it to be impossible to produce anything which could be of practical value to those who had not made a long and very special study of the organs in question, and this in spite (or perhaps I should say because) of the fact that I had seen the reproductions, and in some cases the originals, of the photographs made by our most eminent and successful micro-photographers from the preparations of the most learned and painstaking of our microscopists who have specialized in this direction. I have also in my possession the original photographs taken by M. Jullien, of Geneva, from his own preparations of the genitalia of this group of the *Melitæas*, three of which were shown at the first exhibition of the Geneva Lepidopterological Society to illustrate the connection between *athalia*, *deione*, and *berisalensis*. All these are far too complicated, in my opinion, to be of any considerable value to the average entomologist who, without being a specialist, is anxious to have a general working knowledge of all parts of his subject so far as possible. Now, I am perfectly well aware that my opinion as an individual has no particular value, but it is just because I am not a specialist in this direction that I dare to put forward a claim to speak on behalf of those who, like myself, are merely interested students of fairly average intelligence, and who have managed to reach a somewhat higher entomological level than that of the very unduly despised "mere collector." I would say, then, that the following points are essential if such illustrations are to be of value to any but the advanced specialist:—(1) They must all be in the same position, and if in profile must be turned in the same direction; (2) the preparations must all be made by the same person, for practically no two people make their preparations quite alike; (3) they must all be magnified to the same degree, and it will conduce to further clearness if the photographs are all by the same photographer. This, until recently, was the utmost that I thought might be hoped for, but far more has now been accomplished. In the 'Bulletin de la Société Lépidoptérologique de Genève,' published this summer, Dr. Reverdin's and M. Charles Lacreuze's illustrations of the genitalia of the *Hesperids* show how absolutely intelligible such reproductions can be made in two different ways. Not only have all the above points been carefully attended to, but in both cases the armature, given in profile, is presented with one side removed, so that only the essential structure is shown without any unnecessary complications. The illustrations to Dr. Reverdin's paper are reproductions of carefully finished micro-photographs, those to M. Lacreuze's are much more diagrammatic. For most purposes, indeed, it seems to me that the more diagrammatic the illustrations the more gene-

rally useful they will be found, and personally I have learnt more from the pencil sketches drawn by Mr. Heron, partly for his own guidance and partly for my information, than from all the complicated illustrations that I have ever seen. A further advantage that the new Geneva preparations have over M. Jullien's and the usual English split and spread forms is that they are presented as nearly as possible in the natural position. Details of structure are best compared by means of microphotographs of the separate parts, the greatest care, of course, being again necessary to present them for comparison in exactly the same position; this also is to some extent provided for in the illustrations to Dr. Reverdin's paper. No such illustrations, however, exist as yet, so far as I am aware, of the group now under consideration, and the very incomplete information which I have been able to get together has been drawn from various sources of varying degrees of trustworthiness, so that I feel it impossible for the present to go into details on the matter, and merely regard the few following notes as suggestions which may very possibly require further modification. In some respects, at any rate, the armature of *M. asteria* supports the theory that this is the oldest form of this group, some details appearing to be modified from it in some species, and others in others; *M. parthenie* comes nearer to it than *M. athalia*, a fact that did not surprise me, as I had concluded on other grounds that it was probably the older form; *M. deione*, contrary to expectation, is apparently nearer to *M. athalia* than to *M. parthenie*; *M. varia* adds to the otherwise extreme probability of its specific distinctness from *M. parthenie*, and possibly may be held to support its nearness to *M. aurelia*. The identity of *M. dictynnoides* in this respect with *M. aurelia* seems to indicate a less recent date for the former species than Hormuzaki has supposed on other, and in my opinion probably sufficient, grounds, to which I must refer again; the identity, again, of *M. britomartis* (from Reazzino) with *M. dictynna* certainly shows the close relationship between the two, though I have previously given reasons which still appear to me sufficient to place their specific distinctness beyond question; it would also seem to indicate a greater distance between *M. athalia* and *M. britomartis* than might otherwise have been expected; and, lastly, the comparative anatomy in this respect of *M. deione* var. *berisalensis* gives some slight support to the theory that the latter is a distinct species, and is perhaps an indication that it is at any rate on its way to becoming so; though, comparing the two with *M. athalia*, it would probably be truer to derive *M. deione* from *M. berisalensis* than the latter from the former, a theory to which their geographical distribution certainly lends support. I must, however, be allowed to repeat that the second-hand material at my disposal is drawn from sources too varied to make comparisons very

certain, and to add that I dare not as yet put any reliance on first-hand investigations in a matter in which my experience is still so slight; and, indeed, it is mostly for the sake of *obiter dicta*, and with the hope of throwing out suggestions on which more competent seekers may work, that I have thought it worth while to enter on this part of the subject at all.

(To be continued.)

SOME VERY SMALL AUSTRALIAN BEES.

By T. D. A. COCKERELL.

IN the vicinity of Mackay, Queensland, in March, 1900, Messrs. Gilbert and Rowland Turner obtained three species of very small bees at the flowers of *Eucalyptus*. They are all of the *Euryglossa* type, but two of them are so peculiar in their venation that they must be assigned to new genera. The smallest of the three is only a little over $2\frac{1}{2}$ mm. long, and is smaller than any bee previously made known.*

TURNERELLA, n. gen.

Minute bees allied to *Euryglossa*, but with only one submarginal cell and two discoidals; marginal cell sharply pointed on costa; stigma large; section of basal nervure bounding first discoidal cell strongly arched; claws bidentate; base of mandible making an angle of about 45° with base of eye, so that the malar space cannot be defined as in most bees.

Turnerella gilberti, n. sp.

♂. Length about 2550μ ; head and thorax shining dark sepia brown; clypeus and mandibles (except apex) dull yellow; legs pale brownish yellow, anterior pair orange; abdomen shining, the basal half pale reddish brown, the apical much darker; mesothorax minutely tessellate, with scattered very feeble hair-punctures; front and vertex sculptured like mesothorax; abdomen microscopically transversely lineolate; eyes coarsely faceted; ocelli large; facial foveæ represented by very short grooves, about 35μ long; antennæ placed close together; scape very short; flagellum thick, long-claviform, minutely hairy; second antennal joint very large, oval, third very minute; mandibles bidentate; scanty plumose hairs on face; hairs at end of abdomen with about three short branches, all on one side. Wings clear hyaline, minutely hairy, stigma large, dilute brownish; marginal cell sharply pointed on costa, about 510 long (all the wing measurements of this and the other species are in microns); depth of stigma about 100; submarginal cell about 290 long, more than twice as long

* *Turnerella gilberti* is not the smallest bee. Since writing the above I have noted that *Trigona duckei*, Friese, from Brazil, is only 2 mm. long. It may perhaps exceed *T. gilberti* in bulk, however.

as high; basal nervure falling about 50 short of transversomedial, which is vertical; recurrent nervure to transversocubital about 35.

Named after Gilbert Turner, who collected so many new insects in Queensland.*

Type in British Museum.

EURYGLOSSELLA, n. gen.

Small bees allied to *Euryglossa*, but with only one submarginal cell and one (the first) discoidal; the basal nervure ends a long way from the transversomedial, and its lower section is hardly arched; claws bidentate, pulvillus very large.

Euryglossella minima, n. sp.

♀. Length about $3\frac{1}{2}$ mm.; head and thorax black or brown-black, shining; clypeus and mandibles (except apex) dull rufescent; antennæ dark above, pale fulvous beneath; face broad, eyes slightly converging below; foveæ linear, short, close to eye; base of mandible makes an angle of about 50° with base of eye; clypeus very broad and low, its straight upper margin about $290\ \mu$ long, the lower about 620 ; labrum with a pair of nodules; scape rather long (about $255\ \mu$); second antennal joint large, pyriform, third minute; flagellum short and thick, minutely hairy; femora, except knees, very dark brown; middle and hind tibiæ dark brown, pale reddish at base and apex, anterior tibiæ fulvous; tarsi pallid, slightly yellowish; small joints of anterior tarsi, and apices of their basitarsi, with curious hooked bristles; mesothorax, front and vertex microscopically tessellate; abdomen shining, practically hairless, dark brown with a slight purple lustre; wings clear hyaline, iridescent, the large stigma (its depth rather over 100) margined with brown; marginal cell 425 long, sharply pointed on costa, deep for its length; submarginal cell from lower basal to upper apical corner 340; discoidal measured in the same way 270; basal nervure ending 150 from transversomedial.

Euryglossa perpusilla, n. sp.

♀. Length about $3\frac{1}{2}$ mm.; head and thorax shining black, abdomen dark reddish, with a strong purple lustre, and without evident hair; antennæ fuscous above, pale below; legs clear pale yellow, middle tibiæ mainly fuscous behind; hind tibiæ fuscous behind, pale ferruginous in front, their tarsi pale ferruginous; eyes very strongly converging below; clypeus about $230\ \mu$ across at top, and 275 below (the shape thus entirely different from that of *Euryglossella*), wholly dark, with sparse punctures; supra-clypeal area with a broad transverse orange band, bounding lower suture; mandibles set at an angle

* Mr. Rowland Turner kindly gives me the following information about his brother:—"He was resident at Mackay from 1883 to 1901 with me, and made a very large collection. We afterwards did a season's collecting at Cairns, after which I went to Cape York and Assam, while he went round by Cooktown and Port Darwin, but caught cold at Hongkong, and died of rapid consumption after joining me at Assam in 1903. It had been his intention to return to England and work up his collection, probably beginning with the bees."

of about 50³ with base of eye; last joint of maxillary palpi 75 μ , as long as the two before put together; ocelli large; facial foveæ linear grooves, about 190 μ long; antennæ formed essentially as in *Euryglossella*, the flagellum very minutely bristly; second joint pyriform; joints three to eleven broader than long; sculpture of head, thorax, and abdomen as in *Euryglossella*; claws simple (bidentate in *Euryglossella*), pulvillus large; thick curved bristles on small joints of anterior tarsi; hind spurs orange, thick, spinulose, or denticulate on both margins; two submarginal and three discoidal cells; marginal cell like that of *Euryglossella*, about 510 long; first submarginal 410 long; second submarginal 120 long below and 90 above, its depth about 70; first recurrent nervure to first transversocubital 35; second recurrent reaching apical corner of second submarginal; basal nervure on first discoidal strongly arched; length of first discoidal 425; basal nervure falling about 70 short of transversomedial.

Very near to *E. semipurpurea*, Ckll., but smaller, with differently coloured legs, &c.

BRITISH ODONATA IN 1909.

BY W. J. LUCAS, B.A., F.E.S.

BUT little of interest in connection with the British Odonata came to my notice in 1909. The season certainly commenced early, for specimens of *Pyrrhosoma nymphula* were secured by Mr. B. Piffard near Brockenhurst, in the New Forest, as early as April 22nd. I have no further record, however, till May 8th, when *Libellula quadrimaculata*, in teneral condition, was taken at the Black Pond on Esher Common, Surrey. At the same place on the following day it was taken again with *P. nymphula*, *Enallagma cyathigerum*, and one female *Cordulia ænea*, all being more or less teneral. Of these *P. nymphula* was commonest and most mature. On May 22nd a female *Libellula depressa* was taken at Oxshott in the same district of Surrey.

Between Byfleet and Wisley, in Surrey, on the following day, *Calopteryx splendens*, *Erythromma najas*, *P. nymphula*, *Ischnura elegans*, *Agrion pulchellum*, *A. puella*, and *E. cyathigerum* at least were on the wing; but many were in teneral condition. On this occasion a female *C. splendens* was secured with its captured prey—a mayfly, *Ephemera vulgata*, which appeared to be in the sub-imago stage.

Two days spent in the New Forest (May 30th–31st) brought to notice *Orthetrum cærulescens* just emerging, a fair number of *Calopteryx virgo*, *P. nymphula* in plenty, and *A. puella*. On a visit to Bookham Common, in Surrey (June 9th), *I. elegans* alone was noted. On June 13th a female *Pyrrhosoma tenellum* was taken at the Black Pond, where also *L. quadrimaculata* was common, and a *C. ænea* was secured by Mr. Fenwick, junior. My first

Anax imperator was sighted on this day in the same neighbourhood. On July 23rd, *Sympetrum striolatum* and *Æschna grandis* were met with at the North Downs near Albury.

During a stay in the New Forest from July 30th to September 7th there were seen:—*P. tenellum*, with its var. *erythrogastrum*, *O. cærulescens*, *Platynemis pennipes*, *P. nymphula*, *I. elegans*, *Sympetrum scoticum*, *Lestes sponsa*, *S. striolatum*, *C. virgo*, *Cordulegaster annulatus*, *Agrion mercuriale*, *L. depressa* (August 8th), *E. cyathigerum*, *A. puella*, *Æschna mixta*, *A. imperator*. The date, August 8th, for *L. depressa* is a late one for the species. *A. mercuriale* was found to have a more extended range along Oberwater Stream than was previously supposed.

My last record for the season was *S. striolatum*, *S. scoticum*, *Æschna juncea*, *Æ. grandis* and *E. cyathigerum* at the Black Pond on September 12th.

I should add that I received *C. splendens*, taken at Alice Holt Wood on June 13th by M. Warriner, *E. cyathigerum* from Nethy Bridge in July (D. Sharp), and a note of *Æ. mixta* taken by F. Enock in a garden in Tufnell Park Road, London, about 9.20 a.m. on August 21st. Whence did the last come, as Mr. Enock had not himself bred a nymph during the season?

28, Knight's Park, Kingston-on-Thames.

NOTES ON THE VARIETIES OF *PERONEA CRISTANA* LATELY IN THE COLLECTION OF THE LATE MR. J. A. CLARK.

By SYDNEY WEBB.

(Continued from p. 201.)

CRISTANA GROUP.

A. *Button conspicuus*.

Fore wing unicolorous brown to black, with white, brown, or cream-coloured button, and pure white or cream vitta.

Cristana, Fab. nec Dup.—[Is too well known to require notice. Distinguished by its snow-white button and vitta. It would appear that the ground colour of the wings is at the present day becoming darker than formerly.]

Nigrocristana, Clk.—Readily separated from the last by the central tuft of scales being black, brown, or rusty brown, although Clark mentions black only. There are no subsidiary small tufts of white scales. This form appears to be in almost every collection mixed with the last.

Fuscana, Clk.—Is identical with *nigrocristana*, but slightly lighter in hue. His type specimen does not agree with his

named series, and the central tuft instead of being very large is almost wanting, whilst a red line from the tuft to the costa near the apex is very noticeable. Not one of his series of six shows this red line, and the disc of their wings is in each case unicolorous light brown, vitta pure white, and the central tuft large and rust-coloured. This new name had better be dropped.

[*Albipunctana*, Steph.—A well-known and well-described form, but the central tuft is rarely white, owing to cream scales being intermixed, which make it appear white in some lights only, and distinctly cream in others. At other times the ground colour is darker, nearly black on the costa, and one specimen in the writer's series is very like *semiustana*, with white tuft and vitta.]

Ochreapunctana, Clk.—Similar to *albipunctana*, Steph., but button more decidedly yellow, and vitta distinctly ochreous.

Proxanthovittana, Clk. = *xanthovittana*, Desv.—Desvignes' description is curt; he says it is like *unicolorana* and *alboflammana*, with a yellow dash or vitta, but it is not like *unicolorana*, inasmuch as that form is entirely without vitta, and it is not like *alboflammana*, Curt., for that form has a broad white vitta. It must then have some other character possessed in common with them other than a vitta, or they would not have been classed together by him. Looking for this feature in common, we at once see it to be the absence of the central tuft—the very point of distinction that Clark claims for his var. *proxanthovittana*. By the law of priority Clark's name must then sink in favour of *xanthovittana*, Desv., but we may transfer it to the similarly coloured brown-tufted insect, which has long stood in a mixed series in our cabinets under the name "*xanthovittana*."

B. Button wanting or extremely small.

[*Alboflammana*, Curt.—Unicolorous light to dark brown, button entirely wanting, vitta snow-white.] A well-known variety.

Subalboflammana, Clk.—Unicolorous pale brown, with snow-white vitta, button only represented by a white dot.

[*Unicolorana*, Desv.—Ground colour as last, but no button and no vitta.]

Subunicolorana, Clk.—Differs from *unicolorana*, Desv., by conspicuous large dark button. From its large button this obviously should not be placed here; yet only differing as it does from the last in this respect, I have reluctantly included it. It seems impossible to graduate the varieties of *cristana* in any satisfactory sequence, and collectors would do well to observe Desvignes' plan, and arrange them as much as possible in groups, rather than according to their own individual pleasure.

c. *Vitta confined to base of inner margin only.*

Subvittana, Steph.—Well known to all collectors.

Punctana, Clk.—Ground colour darker, and button and short vitta more cream-coloured; small pale scales more numerous, two on disc before tuft, four along inner fold, several along costal fold, and others towards the end of the wing, giving a very speckled appearance to the insect. But these minor additions scarcely seem to warrant a distinctive name variety.

Nigrosubvittana, Clk.—Blacker ground colour. The short pale vitta more obsolete, pale grey rather than white; central tuft black.

NIGRANA GROUP.

Ground colour black.

This phase of aberration in *P. cristana* seems quite a modern development. The form first appeared in the New Forest a year or two earlier than 1890, and we saw only one of the form among a series of nearly two hundred specimens examined in the following year. The commonest varieties at that time were *cristalana*, *striana*, and *defontainana*, with some of the unicolorous brown examples. Now it is equally common with all of these, and at Epping it is easily first among the scarcer aberrations. Black, with a shining surface and unicolorous, excepting for the deeper blue-black of the markings, button, and tufts; it is well-named and unmistakable, but after all is only an intensified form of *profanana*.

Rufinigrana, Clk.—A distinction without a difference. Of this form Clark remarks: "The chocolate-coloured marking, which is totally absent in *nigrana*, constitutes the difference." Possessing both the type (quite unlike the figure) and his series, we are forced to say there is no chocolate line whatever as described. The main difference is that in this the darker black curved line from the black tuft, which terminates upon the disc in *nigrana*, becomes in *rufinigrana* a straight line to the costa near the apex; whilst in certain lights we see a reddish blush over the black scaling of the wings between the base and the tuft, but this is not sufficiently pronounced to be esteemed a difference such as ought to be recognized by a varietal name. Moreover, the specimen chosen for description and figuring differs *per se* from Clark's own assorted series, being paler in colour generally, and brown-red near the body. The name *rufinigrana* as one of non-importance should be dropped altogether.

Jansoniana, ab. nov.—Another of the *nigrana* group, all of which are absolutely identical in depth of colour, is distinguished by the dark grey head and thorax, and reddish grey vitta always distinct, and never degenerating into the several pale lines we see in *striana*. Mr. Clark had eight of these, and we propose for this rather striking form the above name, after Mr. Oliver E.

Janson, who accompanied him in many of his excursions, and introduced him to the locality where these *nigrana* varieties were mostly captured.

Merlana, Clk.—His description is sufficient to identify this. The head and thorax is more ash-coloured than the last, whilst the *striana*-like lines on the inner margin are quite unlike the consistent unicolorous band which distinguishes *Jansonana*.

Atrana, Clk.—A good variety. The author's description of the vitta as orange-coloured scarcely, however, hits the mark, as it is difficult to give a colour term to it; really it is scarlet, with a yellow margin either side, a combination that makes the general aspect of the vitta much richer in colour than the term which is expressed by orange.

Albonigrana, Clk., does not belong to this group, but to that of *ruficostana*, whilst *nigroruficostana* (*nigrocostana*), Clk., is only a very black *nigrocristana*. Neither would be mentioned here but for the names, which are misleading. By some extraordinary blunder, Clark's plate, showing these aberrations, has the names and figures reversed.

RUFICOSTANA GROUP.

Upper part of wing rich rufous brown. Button wanting or extremely small.

Curtis says of the type of *ruficostana*, "inner margin white," but Clark, "that the true *ruficostana* is yellow." Which is correct? If Curtis stands, *alboruficostana*, Clk., must fall. But for many years that with the white vitta has been in our cabinets as the typical form. The description must stand before any plate.

Ruficristana, Johnson.—He describes this as precisely similar to *ruficostana*, Curt., of which he says his (Curtis's) description would do for the two, but there is a very small red tuft in *ruficristana*, John., which is absent in Curtis's moth, and it is very seldom seen. Our authorities have been right in sinking this name.

Attaliana.—Clark says it is the only aberration in this lovely group of four which has the white dots on the superior wings in the marginal area; and inasmuch as Clark had but two specimens, and one of these he made his type, whilst the other has no white dots on the superior wings, it must be left to our readers whether or not a varietal name should be admitted for a single example.

Transversana, Clk.—Well-founded and distinct, without any vitta; altogether a dull-looking insect, of which there are several in cabinets, but not hitherto differentiated.

Albonigrana, Clk.—Wings deep slate-coloured, the upper third of the wing velvety black, vitta pure white; a chaste and beautiful form.

(To be continued.)

NOTES ON SOME HUNGARIAN AND AUSTRIAN BUTTERFLIES IN 1910.

By W. G. SHELDON, F.E.S.

A FAMILY holiday, spent wandering in various countries south-east of these islands, enable me to pen a few notes on certain Diurni observed there.

We arrived at Budapest on May 10th, and the following day visited Svab-hegy. The day was not very favourable, with but



HERCULESBAD AND THE CSERNA GORGE FROM THE "WEISSES KREUZE" WOOD.

little sun and a good deal of wind, consequently butterflies were not abundant. *Pyrgus orbifer* was, however, well out, and in perfect condition, flying with plenty of *Hesperia malvæ*; males of *Polyommatus baton* were not infrequent, and one example of *P. orion* var. *ornata* was observed but not netted. Here and there *Papilio podalirius* sailed along in its inimitable manner; *Leptosia sinapis* was frequent.

On the morning of May 12th I visited the Promontor Marshes with Professor Schmidt, chiefly with the view of obtaining a series of *Chrysophanus thersamon*. It was a very pleasant experience—after last year's June visits to these marshes, which resulted in a few battered specimens only—to net in a short hour twenty-three fine examples, the sexes being about equally represented; a solitary *C. rutilus* male seemed about the first emergence of his generation. I was fortunate to add a not very good male *Colias chrysotheme* to my list, the first time I had seen this species; *Papilio machaon* was frequent, with at least one var. *aurantiaca*; plenty of *Pontia daplidice* var. *bellidice*; some *Chrysophanus dorilis*; and a few *Melitæa cinxia* completed my list of species other than those of universal distribution.

Proceeding towards the lower reaches of the Danube, the train stopped for half an hour some twenty miles north of Temesvar, and enabled me, in not a very happy frame of mind, to watch the gambols of a pair of *Colias myrmidione* on the railway bank, in apparently perfect condition, for I had searched for this species long, and so far unsuccessfully, and to see it for the first time under these conditions was distinctly tantalizing.

That portion of the Danube gorge between Bazias and Orsova impressed me as being good ground, with plenty of well-wooded transverse ravines, and one passes several villages on the Hungarian side of the river where accommodation might be obtained.

I reached Herculesbad on May 18th, and was favoured with four practically cloudless days. It has often impressed me that one of the most charming aspects of the study of European butterflies is that it almost invariably takes one into such exquisite surroundings; and that the best localities for butterflies are usually those of the greatest scenic beauty. Albarracin, Berisal, Zermatt, Ronda, Granada, and the "Côte d'Azur," amongst others, each in its way are amongst the fairest spots in Europe; and they have all produced for me, at different times, shoals of butterflies, many interesting and beautiful species hardly to be met with elsewhere.

Herculesbad can take its place with any of these, and just at the period of my visit it was looking its very best. The luxuriant woods clothing the sides of the great gorge, except where these are sheer rock and precipice, were in the vivid and varied green of late spring, and the air was laden with the perfume of blossom of tree, shrub, and plant. Prominent amongst these was the wild lilac; these regions are the home of that exquisite shrub, and the mountains round, when the woods are not too dense, are thickly overgrown with it. Another noticeable tree was a species of ash with large trusses of odorous cream-coloured flowers, and one tree was sufficient to

scent the air for many yards around. Altogether I do not remember ever wandering in more delightful woods.

Driving from Orsova, a distance of twenty-seven kilomètres, we did not reach Herculesbad much before noon, and with unpacking and lunch, I was not fairly started on my way up the Cserna before two o'clock, too late on most occasions for much hope of meeting with many butterflies. On this day, however, I was in luck; the day previous there had evidently been a heavy fall of rain, and the road was still damp, with puddles in places; at most of these, *Neptis aceris*, in twos and threes, in most perfect condition, was drinking. I selected my specimens, for *N. aceris*, even when newly emerged, is apt to be chipped or rubbed, but, after allowing for rejections, by four o'clock I mustered thirty perfect in all respects. Last year, a month later, I had to work hard for a whole morning to get half a dozen battered examples.

Last year I recorded in 'Entomologist' (xlii. p. 274) certain specimens of *Pieris rapæ* from Herculesbad. After considerable trouble I find, thanks to the Rev. G. Wheeler, that these are not *Pieris rapæ*, but *P. manni* var. *rossii*. They impressed me at the time of capture as something different from any forms of *P. rapæ* I had ever seen, but I could not then identify them as anything else. *P. manni* is at Herculesbad, as I understand is the case elsewhere, purely a woodland species, feeding, no doubt, on one or more of the numerous Cruciferæ which abound amongst the undergrowth. It is most abundant at the level of the road, but one or two specimens were netted at an altitude of quite one thousand feet above it. The spring brood was well out at the time of my visit, but was not very abundant. The tips of the wings and spots are not so dark as those of the second brood, which are var. *rossii*. A fine form of *Leptosia sinapis*, with strongly marked under sides, was abundant at the puddles in the road. *Polyommatus orion* var. *ornata* was just emerging. *Nemeobius lucina*, very large and ranging up to 38 mm., flitted about the glades a mile or so above the Bad. The spring brood of *Pieris napi* was also abundant, the females much suffused on the upper sides with grey; and amongst other species observed in the Cserna Valley were *Papilio podalirius*, *Cyaniris argiolus*, and *Pararge egeria* var. *egerides*; all of them frequent.

A visit to the Coronini the next day, May 17th, was not remarkable for the number of specimens seen or captured. Amongst other species, *Melitæa cinxia*, with the tawny form of the male usual in South Europe, and a particularly fine female, with ground of wings pale straw colour, all the dark markings on upper side more pronounced than in the type, and a consequent reduction in area of ground colour. I find on comparing these with the series in the British Museum Collection that

there are in it two examples taken in Bulgaria by Mr. H. J. Elwes, and labelled var. *obscurior*, Seitz, which resemble the Herculesbad form, except that in them the ground colour is somewhat whiter, and the dark markings more extended on the wing surface. I presume the Herculesbad form should therefore be called *intermedia*.

The only other things worthy of note taken on this day were a pair of *Chrysophanus thersamon* and an example of *Pyrqus orbifer*, in good condition, larger and darker than my Budapest specimens.

Last year, at the end of June, worn females of *Thecla acaciæ* were abundant flying round some blackthorn bushes, which, on my visit this year, I beat vigorously for larvæ; the only larva I succeeded in finding, however, came out as an imago of *T. pruni* on May 30th. Apparently the larvæ of *T. acaciæ* had pupated at the time of my visit.

Parnassius mnemosyne was abundant about a couple of miles up the Cserna Valley, at an altitude of about 300 ft., surely a very low elevation for this butterfly. The form was similar to that occurring at Budapest; that is to say, with small very dark spots. Fine large *Nomiades cyllarus*, with an expanse of 36 mm., were seen here and there, and the ubiquitous *Callophrys rubi* flitted about with occasional *Brenthis euphrosyne*, local and not common.

I made an observation that somewhat puzzles me. Last year, in one small dingle, and there only, I came across a few rather worn but unmistakable examples of *Everes alcetas* (*coretas*). This year, being six weeks earlier, I looked in this place for fresh specimens, and what I did get was three perfect male *Everes argiades*. I have been told that in Hungary these species, or forms of one species, are mixed up, and occur in the same localities, and my observation seems to confirm this view.

An ascent of the Domogled on May 19th was, from an entomological point of view, singularly barren. One would have expected to meet with *Erebia medusa* var. *psodea*, and other species; but with the exception of half a dozen specimens of *Papilio machaon*, the peak was entirely devoid of butterflies. On the way up, at the well-known Quelle, I netted a fine *Neptis aceris*, and saw plenty of *Pieris napi* and *Pararge egeria* var. *egerides*, and some *Euchloë cardamines*.

May 21st found me back in the Promontor Marshes. *Chrysophanus thersamon* was getting *passé*, quite seventy-five per cent. of those taken showing defects of one kind or another. *Plebius argus* was abundant and perfect, and a male of the fine Budapest form of *P. argyrognomon* was taken. I captured one *Melitæa trivialis* by no means perfect. *Lycæna astrarche* was abundant.

We spent May 22nd at Szada on a visit to Baron Vecsey. The day was sunny, but butterflies were scarce. The Baron

informed me they had been so all the season, and I have a much more vivid appreciation of the kind hospitality we received than of the specimens captured. Before lunch we took our nets and wandered through some very likely country; a few *Melitæa trivialis*, *C. thersamon*, *Argynnis adippe* var. *cleodoxa*, *P. argyrognomon*, and *E. argiades* var. *polysperchon* were all we observed.

Journeying from Budapest to Vienna, an unfortunate breakdown in the health of one of my party necessitated a fortnight's stay at the latter place. During this period the only entomology I could manage was a few hours on May 31st at Mödling. Most of this time was spent in trying to get out of the long streets of the town into the country, which was unknown to me, consequently my time with the net was very limited, the event of the day being the capture of a splendid male of *C. myrmidone*, unexpectedly met with in a lane, too narrow for him to evade me, and netted before he realized his danger. The only other capture here worthy of note was a specimen of *Carterocephalus palæmon*. *Erebia medusa* was not infrequent.

The doctor at Vienna found that it was necessary for the invalid to go to a mountain resort for a time in order to recuperate. On June 7th we moved on to Semmering accordingly. Semmering is situated in the old Austrian Province of Styria, some seventy miles south-west of Vienna, and on the direct railway route from that place to Trieste, at an altitude of about 3000 ft., and as it is amongst the extreme eastern spurs of the Alps, I hoped to meet with some interesting butterflies; but in this respect I was considerably disappointed, though for what reason I do not quite understand.

The surroundings—a maze of valleys, woods, subalpine meadows ablaze with flowers, swamps, and levels of from 2000 ft. to 5000 ft.—seemed ideal ground for a June locality; but whether it was owing to a bad season, or some other cause, I never saw butterflies so scarce in Continental Europe. I was out each day from June 7th to June 19th, but my entire efforts could only account for thirty-one species, and the number seen of each species was in almost every case very few; so few, in fact, that it was no unusual event for me to spend a morning amongst ideal surroundings, and come back with half a dozen specimens.

The northern slope of the railway valley leading to Mürz-zuschlag was perhaps the locality in which occurred the most specimens; pre-eminent in numbers amongst those was *Erebia medusa* of the *hippomedusa* form—the only *Erebia* seen at Semmering—and *Cupido minimus*, and both of these species, especially the latter, were in great numbers, and newly emerged at the commencement of my visit. With them *Nemeobius lucina* flitted about here and there, and *Hesperia malvæ* was common. Other species occurring in this valley were *Chrysophanus*

hippotoë in the meadows; *Colias hyale*, frequent; *C. edusa*, one female observed; *Aporia crategi*; and *Brenthis euphrosyne*.

Perhaps the best collecting-ground I found at Semmering was the cross valley leading out of the railway valley to the left, about a mile from Semmering, and known as the Durr Graben, or deer valley. The sides of this valley were clothed with woods of spruce and pine, and down the centre ran a small stream and a cart-road; alongside this, at intervals, were small clearings, and in these I found practically all the butterflies I cared to take. Prominent amongst them were *Pararge hiera*, which was not uncommon flitting by the side of the road; the specimens were in good condition, and I captured a good series of both sexes, and obtained ova, from which I have now larvæ feeding. With these occurred here and there *C. palæmon*, flying briskly about in the clearings, or drinking at the damp spots in the road. A rather fine form of *Pieris napi* var. *bryoniæ* was not infrequent, and from ova deposited by captured females I have now some three dozen pupæ. *P. egeria* var. *egerides* was abundant amongst the woods, and in good condition.

On June 18th I discovered a swamp on the east side of the Myrten Graben that contained a colony of *Cænonympha typhon*, and also one of *Anthocera hippocrepidis*; in some of the examples of this latter species the sixth spot is well developed, in others it is barely indicated. *Melitæa athalia*, a form with the dark markings all very pronounced, became common generally; and amongst other species observed were *Papilio podalirius*, *P. machaon*, *Leptosia sinapis*, and *Nomiades semiargus*—none of them abundant. *P. mnemosyne* was plentiful at about 4000 ft., but did not apparently descend below this altitude.

Youlgreave, South Croydon: July 23rd, 1910.

REPORT ON A COLLECTION OF CULICIDÆ FROM COCHIN CHINA.

BY H. F. CARTER.

THIS collection, sent to Mr. F. V. Theobald by Dr. Broquet of the Pasteur Institute, Saigon, was found to contain a good variety of species, including a new one belonging to the genus *Stegomyia*. It would appear that the subfamily Anophelinae is well represented, especially the genera *Myzomyia* and *Myzorhynchus*; and, further, that *Mansonia uniformis* is comparatively abundant.

SPECIES FOUND IN THE COLLECTION.

Myzomyia rossii, Giles (1899), Journ. Trop. Med. (Oct. 1899).

Localities.—Five females, South Annam; five females, two males, Bien-hoa; one female, Giadink; one female, Ha-tien.

Myzomyia thorntonii, Ludlow (1904), *Canad. Ento. p.* 69 (1904).

Localities.—One female, Bien-hoa; four females, Ha-tien.

Myzomyia indefinata, Ludlow (1904), *Canad. Ento. p.* 299 (1904).

Localities.—One female, Saigon; one female, Ha-tien.

Myzorhynchus barbirostris, Van de Wulp (1884), *Leyden Mus. Notes vi. p.* 46 (1884).

Localities.—One female, Ha-tien; one female, Phu-My; six females, Tan-chau.

Myzorhynchus (sp?).

Localities.—One male and one female, Saigon; one female, Ha-tien.

These specimens appear to be near *M. vanus*, Walker, but have not yet been definitely placed.

Nyssorhynchus jamesii, Theobald (1901), *Mono. Culicid. i. p.* 134 (1901), Theobald.:

Locality.—One female, Giadink.

Desvoidya obturbans, Walker (1860), *Journ. Proc. Linn. Soc. Lond. iv. p.* 91 (1860).

Locality.—One female, Giadink.

Stegomyia w-alba, Theobald (1905), *Ann. Mus. Nat. Hung. iii. 74* (1905).

Locality.—One female, Ha-tien.

STEGOMYIA HATIENSIS, n. sp.

Head, thorax and abdomen dark, uniformly coloured. Palpi small and covered with dark scales. Legs almost black, un-banded.

♀. Head yellowish brown, covered mostly with dull blackish brown small flat scales; there is, however, a very small area in the centre line of the head composed of flat whitish scales and similar areas laterally; the former appears to be the remains of a median line of white scales; a row of nine black bristles project over the eyes, the three central ones being much longer and extending straight in front, the lateral ones curving towards the vertex; palpi blackish brown, three jointed, the apical joint the largest, with numerous small bristles; proboscis completely dark scaled; antennæ dark brown.

Thorax with dark brown narrow curved scales; prothoracic lobes denuded of scales but with strong bristles; pleuræ also much rubbed, but small patches



Female palp of *Stegomyia hatiensis*, n. sp.

of flat white scales may be seen; bristles on the mesothorax chiefly at the wing-roots and projecting over the head; scutellum with a very marked median lobe, with scales similar to those covering the greater part of the head, border bristles missing; metanotum nude, dark brown.

Abdomen with blackish scales, unbanded.

Legs uniformly dark-coloured, with numerous small bristles; fore unguis equal and uniserrate, mid and hind pairs equal and simple.

Wings with typical *Stegomyia* venation, the veins clothed with dense brown scales; first submarginal cell longer than the second posterior, their bases almost level, the stem of the first submarginal rather more than half the length of the cell, that of the second posterior as long as the cell; the posterior cross-vein slightly more than its own length distant from the mid.

Halteres with light stems and dark knobs.

Length 3-3.5 mm.

Habitat.—One female, Saigon; four females, Ha-tien (Dr. Broquet).

Observations.—This description was drawn up from five females, all of which were in rather poor condition. It is a somewhat obscure species, and at first sight appears to belong to the genus *Verrallina* or *Skusea* rather than *Stegomyia*.

Note.—In two specimens the posterior cross-vein was practically twice its own length distant from the mid.

Stegomyia (sp. ?).

Localities.—One male, Giadink; one female, Ha-tien.

These specimens were both rather badly rubbed, but were most probably either *S. scutellaris*, Wlk., or *S. fasciata*, Fab. Dr. Broquet notes that one of them is "the common *Stegomyia* of Saigon."

Culex fatigans, Wiedmann (1828), Auss. 2 weit, Ins. p. 10 (1828).

Locality.—One male and one female, Giadink.

Culex impellens, Walker (1860), Proc. Linn. Soc. Lond. iv. 91 (1860).

Locality.—One female, Ha-tien.

Chrysoconops aurites, Theobald (1901), Mono. Culicid. ii. p. 209 (1901), Theobald.

Locality.—One female, Saigon.

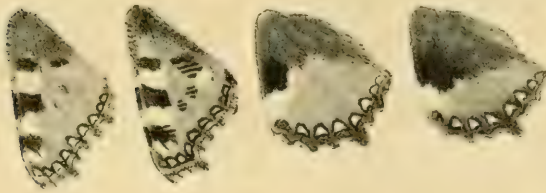
According to Dr. Broquet this species is apparently rare in Cochin China.

Mansonia uniformis, Theobald (1901), Mono. Culicid. ii. p. 180 (1901), Theobald.

Localities.—Six females, Ha-tien; four females, Tan-chau.

COMPARATIVE NOTES ON *V. URTICÆ*, L., VAR. *ICHNUSA*, BON., AND VAR. *TURCICA*, STAND. IS *V. URTICÆ*, L., THE "REDDEST" FORM AMONG ALL THE "TORTOISESHELL" VANESSIDÆ?

BY T. REUSS.



1

2

1a

2a

AFTER studying specimens of *V. urticæ* var. *ichnusa* from Corsica and Sardinia, and of var. *turcica* from Greece and Asia Minor for purposes of comparison with the more northern type and with the many aberrations of the latter, I venture to offer the following notes.

Upper sides:—1. Ground colour. In *V. urticæ* (a) pure or reddish orange, male and female; (b) brownish, yellowish orange (tawny); male and female. In var. *ichnusa* (a) pure or reddish orange (male, with slight puncta), the same colour as in *urticæ*, type, and not redder, mostly less red; (b) pure orange, brownish orange (tawny), male and female. In var. *turcica* the colour is the same as in *ichnusa*, female, the reddish tinge, to which *urticæ* tends so often, is less marked; in some specimens from Amasia, for instance, the colour is often dulled.

2. Yellow markings. In *urticæ* the well-known yellow spots are large, well-defined and light in colour, standing in strong contrast with the ground colour. In var. *ichnusa* the spots are reduced by the spread of the ground colour, and are more orange than yellow, thus lessening the contrast with the ground colour and enhancing the brightness of the latter. The var. *turcica* exhibits these markings as described for *ichnusa*. The inner marginal yellow spot is often quite obsolete in both varieties.

3. Outer margins. Var. *ichnusa*, female, differs often from the other forms by exhibiting a margin strikingly resembling that in *V. io* ab. *fischeri*, Stdfss.

4. Black markings. *V. urticæ* shows the black markings as in figs. 2, 2a; the lined markings in fig. 2 indicate which parts of the black spots fail to appear in var. *ichnusa*, male (with indications of puncta, but these are not in the position of the puncta in *urticæ*—they are farther removed from the wing-

margins), figs. 1, 1a. It will also be seen that the *outer part* of the inner marginal blotch of *urticæ* is "bitten off" in var. *ichnusa*. In var. *turcica* the black markings are in the identical position as in *urticæ*, and in specimens in which the puncta and inner marginal blotch tend to disappear, *they disintegrate exactly in the manner seen in aberrations of V. urticæ*—the inner marginal spot *first* in its *basal portion*—which is just the part that remains intact in *ichnusa*, so that the black spot in *turcica* falls partially in front of the same blotch in *ichnusa*. This is shown in fig. 2 by the lined and by the black portion of the spot in *urticæ*. The distribution of colour in the hind wing is intermediate in *turcica* between figs. 1a (an extreme form) and 2a.

5. Base of the fore wings. These parts are suffused with black and yellowish scales in all three forms, but, as the figures show, the basal and inner central area in *ichnusa* is covered as far as the first costal blotch; while in *urticæ* and var. *turcica* the basal parts show much of the ground colour as in fig. 2. The basal suffusion in *ichnusa* is quite unlike that in the American *V. milberti*, and must not be confounded with it. *Both* kinds of basal colouring appear in aberrations of *V. urticæ*. In *V. urticæ* var. *caschmirensis* the basal suffusion reaches as far as the inner marginal blotch, but does not cover the space before the first costal blotch.

Under sides:—6. As compared with Central European *urticæ*, these parts are of a somewhat richer brown in the two southern forms and the light area of the fore wings is conspicuously darker and warmer yellow in colour. British specimens of *V. urticæ* appear to be distinguished from most Central European forms and from the southern specimens by exhibiting much *black* (not brown-black) in the basal and median portions of the wings. These black markings often become very conspicuous and brilliant (ab. *subtus-nigra*), and the tendency to them makes it more difficult to obtain aberrations from British larvæ, which resemble *ichnusa-turcica* in their under sides, than from most Continental larvæ. Thus all my best aberrations from the latter larvæ—for instance, ab. *ioformis*, ab. *ioprotiformis*—exhibit rich *brown-black* under sides, with the lighter parts warm brownish yellow, as in var. *ichnusa* (it should also be here remembered that atavic forms of *V. io* show *brown* under sides and a tawny orange upper side—compare var. *geisha*, male and female, from Japan); while, with few exceptions, of which my ab. *subtus-puncta* (*antea* vol. xlii. p. 310) is a fair example, my aberrations from British larvæ exhibit *black* under sides tending to *grey*, instead of brown and yellow.* The ochreous, occasionally almost

* The Asian varieties *caschmirensis*, *chinensis*, *connexa* have *brown* under sides. The brown may in the large var. *chinensis* either cover the whole wing surface, as in the brown *V. io* var. *geisha*, or be restricted to the same wing parts as in *V. urticæ*.

white (light greenish grey, violet-grey, yellowish grey) outer area of the under side hind wings in northern forms of *urticæ* is the effect of a tendency further distinguishing them from southern varieties. Extreme forms, which are very conspicuous and somewhat rare, could be distinguished as ab. *subtus-ochrea balteata*. I bred several fine examples of this form in July, 1909, from one particular brood of wild Herts larvæ under normal conditions, and the experience did not repeat itself since.

The under side fore wing of the normal *ichnusa* is interesting for exhibiting conspicuously a row of light ochreous spots near the lunules of the fore wing. These markings correspond with similar spots in *V. io*; in *V. urticæ* they are less conspicuous than in *ichnusa*, while the American *milberti* female exhibits the full chain of these Vanessaïd spots.

If then *V. urticæ* and var. *turcica* clearly belong together, the facial relations of *urticæ-ichnusa*, on the other hand, would read as follows:—

Under sides:—In *V. urticæ* these wing parts are whitish, ochreous and black (greyish) or brown-black; in var. *ichnusa* warmer brownish yellow, brown-black.

Upper sides:—(a) In *ichnusa* the inner marginal blotch and median puncta (when these appear in the male) are not in the same position as in *urticæ*—they are farther removed from the outer margin, and also they are placed in a more slanting position, *i. e.* not in a line almost parallel to the margin as in *urticæ*. The marginal markings are different.

(b) The basal portion of the fore wings is covered with yellow and black scales (which together to the eye look *greenish*, a well-known effect of the two colours when so “mixed”) right up to the first costal spot; while in *urticæ* these parts contain the richest and darkest portion of the ground colour.

(c) In *ichnusa* the light yellow markings of *urticæ* are darker and much reduced in size by the spread of the ground colour.

(d) The ground colour in *ichnusa* is much as in typical *urticæ*; the tendency to red is less in *ichnusa*, however. If *ichnusa* does to the eye appear more brilliantly coloured, more red than *urticæ*, then this effect is simply caused by the *greater unbroken expanse of one colour* in the median and outer area of the wings at the expense of other markings or colours. The “greenish” (black and yellow) basal wing area greatly assists in producing a brilliant colour-effect in the other wing parts.

To prove these points, which had puzzled me till at last I brought some specimens of *ichnusa* into my possession for direct comparison with my specimens of *urticæ*, I took two normal orange specimens of *urticæ*, and patched out the black markings of the right wing pair of one with pieces cut from the wings of the other specimen. The patches were put on as indicated in fig. 2 by the lined markings. Also the yellow inner marginal

spot was covered by a piece of the ground colour. I found, however, that the colour-effect of *ichnusa* did not appear till I had, with the help of a light orange-yellow specimen of *urticæ*, also patched out the light yellow costal spots with the darker colour and filled in the basal wing part as in *ichnusa*. The hind wing was also made to look like fig. 1a, and then it was interesting to see how different in colour the two wing pairs, of which the left one had remained untouched *urticæ*, appeared to have become. The ground colour in the right wing pair was the same as in the left, yet it *looked* more fiery, more brilliant. Still, the shape of the wings, the less dentate outer margin, more "pointed" apical projection, and the peculiar arrangement of the blue spots disturbed the effect slightly; but the resemblance to *ichnusa* was sufficiently striking, and the alterations necessary to obtain this resemblance were great enough to show how hopelessly far from *ichnusa* were the aberrations of *urticæ*, which merely exhibited a reduction of the black and yellow markings. Not yet, as far as I could learn, have the black markings of *urticæ* aberrations appeared in the relative position they occupy in *ichnusa*. I will here note, however, that when in *V. io* the black inner marginal spot appears, as it occasionally does, then it occupies the same relative position in the wing as in *ichnusa*. I possess a few specimens of aberrative *V. urticæ*, which show this spot much as in *ichnusa*, but the puncta do not follow suit, nor does any other part of the facies, except the basal suffusion, do so. The corresponding parts of the under side in *urticæ* are *generally* nearer *ichnusa* than the upper side; this can be easily seen by holding the specimens against the light, when very often the inner marginal spot will be found to jut out far beyond the correlated black under side markings. The basal portions of the fore wings in *urticæ* cloud up occasionally under the influence of retarded pupal development (pupal aberration), or of retarded larval development, also if caused by *insufficient food* (larval aberration), exactly as in *ichnusa*. I have examples of both categories with the base like *ichnusa* (ab. *basi-ichnusa*—not to be mistaken for a dark form in which the wing base is much suffused with black and dark brown-red scales mostly extending to the median wing-area, as in *V. milberti*—ab. *basi-milberti**), but they are otherwise little different from normal *urticæ*.

In *different* aberrations of *V. urticæ* I also found most of the other *ichnusa*-form details, but I have not yet seen them all together in one specimen, and the important displacement of the

* An extreme form of this fine aberration emerged last year, on the 25th of July, in my cases together with some transitional forms, from pupæ of one brood of wild Herts larvæ, which developed under normal conditions in the mean temperature of the season. I had expected to rear only normal specimens, which I wanted for purposes of comparison.

median puncta has perhaps not yet been caused in *urtica*, as also not yet the development of the margin of female *ichnusa*.

Altogether it appears that aberrations of *V. urticae*, which are facially transitional to *ichnusa* (not merely to var. *turcica*), are very rare indeed, much rarer than such aberrations as *ab. atrebatensis*, *ab. ichnusoides* (a misleading name rather), *cærulapicata*, *ignea*, and others.

(To be continued.)

FIELD NOTES ON BRITISH SAWFLIES.

BY CLAUDE MORLEY, F.Z.S., &c.

(Continued from vol. xli. p. 192.)

THE Selandriades comprise ten genera and fifty-three species, very many of which are extremely abundant everywhere, and among the first to be acquired by the collector. *Harpiphorus lepidus*, a very distinct insect, is, however, rare in my experience. I beat it from undergrowth in the Bentley Woods, near Ipswich, in the middle of May, 1897, and on April 22nd, 1901, discovered a larva in a cell, apparently of its own construction, in a gall of *Cynips kollari* on oak in the same locality. This larva became a green pupa on the 25th and remained green till May 11th, when the colour changed to yellow and black, those of the imago. It subsequently appeared to develop into its perfect condition in a curiously gradual manner. On May 12th the pupa could walk with a certain amount of ease, and during the same evening it was yet more active; on the 13th it had changed little in appearance, but was certainly an imago with legs, antennæ, and mouth-organs fully developed, though the wings remained somewhat immature. I still possess the larval skin, which is too shrivelled for description. Cameron (Phyt. Hym. i. 265) had no personal knowledge of the ecdysis of this species; but Fitch records (Entom. 1880, p. 258) four specimens bred from galls of the same species of Cynipid.

The Suffolk coast is especially cursed with *Athalia spinarum*, whence it has been recorded "in such numbers in July as to render the turnip crops leafless in August" (Ent. Ann. 1860, p. 91); crops were damaged at Hulver in 1838, and at Covehithe (Curt. Farm Ins. 59); Bloomfield found it commonly at Rendham about 1850; Smith, abundant at Lowestoft; Tuck, at Southwold and Aldeburgh—he noticed that the autumn brood consists mainly of males (Trans. Norf. Nat. Soc. 1902, p. 331). It has occurred to me mainly at Southwold in July, 1901, and I have never seen it out of the county (*cf.* McLachlan on its scarcity, E. M. M. 1901, p. 128). Singly it occurred at Tuddenham at the end of August, 1900, and at Claydon in the following

September. Of *A. lugens* I have recently made the acquaintance, in the person of a female, at Tuddenham Fen in the middle of last June, though Tuck took it at Southwold in August, 1900, and Chitty at Brandon early in June, 1903. *A. glabricollis* is doubtless often overlooked and mistaken for the next species, though Tuck has thrice found it in Finborough Park and Tostock in this county, and I took it at Brandon, Wherstead, and Tuddenham, Suffolk. Such quantities of *A. lineolata* are everywhere seen that it is only necessary to say that it has occurred to me in Cambs, Lincs, Hants, Isle of Wight, and is ubiquitous throughout Suffolk, where a single somewhat doubtful *A. scutellarica* was swept in Tuddenham Fen on June 19th, 1901. *Selandria* has no common species, all are abundant or quite rare. My only *S. flavens* was captured by Alfred Beaumont towards the end of August, 1899, at Harting, in Sussex; *S. serva*, on the other hand, is to be seen everywhere throughout the summer months; and *S. stramineipes* is abundant in woods in Sussex, Isle of Wight, Suffolk, and the New Forest up to July 11th. *S. morio* appears confined to marshy situations, and is said to feed on willow; I have found it in the Norfolk and Suffolk Broads, the Isle of Wight and New Forest, mainly in June. *S. cinereipes* is much more local in my experience, being especially abundant at Brandon, where Chitty also took it in 1903, from June 3rd to August 12th; it has, too, turned up singly at Tuddenham and Barton Mills in the same district, and once near Ipswich on June 29th, 1895, by sweeping reeds at Bramford.

Fred. Smith is not the only author who has remarked (Ent. Ann. 1856, p. 100) upon the disparity of the sexes of *Strongylogaster cingulatus*: he regarded it as about a thousand to one, *i. e.* a single male "during a diligent search of twenty years"! But I have not found the female in the profusion he intimates, and the male has twice occurred to me in the Bentley Woods in May, as well as at Denny Wood in the New Forest, whence Miss Chawner has given it me. The only specimen of *S. xanthoceros* I have seen is that referred to by Mr. Morice (E. M. M. 1908, p. 192), captured by Rev. H. S. Gorham at Great Malvern. Of our four Thrinaces, I possess but a single *T. contigua*, taken by Beaumont at Blackheath on May 22nd, 1898. *Strombocerus delicatulus* is a beautiful species, by no means rare during June in woods by beating birch at Assington, oak (a pair) at Staverton in Suffolk, at Hursthill and Matley Bog in the New Forest. I have rarely met with *Eriocampa ovata*: near Ipswich in 1894; on *Heracleum sphondylium* flowers at Farnham, in Suffolk, on July 24th, 1899; and Elliott found it at Matley Bog on June 18th, 1907. Our ten species of *Pacilostoma*—a correctly compounded word, whatever one surmise its author may have intended to convey—all appear to be of uncommon occurrence.

P. excisa and *P. liturata* are probably common, however, in the Norfolk Broads, where I took them in June, 1901; *P. abdominalis* has turned up singly at Matley Bog, Brandon Staunch, and in an elm-hedge at Southwold during June and July; once I swept *P. pulverata* towards the end of the former month at Foxhall, in Suffolk; *P. excisa* has also occurred in the Reydon and Henstead Marshes, near Southwold, on rushes during early June; and *P. liturata* at both Brandon and Wicken Fen in the course of the same month. *P. immersa* is rare, and I possess but a male from Barton Mills in Suffolk, and a female from Bentley Woods; a male of *P. longicornis* was swept at Henstead with *P. excisa* on June 2nd, 1905; and *P. tridens* turned up in the New Forest during May, 1895, and at Barnby Broad on July 15th, 1906.

Ten of our thirteen species of *Emphytus* are represented in my collection, and I believe the majority to be not uncommon, though *E. calceatus* is the only one I have met with in any numbers; this is frequent in the Norfolk and Suffolk Broads at Rockland, Oulton, and Barnby, and it also occurs at Brandon and Claydon, in Suffolk, in August, very rarely in June, and always in swamps. Mr. F. C. Adams has taken *E. togatus* at Lyndhurst, and I beat a single specimen (the only one in twelve years' constant collecting there) in the Bentley Woods in June, 1898. *E. cinctus* is a garden insect, occurring to me in my garden here and in Chitty's at Huntingfield, in the Blean Woods, and at Lyndhurst. My single *E. melanarius* was taken by Beaumont at Oxshott in September, 1891. *E. rufocinctus* also occurs in gardens: I have it from Monks Wood, Hunts, June 4th, 1905 (Chitty), Buckfastleigh, June, 1905 (de la Garde), and Monks Soham. A couple of *E. braccatus* turned up on August 13th, 1901, at Brockenhurst and Denny Wood; and I have another pair from Beaumont's collection, taken by him in September at Courten, in Ireland, and Taynuitt, in Scotland. The curiously autumnal *E. serotinus* occurred to Tuck at Bungay on September 24th, 1898; Sich has given me one found in Richmond Park on October 29th, 1900; and I took it by sweeping in a very swampy wood at Bramford, near Ipswich, on October 13th, 1899. *E. tener* is probably not rare: Brandon (Chitty), Southwold (Tuck), Lowestoft, Ipswich, and on birch in Tuddenham Fen. *E. carpini* and *E. grossularie* should not be rare, but of the former I have found one flying in the sunshine in my garden here on May 8th, one at Brockenhurst in early July, and possess one taken at Chobham by Beaumont, only; and of the latter, two examples from woods at Bentley and Assington, in Suffolk, are all I have obtained. *Taxonus glabratus* is one of our commonest sawflies, and I often see it basking on the leaves of *Alisma* in my moat here; I have it from all over Suffolk, from Cambs (Wicken Fen), Northants (Castor), and

Southampton (Gorham). *T. equiseti* is hardly rarer in Suffolk and the New Forest; Elliott found it at Clunie, in Scotland, on August 16th, 1907. But I do not know the other two species of the genus.

The Dolerides mark the beginning of the end of these remarks, for after them are only the Tenthredinides, which I shall reserve for a final note. Two of our three *Loderi* are known to me: *L. palmatus* by a pair captured at Tostock, in Suffolk, by Tuck in June, 1899, and a doubtful male from Bramford; *L. vestigialis* is not uncommon in marshes at Foxhall, Barton Mills, and Farnham, in Suffolk, from the end of May to middle of June. The genus *Dolerus* is one of the best known and most difficult of elucidation; some of its species are ubiquitous and others extremely rare. I possess but a single female of *D. triplicatus*, captured by the late A. J. Chitty at Colchester in May, 1907; but *D. madidus* is not infrequent from the end of April to beginning of July in marshes at Ipswich, Tostock, Matley Bog, and Burley, in Hants, being sometimes swept at dusk. My single *D. ferrugatus* was found at Gosfield, in Essex, early in June, 1903, by Alfred Beaumont. *D. pratensis* is extremely abundant everywhere; I have found it at all times from April 1st to August 29th about Dover, the Norfolk Broads, and all over Suffolk. On the wing it has a peculiarly straight and sustained flight, accompanied by a distinct humming noise, buzzing along like a Zygænid moth. My only *D. æriceps* was swept at Hursthill, or Queen's Bower, in the New Forest, on July 11th, 1909; but *D. palustris* is much commoner, and turned up at Rookley Wilderness, in the Isle of Wight; at Dunwich, Bentley, Bramford, and Stanstead, in Suffolk; and Gorham found it in Herefordshire. Many of the black-bodied species are abundant, though difficult to name. Of these, *D. gonager* is among the commonest, and usually turns up by sweeping reeds; I have it from Norfolk, Suffolk, Hants, and Kent, the dates of capture varying from May 9th to July 14th. *D. liogaster* seems, on the contrary, to be very rare, since my single specimen turned up on reeds at Theberton, in Suffolk, on July 10th, 1900; but the handsome *D. hamatodes* is by no means infrequent in my paddock and even on the windows here. I have received it from Doncaster, and used to find it on aquatic plants about Ipswich at Foxhall, and on the banks of the Gipping from April 19th to June 5th. The var. *ravus* of *D. sanguinicornis* is common in Suffolk at Brandon, Lavenham, and Stoke-by-Clare at the end of May; I have also taken it at Burley, in the New Forest, early in July. *D. niger* is a large and fine species, unknown in Suffolk, though it has occurred to me at Setley and Rhinefields, in the New Forest, on July 12th, and at Helpston Heath, near Peterborough, on June 13th. *D. anthracinus* is the earliest of all species in my experience, since I have

swept it in woods as early as March 23rd. I took several in 1895, but have never seen it since that year, when it extended only to May 1st, on reeds on the banks of the Gipping, near Ipswich. A single old female, taken in the same district in 1893, is my only exponent of *D. nitens*; but *D. picipes* is common about Southwold, Tuddenham, and Ipswich, in Suffolk, and at Peterborough, from April 11th to the middle of June. My best species is *D. tinctipennis*, Cam., of which a single female was swept from last year's dry reeds in a brackish ditch on the coast at Southwold on April 26th, 1909; this is the second known specimen, but a very diligent search about the same ditch, and within three miles of it, on April 20th-21st, 1910, did not produce a single representative of the genus. *D. fumosus* I have only found in the New Forest, in Matley Bog and Denny Wood, in the middle of June, 1907. Our commonest kind here is *D. nigratus*, which abounds in my paddock throughout May, extending into June. The males fly swiftly in the morning sun about a foot above the grass-tops. I have swept it at Foxhall as early as April 8th, and found it sucking the flowers of a box bush here on the 23rd of that month; it also occurs at Peterborough, Bentley Woods, and in the Isle of Wight. I need say nothing of *D. ceneus*, which I have from Skene, on the borders of the Scottish Highlands, to the Isle of Wight and Somerset. It is commonest in June, and does not appear very early. Of *D. rugosulus* I possess but a single example, swept from a hedge-bottom at Blakenham, Suffolk, on April 11th, 1898.

Monks Soham House, Suffolk.

(To be concluded.)

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

(Continued from p. 248.)

Euproctis labecula, sp. n.

Fore wings yellow-buff, faintly mottled with rusty on the disc; antemedial band represented by some brownish scales above the inner margin; postmedial band narrow, dark brown, incurved and most distinct from below middle to the inner margin, preceded by a whitish line. Hind wings paler.

Expanse, 24 millim.

Collection number, 36*a*.

One male specimen from Takow (on the plains), May 19th, 1906.

Euproctis sparsa, sp. n.

Fore wings yellow, no transverse lines, but the medial area is sparsely sprinkled with black scales except near the costa. Hind

wings whitish slightly tinged with creamy along the veins. Under side of fore wings yellowish and of hind wings whitish.

Expanse, 34 millim.

Collection number, 745 a.

A male specimen from Rantaizan (7500 ft.), May 14th, 1909.

Euproctis dissimilis, sp. n.

♂. Head, thorax, and abdomen cinnamon-brown, the latter whitish mixed. Fore wings cinnamon-brown, thinly powdered with darker scales; ante- and postmedial lines whitish, the former angled above middle, and the latter curved towards costa. Hind wings and under side of all the wings whitish sprinkled with fuscous.

♀. Head, thorax, and fore wings yellow; the whitish transverse lines on the fore wings only faintly in evidence. Hind wings, and under side of all the wings, yellowish white; abdomen whitish buff, anal segment and edges of the others darker.

Expanse, ♂ 26 millim., ♀ 34 millim.

Collection number, 33 a.

Two specimens reared, August 30th, 1906, from larvæ found at Anping (on the plains) earlier in the month.

Euproctis kanshireia, sp. n.

♂. Head, thorax, and abdomen pale ochreous, anal tuft orange-brown, and the two segments immediately before it dark brown. Fore wings pale ochreous, clouded with greyish on the costal area, and sprinkled, except on outer margin, with dark brown scales; ante- and postmedial lines of the ground colour, without dark brown scales; the first line is slightly oblique, and preceded by a greyish band sprinkled with dark brown scales; the second line is followed by a greyish band, from which two spurs run to the outer margin; a black spot at apex has a dot above it and another below, the latter rather indistinct. Hind wings fuscous grey, outer margin whitish. Under side of fore wings fuscous with a twice interrupted pale yellow border to outer margin; hind wings whitish clouded with fuscous at the extreme base.

♀. Pale sulphur yellow, the dark grey band following postmedial is sprinkled with dark brown scales; the abdomen is fuscous grey with orange-brown anal tuft.

Expanse, ♂ 30 millim., ♀ 44 millim.

Collection numbers 747 and 1201 a.

One example of each sex from Kanshirei (1000 ft.); the male captured in April, 1908, and the female in May, 1907.

Euproctis inornata, sp. n.

♀. Head and thorax pale brown, rusty tinged; abdomen greyish brown, anal segment yellow. Fore wings pale brown, sprinkled with black scales; three double whitish spots on the outer margin; an obscure dark central band, interrupted above the inner margin and bifurcate towards the costa, the outer arm indistinct, the inner

enclosing a discal dot. Hind wings fuscous merging into whitish on the outer margin.

Expanse, 52 millim.

Collection number, 1202.

One female specimen from Kanshirei (1000 ft.), May 29th, 1908.

Euproctis unifascia, sp. n.

♂. Fore wings yellowish buff; postmedial band brownish, slightly turned inwards towards the costa, edged on each side by a whitish line. Hind wings paler, as also is the under side of all the wings.

Expanse, 21 millim.

Collection number, 36.

Two male specimens, one from Tainan (on the plains), April 17th, 1906; the other from Kanshirei, July 1st, 1908.

The band of the fore wings in the Tainan specimen is narrower than that of the Kanshirei type, the under side of the fore wings is clouded with fuscous, and it measures 24 millim. in expanse.

Euproctis insulata, sp. n.

♂. Head pale brown, thorax reddish brown; abdomen paler, anal tuft yellow buff. Fore wings pale purplish brown, finely sprinkled with black scales; a yellow buff discal spot, around which the black scales are more numerous; outer margins bordered with yellow buff, enclosing a series of black dots (5-7), not extending to the costa; a projection of the ground colour intersects the yellow border one-third from apex. Hind wings pale buff with dusky central shade.

♀. Similar to the male, but the outer marginal border of fore wings is of a deeper colour, and the anal tuft is browner.

Expanse, ♂ 48 millim., ♀ 60 millim.

Collection number, 1781.

Two male specimens and one female taken in May, 1909, at Rantaizan (7500 ft.).

Allied to *E. marginata*, Moore, from Sikkim.

Pida postalba, sp. n.

♂. Head and thorax brown inclining to reddish, palpi blackish above, tawny beneath; abdomen blackish, segmental divisions whitish, anal tuft yellow. Fore wings greyish brown, sprinkled with blackish scales, and with indications of pale ante- and postmedial lines; a large creamy white apical patch, and a narrow white lunule at outer extremity of the cell. Hind wings white, with some fuscous hairs on the abdominal area.

♀. Fore wings greyish brown, without apical patch; antemedial and outwardly angled postmedial lines pale grey but not distinct except towards the inner margin and the costa; the space between the lines is of an obscure olive brown tint; lunule at end of the cell very faint; hind wings white.

Expanse, ♂ 54 millim., ♀ 57-60 millim.

Collection number, 1782.

One male in rather poor condition and two females from Rantaizan (7500 ft.), May 9th-11th, 1909.

Allied to *P. apicalis*, Walk., from Sikkim.

Lælia striata, sp. n.

♂. Head and thorax whitish with a pinkish brown tinge, the former marked with red at base of the antennæ; palpi pale brown above, marked with blackish, reddish below. Fore wings greyish brown, veins, streaks between the veins, and the fringes whitish tinged with pink; a series of seven black spots on the outer margin, four and six linear. Hind wings and abdomen whitish. Under side whitish, fore wings clouded with fuscous.

Expanse, 48 millim.

Collection number, 1200.

One male specimen from Kanshirei (1000 ft.), April 28th, 1908.

Pantana simplex, Leech.

♀. Fore wings whitish with a faint ochreous tinge along the veins and margins; four brownish spots below the cell. Hind wings white, finely powdered with ochreous scales on the outer margin; fringes ochreous tinted, preceded by an ochreous line.

Expanse, 39 millim.

Collection number, 40.

Three specimens from Kanshirei (1000 ft.), August, 1905.

Two of the specimens are without the brownish spots below cell of fore wings, and are rather paler than the type described above.

Leech only received male specimens of *P. simplex* from Western China. I obtained both sexes of the species in Formosa; the males do not differ in any material respect from Chinese examples of the same sex.

Rhagastis varia, sp. n.

Head and thorax rich olive-brown, laterally edged with whitish mixed with brown; some reddish scales on the metathorax; abdomen paler marked with reddish on the sides, two black dots on each of the last three segments. Fore wings pale brown with a violet tinge, the costa paler; basal third, and a stripe along costal area to near apex, olive-brown, the former clouded with blackish towards inner margin; antemedial line black, medial band blackish, both angled about the middle, the latter diffuse near inner margin; postmedial line indicated by two blackish chevrons near costa and some blackish dots thence to inner margin; a black dot at end of cell, a blackish cloud between veins five and six, a smaller one below on inner margin, and a triangular one at apex. Hind wings fuliginous brown, darker towards outer margin and paler on costa. Under side reddish orange, freckled with brown; a smoky grey patch below the costa of fore wings extends from the base of the wing to the almost straight, dusky, postmedial line; border of outer margin greyish brown,

tapered towards apex, projecting inwards between veins four and five to postmedial line.

Expanse, 55 millim.

Collection number, 711.

A male specimen from Kanshirei (1000 ft.), June 7th, 1907.

Stauropus nigribasalis, sp. n.

Head grey, thorax blackish mixed with grey, a whitish mark on the metathorax; abdomen grey, darker on the back of anterior segment. Fore wings grey, the basal third, except near costa, black, enclosing a greyish patch at base of the inner margin; stigmata outlined in whitish; antemedial line blackish, wavy, indented at median vein, thence oblique to middle of the inner margin, inwardly edged with whitish; postmedial line blackish, edged outwardly with whitish, serrate, incurved at end of cell, a blackish cloud beyond on the inner margin; submarginal line blackish, not clear above vein seven, but thence to vein three nearly straight, lunulate, and marginal from vein three to inner margin. Hind wings whitish suffused with fuscous, hairs on inner area brownish; a patch of grey mixed with whitish at outer angle; fringes whitish.

Expanse, 52 millim.

Collection number, 1778.

One male specimen from Rantaizan (7500 ft.), May 9th, 1909.

Stauropus pulverulenta, sp. n.

Head, thorax, and fore wings grey dusted with blackish; antemedial line ochreous, indistinct; postmedial line ochreous, indented at middle, brownish spots upon it. Hind wings grey dusted with blackish, basal area suffused with darker.

Expanse, ♂ 52 millim.

Collection number, 1219.

One male specimen from Kanshirei (1000 ft.), April 27th, 1908.

Stauropus confusa, sp. n.

Head grey, thorax whitish mixed with grey; abdomen brown, grey mixed towards base, terminal segments grey. Fore wings grey, slightly tinged with ochreous on the disc; a black mark near base of the wing under the median vein; the costal area above the mark white flecked with black; two wavy transverse lines before the middle, and two others, with traces of a third, beyond the middle; all the lines are dark grey but not very distinct; submarginal line dark grey, intersected by dark grey veins. Hind wings whitish clouded with grey on costal area; hairs on basal area grey-brown; a dark grey line before the white fringes.

Expanse, 54-56 millim.

Collection number, 1777.

Two male specimens from Rantaizan (7500 ft.), May, 1909.

In the cotype the transverse lines are less distinct than in

the specimen described above, but the black mark on the first postmedial is bidentate and more conspicuous.

Fentonia variegata, sp. n., *sordida*, Wileman, ined. ab. *formosana*, nov.

♂. Antennæ pale reddish brown, shaft darker; head grey, thorax dark grey finely mixed with paler grey; abdomen greyish, brownish towards thorax. Fore wings grey, basal area darker, dusted with whitish, and limited by a blackish crenulate line from costa at one-quarter to middle of the inner margin; postmedial line whitish, black-edged, wavy, dentate about middle, followed by a dark shade-like band which is interrupted below the middle; medial area clouded with brownish towards the postmedial, and with whitish towards the basal patch; a series of black lunules before the outer margin. Hind wings fuscous, browner towards the base.

♀. Head and collar grey, the latter dark edged; abdomen brownish, last three segments greyish. Fore wings grey, as in the male from Formosa, but all the markings more distinct, and more white on the medial area.

Expanse, ♂ 48 millim., ♀ 54 millim.

Collection number, 1217.

One example of each sex from Kanshirei (1000 ft.). The male was secured May 11th, 1907; the female, which is in better condition than the male, was taken in August, 1908. The typical male of this species has already been described by me from Japan in a paper not yet published. The Formosan male is greyer in colour; the female, which sex had not been captured by me in Japan, is now described.

General distribution: Japan; Formosa.

Fentonia nigrofasciata, sp. n.

Antennæ pale reddish brown, head and thorax blackish grey; abdomen brownish. Fore wings grey, sprinkled with darker; a broad, oblique, whitish sprinkled, black band precedes a dark-brown ante-medial line, the latter wavy to middle, thence outwardly oblique to the inner margin, between it and the band is a narrow space of ground colour; postmedial line, double, wavy, almost parallel with the outer margin; submarginal line blackish, lunular. Hind wings fuscous brown. Under side greyish suffused with fuscous, especially on the fore wings.

Expanse, 50 millim.

Collection number, 1218.

One male specimen from Arizan (7300 ft.), August 15th, 1908.

Callidula formosana, sp. n.

♀. Brown; an oblong and slightly curved orange band on fore wings, extending from beyond middle of costa to vein two, narrowed at each extremity, widest between veins three and six. Under side of fore wings orange freckled with brown on costal and outer margins; band paler, limited by brown lines; three dark ringed grey spots in

the cell, the smaller one nearest the base, and the larger one at outer end of cell; hind wings yellowish freckled with orange and brown; two, almost central, dark ringed grey spots, and a similar but smaller spot nearer the base.

Expanse, 34 millim.

Collection number, 31.

One female specimen from Kagi (on the plains), November 24th, 1904.

Closely allied to *C. attenuata*, Moore; possibly a local form of that species.

Thyatira arizana, sp. n.

♂. Fore wings smoky brown with five ochreous brown spots—one at the base produced outwards and enclosing a small fulvous cloud, one on the costa just beyond middle, a double one below it on the inner margin, a large one at apex, and a smaller one at inner angle. Hind wings and under side smoky brown.

Expanse, 44 millim.

Collection number, 1686.

One male specimen, in rather poor condition, from Arizan (7300 ft.), September 15th, 1908.

Tyana ornata, sp. n.

♂. Head and collar pale pinkish brown, thorax green, abdomen pale brown. Fore wings green, costa narrowly pale pinkish brown; a pale pinkish brown dot in the cell, and one below, both margined with darker; a series of similar dots forming a sinuous submarginal band. Hind wings, and under side of all the wings whitish, silky.

♀. Head and thorax pale pinkish brown; abdomen whitish brown. Fore wings green, pale pinkish brown at base and along edge of costa; a pinkish brown dot at end of the cell, this is ringed with darker, and between it and the inner margin are two more or less confluent marks of a similar colour; an irregular pinkish brown patch on the outer marginal area, not extending to costa, reddish points between the veins on the outer margin. Hind wings whitish, silky. Under side whitish, fore wings tinged with fuscous.

Expanse, ♂ 19 millim., ♀ 29 millim.

Collection number, 71.

One example of each sex from Kanshirei (1000 ft.); the male captured July 6th, 1908, and the female in May, 1907.

(To be continued.)

NOTES AND OBSERVATIONS.

ZEUZERA PYRINA LARVA ATTACKING JASMINE.—In July last I bred a specimen of *Z. pyrina* from a larva found feeding on the stem of a yellow jasmine.—ALFRED SICH; Chiswick.

FORFICULINE MATERNAL CARE.—At Hereford, some time, I think, in the seventies, when entomology was almost laid aside, I made an

observation of which Dr. Sharp's note on the habits of an earwig reminds me. I remember writing about it to Prof. Westwood, chiefly as regards the joints added to the antennæ with each moult in the young earwigs, but I think I sent no notice to any magazine. I found more than one earwig's nest in which the young and pale earwigs were at home with their mother till quite half grown. But the point I remember as most attracting my attention was the presence in the nest of bits of grass; the details I forget, but I felt no doubt that these were brought in by the mother earwig, and were food for the young, which were too small and soft to forage for themselves, but whether they nibbled this grass, or whether the mother further prepared it for them, I do not recollect ascertaining. It curiously happens that last July 2nd, on the Eggishorn, I observed an earwig, looking to me like *auricularia* but possibly some other species (I enclose the specimen so that it may be identified),* carrying a piece of grass, no doubt, I imagined, to take it to its nest for its brood. The piece of grass was rather slender, and of a length to project some 2 or 3 mm. in front and rather more behind the insect as it carried it underneath and parallel with its length. I watched it for some time, and came to the conclusion, owing to its uncertain wanderings, that it had lost its way. It was on a foot-path, and as it examined different hollows, it seemed probable that the nest was in the path, but that the entrance had been damaged or closed either by me or some other passer-by. This was shortly after midday, an unusual time for an earwig to be at large, so that possibly it had been wandering since early morning, though, if so, one would hardly expect it to have stuck to the bit of grass all the time. Once an impediment made it drop the grass and pick it up so that it was transverse to the line of march, but as soon as it was clear it again dropped it and picked it up, so as to replace it in its position longitudinally beneath it, obviously the one in which it could be most easily transported. There must surely be somewhere some record of how the young earwigs are fed in the nest, but no reference is made to the point in De Geer (as quoted by Kirby & Spence) or by Dr. Sharp either in the note in the 'Entomologist' or in the Cambridge Natural History. My observations show that the mother provides the food, but details are much to be desired.—T. A. CHAPMAN; Betula, Reigate, September 10th, 1910.

PHIBALAPTERYX LAPIDATA REARED ON CLEMATIS JACKMANII.—During the present month (September) I have had the pleasure of rearing seven specimens (two males, five females) of *P. lapidata*. The larvæ hatched (March 9th–30th) from ova deposited by a female captured in the Glasgow district during the previous autumn. About a score of the earlier hatched larvæ were provided with leaves of a rue (*Thalictrum adiantifolium*), buttercup, and a coarse kind of grass; but although they seemed to eat the rue they did not thrive, and ultimately died. The later larvæ were supplied with shoots of *Clematis jackmanii* and *Thalictrum*, and they at once took to the former, entirely neglecting the rue. On May 11th there were eight alive, and these varied in size, the largest being about three-quarters

* [Species not yet determined; name will be given in November.—ED.]

of an inch in length when resting. One larva spun up on May 15th, and all the others had prepared for pupation by the 28th of that month. A female specimen emerged on September 9th, followed by two males and a female on the 14th. The seventh specimen (female) appeared on the 25th. Forty-three eggs were deposited during the nights of the 15th and 16th by the female that emerged on the 14th; these, which appear to be fertile, were laid loosely. Hellins, in his excellent life-history of *P. lapidata* (E. M. M. viii. 165), states that the larva he had under observation did not make a cocoon, but merely spun a few threads of silk. All my larvæ constructed cocoons of silk, sand, and tiny stones; in one case four of these were attached side by side, and in another two. One I disturbed before pupation had been effected, and the bottom of the cocoon being more tender than the top, broke open and exposed the larva. The next day the pupa was formed, and it was then of a light orange colour. Shortly afterwards it changed to a rather pale chestnut red, with the wing-cases slightly greenish for a time. Later it became reddish brown, as are the empty pupa-shells at the present time.—RICHARD SOUTH.

CAPTURES AND FIELD REPORTS.

HYDRÆCIA CRINANENSIS IN IRELAND.—During August last I was fortunate enough to find specimens of *Hydræcia crinanensis*, of the melanic form, near Londonderry. They were taken about the end of the month. Mr. Pierce has examined all the specimens, so there can be no doubt as to their being correctly named.—H. R. SWEETING.

OCCURRENCE OF *ÆSCHNA ISOSCELES*, Müll., NEAR KING'S LYNN.—On June 15th of this year, a large dragonfly flew into a house about three miles from King's Lynn, and was brought to me two days later. From its early appearance, I at once thought it to be *Æschna isosceles*, and a reference to Mr. W. J. Lucas's work on British Dragonflies soon convinced me that it could be none other than a female of that extremely local species. The Norfolk Broads, so far as this country is concerned, must, I suppose, be considered the home of this fine insect; but so far as I know this is the first time it has been met with in this part of Norfolk.—E. A. ATMORE, F.E.S.; King's Lynn, Norfolk, September 19th, 1910.

LEPIDOPTERA AT CHISWICK AND BARNES.—With the exception of three species, lepidoptera have been scarce here this season. *Gracilaria syringella* has been perhaps more abundant than usual, and I have seen a larger number of *Crambus culmellus* than I remember previously, though this species is usually very abundant. The third species, which has been more common this year, is *Bryophila perla*. On a wall, where I usually see two or three specimens, I counted twelve, on August 24th. I have never seen any but the grey typical form here. At Barnes, August 31st, I saw a fine fresh example of *Acronycta megacephala*.—ALFRED SICH; Chiswick.

SENTA MARITIMA IN SURREY.—In confirmation of Mr. Percy Richards's note (Entom. xliii., 251), I should like to add that I took three specimens of *Senta maritima* (*ulvæ*) on July 17th of this year,

at the Black Pond, Esher, the locality Mr. Richards suggests.—E. S. A. BAYNES; 120, Warwick Street, S.W.

SENTA MARITIMA IN SURREY.—With reference to the note (*antea*, p. 251) on *Senta maritima (ulvæ)* in Surrey, the following will be of interest. On July 13th, 1906, I took a damaged male at light here. Although I have worked lamps each year since then, I have not met with it again. Meyrick in his handbook gives, as its range, Surrey to Norfolk and Cambridge, but the Victoria History of Surrey does not record it as occurring in the county.—F. W. J. JACKSON; Woodcote End House, Epsom.

PACHYS BETULARIA ab. DOUBLEDAYARIA IN SURREY.—Perhaps the following notes on the occurrence of *Pachys betularia* ab. *doubledayaria* may be of interest. Commencing to collect here in 1904, I only met typical *betularia* till 1907, when I bred a very nice dark intermediate female. In 1909, I bred a female *doubledayaria* and took five typical males, and this year I have taken a *doubledayaria* male at light, and also a typical male and a *doubledayaria* female *in cop.*, from which pairing I have some twenty or thirty pupæ.—F. W. J. JACKSON.

OCCURRENCE OF THE ICHNEUMONID ŒDEMATOPSIS OPS, Morl.—I have this year captured five specimens, all females, of the above Pimplid, at Wimbledon, by sweeping birches on the Common. The first was taken on May 23rd, two on July 19th, and two more on July 28th. The only known specimen, a female, was taken by Dr. Capron, it is thought possibly at Shere, in Surrey (*Ichn. Brit.* vol. iii., p. 273), and is now in the collection of Mr. Claude Morley, who very kindly determined my own captures.—RUPERT STENTON, F.E.S.

DILINA (SMERINTHUS) TILLÆ AT CHESTER.—On the morning of September 8th, while walking in an avenue of lime trees on the south borders of the city and on the banks of the Dee, I saw a robin two or three yards off about to pick up a large green caterpillar, which had evidently dropped from the boughs overhead. The robin unwillingly allowed itself to be driven away, and then I found the larva to be a full-grown Lime Hawk caterpillar. The species is very rare in the Chester district. The only previous records I can find are an imago captured at electric light in 1899 in the north part of the city, and one in Flintshire in 1870. On reaching home, I put the caterpillar in a flowerpot three parts full of soil, and it immediately began burrowing. It is worth mentioning that the trees forming the avenue are not old ones. Their age will not be more than fifteen years at the outside.—J. ARKLE; Chester.

CAPTURES AT ELECTRIC LIGHT IN JUNE, 1910.—The following results from an occasional midnight visit to a couple of street lamps near my home may be of interest. All the moths referred to were found resting on the walls within three or four yards of the lamps, or on the pavement:—*Amphidasys betularia*, one type, one intermediate between the type and *doubledayaria*, and several *doubledayaria*; *Acronycta alni*, one; *A. psi*, many; *A. rumicis*, several; *A. megacephala*, four; *A. leporina*, one; *Notodonta dictæa*, one—all in fine

condition. Of course these are only the pick of the total captures.—
J. ARKLE; Chester.

LATE DATE FOR CYANIRIS ARGIOLUS.—While collecting in the Abbot's Wood district on Thursday last I netted a female *Cyaniri argiolus*, which, although a good deal worn, was quite active. On the same date last year I took full-fed larvæ from the ivy-buds within a few miles of the same spot.—R. ADKIN; Sept. 19th, 1910.

EPICNAPTERA (GASTROPACHA) ILICIFOLIA IN DEVONSHIRE.—I had the good fortune, on Sept. 2nd, to take a female *E. (G.) ilicifolia* at light about 11.15; a very late time of the year, I think, for this moth. The weather was thick, misty rain.—W. J. MONK; Tavistock, Sept. 15th, 1910.

TORTRICES IN ESSEX.—I was pleased to find *Eupœcilia udana* at Bowers Gifford on July 9th last, as it is a species I had not previously met with. Two dark narrow-winged moths, with ocellus obscurely defined, were bred from some beech-mast gathered near Thornden Park; these seem to answer the description, given by Barrett, of *Carpocapsa nimbana*.—F. G. WHITTLE; 7, Marine Avenue, Southend.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 28th.*—Mr. W. J. Kaye, F.E.S., President, in the chair.—Mr. Main, the larvæ and luminous ova of the glowworm, *Lampyrus noctiluca*.—Mr. Clark, on behalf of Mr. Gadge, a specimen of a species of mite found at Ventnor on a specimen of *Melanargia galatea*. It was a species of the genus *Trembidium*.—Mr. B. H. Smith reported the larvæ of *Cucullia verbasci* found feeding on *Budleya variabilis*.—Mr. Edwards, a box of exotic Satyrinæ, including *Neorina crishna* from Java, and several species of the genus *Citherias* from Central America.—Mr. Sieh reported finding a larva of *Zeuzera pyrina* (*æsculi*) attacking jasmine.

August 11th.—The President in the chair.—Mr. Carr exhibited the ova of *Acidalia straminata*, from Oxshott, on heather.—Mr. Sieh, sallow-catkins met with during the past week, and ova of *Eupithecia subumbrata* laid on leaves of yarrow.—Mr. Rayward, a specimen of *Adopœa flava* (*linea*) in a moribund condition from being attacked by no fewer than twenty-one mites. He also showed the egg-shells of *Phorodesma smaragdaria* and *Geometra vernaria*, and made comparison of the surface structure and the method of oviposition.—Mr. West (Greenwich), specimens of Coleoptera and Hemiptera recently met with by him attacked by mites.—Mr. R. Adkin, a number of "white butterflies" from North America, sent him by Mr. Lachlan Gibb, including a series of the introduced *Pieris rapæ*, a series of *P. oleracea*, and three specimens taken near Lost River, Canada, in May last, about which comment and opinion were requested.—Mr. Turner, a short series of *Coleophora silenella* (?) bred from the heads of wild sweet-william sent him by Dr. Chapman from the South of France. He also exhibited the nest of a species of *Polistes* wasp,

found at Zermatt in July, 1909, suspended in a bush of alpine-rose (*Rhododendron*).—Captain Cardew, an extremely fine confluent example of *Anthrocerus vicie* (*meliloti*), taken in July in the New Forest.—Mr. A. E. Gibbs, a series of *Epinephela jurtina* from Algeria, having the females of the extremely large and bright form, var. *fortunata*.—Mr. Edwards, a box of *Satyrinae*, including a series of the extremely dimorphic species, *Heteronympha merope*, from Australia.—Mr. Enoch, living specimens of the egg-parasites, *Mymaridae*, taken in Richmond Park.—HY. J. TURNER, *Hon. Rep. Secretary*.

RECENT LITERATURE.

The Dermaptera (Earwigs) of the United States National Museum. (From Proc. of the U.S. Nat. Mus. vol. 38, pp. 443-467.) By M. BURR, D.Sc. Washington. 1910.

A VALUABLE paper to students of the Orthoptera in general and Earwigs in particular.

W. J. LUCAS.

Experiments on the Generation of Insects. A translation, by MAB BIGELOW, of FRANCESCO REDI'S Italian Treatise of 1688. Chicago. 1909.

WE are pleased to see this translation of one of the works of the older school of naturalists, and hope that others of a similar kind will follow. The period when Redi wrote marks the commencement of a new epoch in the history of biology. The theory of "spontaneous generation" was beginning to be discredited, and Redi was one of those who looked with favour on the dictum, "omne vivum ex ovo." He, however, stands out pre-eminent at this early date, in that he put to the test of experiment the theory he advocated. In the main, the truth of this dictum was borne out by his experiments, though he was led to waver in the matter of gall-insects. If somewhat crude, most of the numerous large woodcuts are singularly suggestive of what they are intended to portray.

W. J. L.

The Plume-Moths of Ceylon. Part ii. By T. B. FLETCHER, R.N., F.E.S., F.Z.S. (Reprinted from 'Spolia Zeylanica,' vol. vi. part xxiv., May, 1910.)

THE first part (pp. 39, five plates and a map) of this important work appeared in March, 1909. It treated of the Pterophoridae, thirty-seven species of which were then known to occur in Ceylon.

In the part now under notice (pp. 22 and two plates) the Orneodidae are discussed. Twelve of the thirteen species belonging to this group found in Ceylon are referred to the genus *Orneodes*, Latr.; but the author remarks that two of these—*brachyptera*, Meyr., and *microscopica*, n. s.—present structural characters upon which new genera might be founded.

The plates are admirable, and all but two of the species dealt with in the text are figured thereon. Diagrams of wing structure, in the case of one species not portrayed on the plate, are given in the text; and *Triscædecia dactyloptera* is represented by a cut.

Tuesday, October 25th, at One o'Clock.

MR. J. C. STEVENS will sell by Auction, at his Rooms, 38, King Street, Covent Garden, London, W.C. All the best varieties of *ABRAXAS GROSSULARIATA* reared during the last three seasons by the Rev. G. H. RAYNOR, M.A., including many Superb Specimens of recently-named forms, and several that are unique. They are in the finest possible condition and have full data attached.

The Collection will be on view at the Auction Rooms seven days prior, from 10 to 5 each day, and on the morning of Sale. Catalogues may be had on application.

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Vol. XLIII.]

NOVEMBER, 1910.

[No. 570.

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.

H. ROWLAND-BROWN, M.A., F.E.S.

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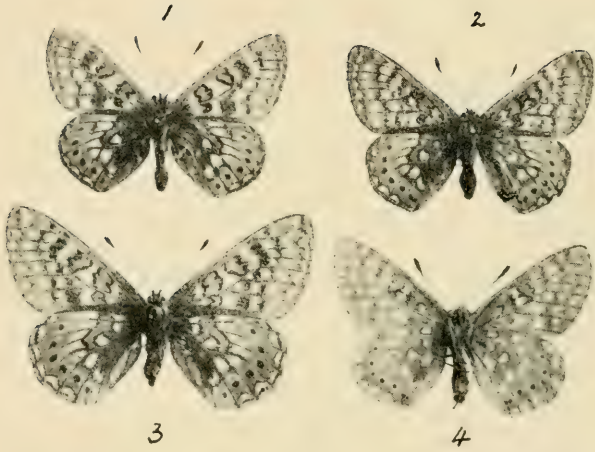
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MELITAEA AURINIA Rott., Var. AURUNCA. Turati. ($\times 1$).

1 and 2 ♂. 3 ♀. 4 ♂ underside.

THE ENTOMOLOGIST

VOL. XLIII.]

NOVEMBER, 1910.

[No. 570

CORDYCEPS MILITARIS.

BY G. T. LYLE.



G. T. Lyle, photo.

It is well known that certain species of fungi are developed on pupæ, generally in the ground, but it would seem that the occurrence of these fungi growing in captivity is somewhat rare, so I was much surprised to find recently a well-developed specimen attached to a silk and earth cocoon containing a dead Geometrid pupa (probably *Oporabia dilutata*) in one of my glass-topped metal boxes which contained a little mould. The specimen has been kindly identified for me by Mr. J. F. Rayner, of Southampton, as *Isaria farinosa*, the conoidal state of *Cordyceps militaris*. The colour was creamy white, texture mealy. The photograph is twice natural size.

Bank House, Brockenhurst.

ENTOM.—NOVEMBER, 1910.

2 A

[Folsom, in his remarks on insects in relation to plants,* writes:—"Those who rear insects know how frequently caterpillars and other larvæ are destroyed by fungi that give the insects a powdered appearance. These fungi, referred to the genus *Isaria*, are in some cases known to be asexual stages of forms of *Cordyceps*, which forms appear from the bodies of various larvæ, pupæ, and imagines, as long, conspicuous, fructifying sprouts."

Of the life-cycle of fungi parasitic on the various stages of Lepidoptera, the entomologist, as a rule, knows very little. Possibly the study is one that appeals more especially to the botanist, but the subject is not without entomological interest. In the 'Entomologist' for 1878 (vol. xi.), p. 121, there is an article by the late Dr. F. Buchanan White entitled "Notes on Certain Parasitic Fungi which attack Insects"; a figure of a larva of *Mamestra brassicæ*, with fungus thereon, is given. The late Mr. W. H. Tugwell, in 1891, at a meeting of the South London Entomological and Natural History Society, exhibited some parasitic fungi that had destroyed a number of pupæ of *Eucosmia certata* in one of his breeding-cages. Some pupæ of *Gortyna flavago*, afterwards placed as an experiment in the same soil, were also attacked by the fungus and killed (Entom. xxiv. 306). Another exceedingly interesting contribution to our knowledge of the vegetal enemies of insects is by Mr. F. V. Theobald, published in the 'Entomologist' for 1897 (vol. xxx.) p. 162; this is also illustrated. Scattered through the volumes of this Journal are several notes and articles on the "Vegetable Caterpillar of New Zealand"; the latest, by Mr. Alfred Philpott, was published in volume xxxix. p. 174 (1906).

We may add that in future British "Vegetable Caterpillars" will have a place in the National Collections at the Natural History Museum, South Kensington, and Mr. Hartley Durrant, of the Museum, will be glad to receive such material.—ED.]

MELITÆA AURINIA, ROTT., VAR. *AURUNCA*, TURATI.

By PHILIP J. BARRAUD, F.E.S.

(PLATE V.)

THIS interesting form of *Melitea aurinia* was discovered by my friend Signore Orazio Querci, of Formia, on May 25th, 1909, in the Aurunci Mountains at about 2500 ft. elevation, and a month later on Monte Petrella at about 5000 ft. The Aurunci Mountains are in southern central Italy, and lie towards the Mediterranean coast, about mid-way between Rome and Naples.

* 'Entomology, with Special Reference to its Biological and Economic Aspects,' p. 258 (1906).

They are divided from the main system of the Apennines by the river Garigliano (the Liris of the ancients). Specimens were submitted to Count Emilio Turati, of Milan, who has given this form the name of *aurunca*.

The most striking feature is the wide median line on the upper side fore wing (fig. 1), but this is a variable character, and occasionally it is much reduced, with a consequent darkening in other parts of the wing (fig. 2). The ground colour is rather pale yellow, the outer band fore wing and the hind wing being more fulvous. The hind wing upper side also has a row of bluish, submarginal, lunular markings, corresponding in this respect with var. *provincialis*, Bsdv. Otherwise the appearance of the upper side reminds one more of var. *alexandrina*, Stgn. The under side is very similar to var. *provincialis*, Bsdv. The males measure from 33–36 mm. in expanse, and the females 37–43 mm.

When visiting Signore Querci, last year, I had the pleasure of taking a fair number of specimens on Monte Petrella.

NOTES ON A BUTTERFLY HUNT IN FRANCE IN 1910.

I.—IN THE NORTH-EAST.

BY H. ROWLAND-BROWN, M.A., F.E.S.

THE May weather of the south-eastern and midland districts of England had been so beautiful, the number of insects on the wing so numerous, that it was with more than the ordinary anticipation of favours to come that I set out for a summer holiday in France towards the end of June with Mr. B. C. S. Warren as my companion.

Our first objective was the Forest of Samoussy, a fine tract of State woodland in the Department of the Aisne, within a few minutes railway travel of Laon, the second stopping place between Calais and Bâle of the trans-continental expresses. A perfect crossing, with sunshine and blue sky, just a passing shower soon after landing, and a warm clear night filled with stars, seemed to justify hopes of a successful chase on the morrow. The small inn and "marine" store at which we had engaged quarters is about ten minutes' walk from a siding in the midst of the forest, and as "the domestic" wheeled our bags and entomological impedimenta down a velvet-dark alley of overhanging trees, we congratulated ourselves on the certainty of meeting some at least of the numerous interesting species detailed by Mr. W. G. Sheldon (*Entom.* xl., pp. 75–77, and pp. 197–199), which, also on the authority of Mr. Henry Brown, of Paris, are known to occur plentifully at Samoussy. But, alas!

for our calculations. When the morning of the 24th broke—Midsummer Day!—the wind had settled in the south-west; heavy clouds were rolling up from the direction of the sea, and the towers of Laon Cathedral, which we had visited and admired so much the night before, though ten miles away, seemed, “like Birnam Wood,” to have come to our own particular “Dunsinane.” For five mortal days the wind blew, and the clouds gathered to discharge upon us endless falls of unwelcome rain, and rare, indeed, were the intervals of sunshine when we could unfurl our nets and take a modest toll of the few butterflies in evidence. We had been expecting M. René Oberthür, also, to join us, but much to our regret he determined to postpone his visit in view of the uncongenial weather which extended right across Northern France from west to east, and far down beyond Paris. Whenever there was the least hope of taking anything we sallied out, but in the days of our visit our combined efforts produced barely a hundred examples. Of *Limenitis populi*, the first and foremost object of my desire, we saw but one single example, seated on the warm, wet sand, which is the prevailing soil, fanning its wings in a momentary gleam of sunlight. It proved too nimble, however, for our nets, and we left Samoussy without so much as a glimpse of another. *Chrysophanus hippothoë*, which Mr. Sheldon had reported very common in the marshes, was also unaccountably absent, while *Araschnia levana* of the first generation was represented by a couple of battered females. Of *Thecla pruni* we saw no trace, which was the more remarkable as the privet was in full blossom, and swarming with splendid Diptera. On the flower-heads of the same shrub I captured one or two belated females of *Melitæa maturna*, one alone being considered of “cabinet rank,” while a second we caged on its food-plant, eventually taking her off to the Midi, where she died without depositing a single egg: no doubt from want of sufficient sun warmth to encourage oviposition. *Thecla ilicis* was, however, in perfect condition and not uncommon. Of *Erebia medusa* we found no trace, but evidently common enough, “weather permitting,” were *Limenitis sybilla*, *Melitæa athalia*, *M. dictynna*, and *Cænonympha arcania*, the three last-mentioned presenting somewhat interesting forms: the *Melitæas* with a strong melanic tendency, *C. arcania* (which was going over) displaying a marked inclination in the females to develop the brownish-yellow markings of the fore wings on the lower wings as well—a form, as I am told by M. Charles Oberthür, characteristic of Samoussy and, no doubt, the other fine forests which exist between Laon and Paris. A pupa of *Polygonia c-album*, found by Mr. Warren, emerged a few days later at Lyons. Most abundant of all the butterflies, however, was *Pararge achine*, as a rule settling high on the White-poplar trees, to which we looked in vain for *L. populi*, but not

superior to the attractions of a long-defunct rabbit, over which they flitted incessantly, settling finally, as one sees the *Lycænides* at the water's edge of a hot July day in the mountains. We also bagged odd specimens of *Nomiades cyllarus*, *Hesperia alveus*, and *N. semiargus*, while here and there rain-soaked *Aporia crategi* and *Argynnis aglaia* would be seen glued to the flower-heads of *Centaurea nigra*. With *Adopcea sylvanus* and occasional *Argynnis selene* our meagre captures came to an end, and, as the weather showed no sign of amendment, and the barometer refused to budge the fortieth fraction of an inch in the right direction, we reluctantly packed up our traps on the 27th and took the train to Paris.

Generally speaking, and from experience gained elsewhere in France, and latterly at Rennes, what must strike the British collector as inexplicable is the absence in our own country of certain butterflies common enough in the northern French woods and plains. The conditions, geographically and geologically, appear identical; the climate of the forest region of the north approximates sufficiently to that of our southern and midland enclosures; the winters are not as a rule more humid in the South of England. *Chrysophanus hippothoë*, L. (= *chryseis*, Hb.) has a traditional connection with the southern counties. But why, if it ever really existed otherwise than as an importation, should it have disappeared as effectually as its greater congener, *C. dispar*? The larva is not dependent on the Great Water-dock, as was the case with *dispar*, though *C. var. rutilus* in its Continental habitats affects sorrel and bistort; nor is it exclusively a fen species. It occurs in France to the very coasts of the Channel, namely, at Eu, in Seine-Inférieure; it is generally prolific. In the same way *Carcharodus alcea*, a much stronger winged butterfly, might have been expected to cross the sea and establish itself on our south-coast mallows, as it also reaches to the water's edge at Cancale, in Brittany, where, M. Charles Oberthür informs me, it is common in the garden of his villa; he haunts also of that successful Devon immigrant, *Callimorpha hera*. In the same way *Hesperia alveus* (a doubtful British capture)—a stout aviator—seems to frequent the entire line of Departments through Ille-et-Vilaine, Seine-Inférieure, and Somme to the embrochure of the Somme.* *Pararge achine* also suggests itself as an ought-to-be British insect, while the occurrence of *Argynnis niobe*† on the sand-dunes of Calais lends pro-

* My authorities for the above observations are M. Charles Oberthür (*Études de Lépid. Comparée*), M. P. Noel (*Cat. des Lépid. de la Seine-Infér.*), and M. Postel, late of Mailly-Maillet, Somme (*in litt.*) respectively.

† Recorded by M. Paux (*Bull. Sci. de France et de la Belgique, sér. 6, tom. iv. Nord*) as "not rare" at Malo-les-Bains (Nord); and by M. Giard in the Boulonaise (Pas de Calais) on the dunes, the food-plant of the larva being *Viola sabulosa*, exclusive in this locality to the coast of these two north-eastern Departments.

bability to the doubtful records of this butterfly in Kent. Possibly the Hesperids have been overlooked, just as for so many years was *Everes argiades* until its chance discovery by the Rev. Pickard-Cambridge added this charming little "blue" to our scanty and diminishing list of British *Lycænas*.

Our list of observations for Samoussy includes the following species:—*Hesperia malvæ*, *Pamphila sylvanus*; *Nomiades cyllarus*, *Polyommatus icarus*; *Thecla ilicis*; *Pieris brassicæ*, *P. rapæ*; *Aporia crategi*; *Dryas paphia*, *Argynnis aglaia*, *A. adippe* var. *cleodoxa*, *Issoria lathonia*; *Brenthis ino*, *B. dia*; *Melitæa matura*, *M. athalia*, *M. dictynna*; *Araschnia levana*; *Polygonia c-album* (pupa); *Limenitis populi* ab. *tremulæ* (1), *L. sibylla*; *Pararge achine*; *Epinephele jurtina*; *Aphantopus hyperanthus*; *Cænonympha arcania*, *C. pamphilus*. I may add also that I have seen recently, in M. Charles Oberthür's collection, what appear to be undoubted examples of *M. aurelia* from this locality; and the same authority gives us in the last instalment of his 'Études de Lépidoptérologie Comparée' (fasc. iv. p. 142) an account of an expedition to this lovely forest on June 13th of last year, made by Mr. Harold Powell, F.E.S., M. René Oberthür, F.E.S., and Mr. Henry Brown, in search of *Chrysophanus dispar* var. *rutilus*. This beautiful insect they did not find in the marshes, nor in the recorded habitats of the species near St. Quentin, from which it has disappeared altogether apparently. In addition to the butterflies enumerated above, however, they observed *C. hippothöe* (= *chryseis*), quite fresh; *Erebia medusa*, going over; *Melitæa aurinia*, passé; *M. cinxia*, rare and in bad condition; the above-mentioned *M. aurelia*; and *Hesperia carthami*. From which it will be seen that the forest is particularly rich in *Melitæas* as well as *Apaturids*, and that, given normal June weather, a very decent bag may be made at this particular season of the year.

Before concluding this brief account of our first experiences of the Aisne, I should like to say that Samoussy and the forests further west towards the Belgian frontier, as well as eastwards, offer a fine field for collectors of all Orders. The ponds, marshes, and meadow-sweet bordered runnels which march with the several main rides of Samoussy teem with insect-life, especially *Odonata*. My French friends inform me that the coleopterous fauna is hardly less rich. But I would advise entomologists who contemplate a visit securing their accommodation well ahead. There is one *auberge* only, kept by M. Hemmery, the local *agent des vins*, and but two or three bedrooms at the most. Nevertheless, for a country inn the accommodation is excellent, the rooms spotlessly clean, the cooking surprisingly good, considering the remoteness of the place, and a pleasant contrast to that of the hotel we dined at in Laon, which was both dear and none too well "found." Above all, it is

on the verge of the forest, and the name of the proprietor is sufficient password in such parts of it as are preserved under the eye of the *garde-forestiers*.

(To be continued.)

P. ATALANTA AB. MERRIFIELDOIDES.

By T. REUSS.

THIS season I was not able to find any larvæ of *P. atalanta* till the last days of August. Then, by the middle of September I captured fifty-eight larvæ, mostly full-fed, belonging to two different broods, but I never once saw an imago on the wing.

Ten of the smaller larvæ and half of all the resulting pupæ (fifty-six, two were ichneumonid) were forced in + 30 to 42° C. These produced fine red or rose-banded specimens, often with a well-known rusty red suffusion at the apex and at the base of the fore wings (ab. *æstiva*). Among the imagines, from pupæ of which the larvæ had not been forced, I found one specimen with small violet-blue centres in the black spots just beyond the orange-red band in the hind wings.

The other twenty-eight pupæ were kept in the shade temperature of the season—rarely above 16° C.—and when they began to emerge, I found that several of the imagines, which were very fine in colour, had actual ocelli in the hind wings.

From my previous experiences with this and other Vanessid species, I think it is very probable that these blue-centred hind wing ocelli in *P. atalanta* (found also in two other Pyrameid species distantly resembling *P. atalanta*, viz. *P. abyssinica*, Africa,* and *P. gonerilla* of New Zealand) are the result of a cool maritime climate, influencing already the oval and larval stages, and that if *P. atalanta* became at home in England (Mr. L. W. Newman, Bexley, succeeded in hibernating some specimens indoors last winter; it will be remembered that “wild” *V. io*, *urticæ* also hibernate “indoors”), then the species would develop ocelli in the hind wings as described.† Blue spots in the hind wings were,

* The Vanessids of the tropics mostly seek out the mountainous districts, where they find the more temperate conditions of climate necessary to them. *P. cardui* and *P. atalanta*, of which single specimens (not necessarily swarms) appear to migrate far and wide every year, show this fondness of, and preference for, mountainous regions most markedly by seeking out the hill-lands of the countries which they visit. It will be remembered that in Polynesia (maritime climate) there flies an ocellated form of *P. cardui*, though not to the exclusion of the normal form.

† *Chrysophanus phlæas* shows similar blue spots in the hind wings, which, however, occur independent of climate (*vide* Prof. Weissman, Ent. 1896, “New Experiments”).

I think, first mentioned in connection with *P. atalanta* ab. *merrifieldi*, Stdfss., bred in the year 1892 by Mr. Merrifield for the first time, and I will therefore call the ocellated aberrations, resulting evidently from the influence of a cool season on already the larval (and oval) stages—*P. atalanta* ab. *merrifieldoides*. The duration of the pupal stage ranged from eight to twenty-seven days. The aberration appeared in *both* broods.

VALUE OF GENITALIA.

BY F. N. PIERCE, F.E.S.

I AM glad to see that at last we have a distinguished entomologist like the Rev. George Wheeler who has the courage to voice what must be in the thoughts of every entomologist attempting to decipher the weird photographs of genitalia that have lately been appearing.

First, illustrations in profile are utterly useless by themselves, because in a vast number of cases the right and left sides differ—that is, they are asymmetrical. Therefore, if anything like an intelligent idea is to be obtained, the objects must be spread.

There is no more difficulty in spreading the majority of genitalia of the Lepidoptera so that anyone can understand and compare them than there is in setting a moth or a butterfly. It is impossible to imagine a collection of Lepidoptera pinned, some vertically through the thorax, some horizontally, some with wings folded over the body like a butterfly, others with them lying close to the sides, &c. Can we imagine any but one who has “made a long and very special study” of insects being able to make head or tail of such a collection? But we know a properly set collection of insects can be compared, part for part and point for point, until the minutest difference is easily observable. Hence the incipient entomologist is first taught to set decently. But this in students of genitalia seems to go for nothing, so that it would seem as if the preparations were purposely made to prevent people from understanding them.

I cannot agree with Mr. Wheeler that no two people can make their preparations quite alike, any more than that no two individuals can set insects the same. Yet, if genitalia are properly spread, I am confident that neither Mr. Wheeler or anyone else could distinguish any difference in the mount. Unlike the wings of Lepidoptera, the parts of the genitalia are mostly fixed, and are bound to lie at the same angle, and assume the same position.

The Elms, Dingle, Liverpool, Oct. 11th, 1910.

THE NUMBER OF LARVAL STAGES OF *LYCÆNA ACIS*.

BY F. W. FROHAWK, M.B.O.U., F.E.S.

IN Mr. Tutt's new work on 'British Butterflies,' vol. iii., pp. 287-8, dealing with the larval stages of *Lycæna acis*—*Cyaniris semiarqus*, he quotes my description of the different stages of the larvæ which I published in the 'Entomologist,' July, 1908. To these the author has added footnotes, doubting the accuracy of my statements respecting the number of stages which this larva passes through. This, I think, calls for some comment. The two notes in question are as follows:—

Note 1.—"Frohawk calls this the 'fifth instar,' but seems to have judged this to be so entirely from its different size and its greener tint, changes that occur apparently in this stage without a moult."

Note. 3.—"Frohawk calls this the 'sixth instar'; it is most probably the *fifth*. Chapman only notes five instars for those he reared at the same time."

First, I may point out that I have avoided the use of the word "instar" for that of "stage," and no such word as "instar" occurs in the life-history I published.

In working out the life-histories of certain species, especially the Lycænidae, unless the greatest care is taken in observing most critically the different moults, one is very apt to miss a stage completely, especially when the larvæ are very young, and for this reason I always keep a few separate, from the moment of hatching until pupation, for special observation; these few I examine with a lens several times daily, and when necessary at night also, to note exactly what is happening; in this way I ascertain precisely when they moult, and at once note it down, and after each moult I make a microscopical examination of each individual and compare them with others of the same brood, so as to check any individual variation that might occur. (This way of working out species is hardly what Mr. Tutt calls in his preface "Frohawk's ontogenetic outlines.") Therefore in this manner I not only see the actual moults taking place, but also see the cast skins beside the larvæ, which I think no one can doubt is sufficient proof. Regarding *L. acis*, I not only noted each moult and stage in this way, but also made careful drawings of each stage.

These particular *L. acis* larvæ, which I worked out from the egg to the imagines, moulted five times, as stated in the published life-history in the 'Entomologist,' July, 1908, p. 165, where I stated—"after fifth and last moult fully grown about two hundred and seventy-five days old. . . ."

I do not wish to infer that Dr. Chapman (whose description

Tutt also quotes) is wrong in stating he only noted "five instars," as possibly his larvæ may perhaps have moulted only four times under perhaps different conditions in which they were kept. I merely wish to point out the fact that my *L. acis* passed through six separate stages, *i.e.* they moulted five times. It must be borne in mind that larvæ of several of the Lycænidæ, during their earlier stages, feed on flowers, &c., and are then frequently hidden from view, which makes it no easy matter to detect the changes taking place within. This evidently led former authors into error respecting the young larvæ of *L. arion*, who stated that the larva refuses wild thyme as its food after its first moult, whereas it is not until after its third moult that it discontinues to feed on thyme.

As Mr. Merrifield pointed out in his interesting lecture delivered at Brussels this year, during the visit of the Entomological Congress to that city, the number of moults a larva undergoes may vary according to the brood. The larvæ of the summer brood of several species undergo fewer moults than those turning to pupæ which hybernate. By missing a moult the larva develops more rapidly, and the perfect insect is then able to lay the eggs for the hyberating brood in good time for the resulting larvæ to feed up in the late summer and autumn. I do not claim that this fact explains the discrepancy between Dr. Chapman's observations and my own, but it is a point entomologists should bear in mind when criticising life-histories which are the work of two different observers.

I may add, however, that in my experience I have never found a species to vary in the number of moults, in those carefully worked through.

A NOTE ON THE NEW CLASSIFICATION OF CERTAIN HESPERIID BUTTERFLIES.

BY H. ROWLAND-BROWN, M.A., F.E.S.

WE have received the 'Bulletin de la Société lépidoptérologique de Genève' (fasc. i., June, 1910) containing Dr. J. L. Reverdin's "Note on the Male Genital Armature of several Palearctic Hesperiiids," illustrated by one coloured and two photographic plates. At the same time comes a welcome further instalment of M. Charles Oberthür's 'Études de Lépidoptérologie Comparée,' fasc. iv., 1910, containing, among others, no less than four coloured plates, almost wholly devoted to the same excessively difficult group. In both instances the coloured plates have been executed by M. J. Culot, of the Geneva Society, and for accuracy excel anything that we have yet seen upon this particular subject. In both cases the authors have co-operated with results which will be found eminently satisfactory.

As all collectors are aware, the "Black and White Skippers" of the palæarctic region, especially those of the west, present difficulties of identification which have been augmented to a great extent by hopeless confusion of nomenclature. A certain number of them, however, are easy enough to distinguish, and, being so, have been allowed to retain their original names. These are *Hesperia sidae*, *H. carthami*, *H. cacaliae*, *H. andromedae*, and *H. centaureae*, and, so far as Great Britain is concerned, *H. malvæ* (*alveolus*). But, as Dr. Reverdin and M. Oberthür point out, it is quite another matter when we come to deal with the *alveus* group, and the *malvæ fritillum* forms. Superficially *alveus*, *carlinae*, *cirsii*, *onopordi*, and *conyzæ* may so closely resemble one another in their markings and general appearance as to defy separation at sight. Hitherto, therefore, authors have been content to group each one of them from such differences of marking as examples under their immediate supervision seemed to present: the majority, avoiding originality altogether, have satisfied themselves with a repetition of the conclusions arrived at by a few of their more conscientious and painstaking predecessors.

Speaking from experience, the idea of identification by means of the genital armature has been rejected in the case of the Hesperiids under the impression that, to make confusion worse confounded, the structure of these organs varied with individuals of the same species so much that differentiation thereby was unreliable. In the case of the several species under review, at all events, Dr. Reverdin disposes of any such objection in the *alveus* group. Preparations of the appendages of several *alveus* show that, *inter se*, the form of the armature may vary in detail, but that it still retains specific characters distinguishing it from the armature of others associated with the *alveus* group. Dr. Reverdin demonstrates, in fact, that the appendages of each species present characteristic forms; that they can be separated thereby; and that Rambur, who originally described *cirsii*, *carlinae*, and *onopordi* as distinct from *alveus*, was right in his classification, and that his diagnosis formed upon the appendages themselves was correct in almost every instance, despite the insufficient and meagre scientific apparatus at his disposal. For the author of the 'Catalogue des Lépidoptères de l'Andalousie' and the 'Faune d'Andalousie' was the first lepidopterist to attempt the differentiation of species in the manner indicated, and to publish the results of his observations with the drawings of the butterflies themselves. Of *conyzæ*, of course, Rambur makes no mention, the insect, at the time when his books were published, being still undiscovered.* It is worth noticing, how-

* Described by Guenée from examples taken at Voiron, Savoie, as a new species, 'Petites Nouvelles Entomologiques,' 1877.

ever, that while Dr. Reverdin has unravelled the tangled *alveus* skein by the same entirely scientific methods, M. Charles Oberthür, from personal field-knowledge of the so-called "varieties" of *alveus* and *serratulæ*, and a close study of the series in his museum, has arrived at almost similar conclusions, with the addition of a new species, which, from its association with western France, he names *Hesperia armoricanus*. Both authors refer *Conyzæ* to *onopordi*; *cirsii*, Rbr., retained as a separate species by M. Oberthür, is found by Dr. Reverdin to belong to *carlinæ*, Rbr., the whole group working out as follows:—

HESPERIA ALVEUS, Hb. (mountain form and type).

(a) var. (lowland form).

(b) var. *speyeri*, Stgr. (Advanced to the rank of a species in Staudinger's 1901 Catalogue on extremely slender evidence.)

H. CARLINÆ, Rbr.

(a) var. *cirsii*, Rbr.

(b) var. *iberica*, Gr. Gr.

H. ONOPORDI, Rbr.

(a) ? var. *conyzæ*, Guenée.

H. FRITILLUM, Rbr. (? = *fritillum*, Hb.).

H. SERRATULÆ, Rbr.

(a) var. *occidentalis*, Lucas.*

H. armoricanus is described by M. Oberthür as "more nearly approaching *carlinæ* than *cirsii*," and, pending further investigation, should therefore follow *carlinæ* in the above list. So far it is reported only from Bretagne and the western littoral Departments—as far south as Charente-Inférieure.

Local races of *H. alveus* M. Oberthür also describes and figures as follows:—

(c) var. *constans*, *bellieri* (Larche, Basses-Alpes, and Pyrénées-Orientales).

(d) var. ? ab. *numida* (Lambèse, Algeria).

(e) var. ? ab. *foulquieri* (Basses-Alpes and Bouches-du-Rhône).

(f) var. *ballotæ*, Bsdv., *in litt.* (Dovre-fjeld, Norway).

It remains only for entomologists on the spot to breed out the several species and these local forms, in order to put their identity upon an entirely satisfactory and final basis.

Meanwhile, in presenting the summarized results of these two important contributions to our knowledge of the Hesperiid group, I have refrained purposely from entering into details. In the case of the appendages, Dr. Reverdin leaves no shadow of doubt in our mind as to the scientific value and accuracy of

* Described by M. Daniel Lucas, 'Bull. Ent. Soc. France,' 1910, as a new variety of *serratulæ* from examples taken by himself in the Forest of Vouvant, Vendée. "Almost var. *major*, Stgr."—Oberthür.

his experiments. Of M. Oberthür's descriptions, with the exquisite illustrations attached, we can only add that they bring to bear upon the facts corroborative evidence of the highest importance. Many of us during our wanderings abroad have collected ample material to test for ourselves the accuracy, if not the finality, of these respective conclusions. Our cabinets and store-boxes teem with unnamed or wrongly-named Hesperiidæ, whose proper identification we have either shirked altogether, or given up as a hopeless task with the text-books at our disposal. In the long winter evenings, furnished with this new information, we may hope to reduce chaos to order before once more betaking ourselves to the mountains and flowery lowlands which are our own particular happy hunting-grounds across the Channel.

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

(Continued from p. 291.)

Lymantria umbrifera, sp. n.

♂. Head, thorax, and abdomen grey, the latter with reddish lateral hairs. Fore wings grey, clouded with darker at base and on median third; transverse lines blackish—subbasal not reaching inner margin; antemedial undulated, rather broad, especially on the costa; postmedial slender, wavy, deeply indented opposite end of cell; submarginal wavy, strongly so towards costa; a black lunule at end of cell, and a black dot in cell near the antemedial line; a series of black dots on the outer margin, placed between the veins. Hind wings fuscous, darker on the outer marginal area, black dot on the margin. Under side fuscous with a pinkish tinge; fore wings with blackish discal suffusion; the hind wings have a black lunule at end of the cell, and traces of two dusky, curved, transverse lines beyond.

Expanse, 44 millim.

Collection number, 32a.

A male specimen from Rantaizan (7500 ft.), May 14th, 1909.

Allied to *L. serva*, Fab.

Lymantria nebulosa, sp. n.

♂. Fore wings pale grey, suffused and clouded with darker on outer two-thirds; subbasal line black, not continued to the inner margin, its upper end merged in a blackish dash on the costa; antemedial line black, serrate, slightly oblique, followed by a blackish shade, which reaches the blackish discoidal mark; a short black bar under the discoidal; postmedial line sinuous, whitish partly edged with black; fringes dotted with black. Hind wings fuscous, darker on outer margin; fringes paler.

♀. Fore wings whitish, slightly brownish tinged on the costal and inner marginal areas; subbasal line black, not extending to inner

margin; antemedial line black, diffuse on costa, waved, angled at vein one, terminating in a short black bar on the inner margin; post-medial line black, strongly waved, commencing in a black spot on the costa; submarginal line black, lunulate, interrupted; a black dash under the black discoidal mark; fringes dotted with black. Hind wings whitish, suffused with fuscous, darker on outer margin.

Expanse, ♂ 43 millim., ♀ 54-64 millim.

Collection number, 668 a.

Four specimens from Kanshirei (1000 ft.). One male, April 16th, 1906; another (type), May 24th, 1908; two females, August, 1905.

The April male has the fore wings less distinctly clouded, the transverse lines are very faint, and the outer marginal area is suffused with blackish.

Allied to *L. fumida*, Butler.

Euproctis sericea, sp. n.

Head and body faintly yellowish tinged; anal tuft distinctly yellowish. Wings silky white without markings.

Expanse, 34 millim.

Collection number, 742.

One male specimen from Kanshirei (1000 ft.), November 16th, 1908.

Euproctis nigropuncta, sp. n.

Similar to *E. sericea*, but larger; a small blackish mark at end of the cell of fore wings; anal tuft brown.

Expanse, 40 millim.

Collection number, 742 a.

One male specimen from Kanshirei (1000 ft.), April, 1908.

Heteropan submacula, sp. n.

♂. Antennæ blackish. Head, thorax, and abdomen brown; collar crimson. Fore wings brown; fringes dark brown, tips paler. Hind wings brown; an obscure, pale, longitudinal streak through cell to outer margin, where it is broadest; fringes pale brown. Under side of fore wings brown with pale ochreous brown patches in and below cell, near apex, and above the inner margin; hind wings pale ochreous brown, fringes dark brown at base.

Expanse, 22-24 millim.

Collection number, 702.

Two male specimens—one from Kanshirei (4700 ft.), May 15th, 1908; the other from Daitozan (8500 ft.), September 14th, 1906. The latter is smaller and darker than the type, the pale streak on the hind wings expands into a blotch beyond the cell, and is more conspicuous; on the under side the whole of the cell of fore wings is filled with pale ochreous brown.

Dasychira olivacea, sp. n.

♂. Head and thorax olivaceous; abdomen darker. Fore wings

olivaceous with black transverse lines; subbasal line double, angled below the costa, space enclosed paler shade of the ground colour; antemedial line double, sinuous, preceded by a black cloud on costal area; postmedial line wavy; submarginal line interrupted; lunulated line before the black-marked brownish fringes. Hind wings fuliginous brown, fringes paler at the tips. Under side brown, the fore wings suffused with blackish, except on inner area; all the wings have two, wavy, blackish postmedial lines; a dusky discal mark on the hind wings.

Expanse, 44 millim.

Collection number, 668.

A male specimen from Kanshirei (1000 ft.), April 22nd, 1908.

Dasychira taiwana, sp. n.

♂. Antennæ dark brown, shaft greyish; head and thorax pale grey mixed with darker; abdomen greyish, pale at base, darker on anal segments, and tinged with tawny on the middle segments. Fore wings pale grey, clouded and suffused with darker; subbasal and antemedial lines black, wavy, the first only distinct towards the costa, a blackish shade-like band between the lines; reniform mark outlined in black; postmedial line black, strongly wavy, followed by a faint blackish shade; submarginal line wavy, interrupted. Hind wings dark fuscous, inner area tawny; a dusky discal mark and traces of a darker, diffuse postmedial line; fringes greyish.

♀. Fore wings pale greyish, with transverse lines as in the male, but the postmedial and submarginal are more clearly defined, and the darker clouds are less in evidence. Hind wings pale fuscous; discal dot and postmedial band dusky.

Expanse, ♂ 56 millim., ♀ 67 millim.

Collection number, 1210a.

One male from Arizan (7300 ft.), August, 1908; and a female from Rantaizan (7500 ft.), May, 1909.

Allied to *D. strigata*, Moore, and possibly a local form of that species.

Dasychira arizana, sp. n.

♂. Antennæ reddish brown, shaft whitish; head and thorax whitish grey; abdomen greyish brown, paler at the base. Fore wings whitish grey, clouded and suffused with darker, except at basal fourth and along the costa to the black-outlined reniform mark; subbasal line black, indistinct; antemedial line blackish, double, inwardly shaded with black; postmedial line black, wavy, inwardly edged with clear ground colour, outwardly shaded with darker, followed by a sinuous line of the ground colour; submarginal line black, wavy and interrupted; fringes pale grey chequered with darker. Hind wings dark fuscous, brown tinged on the inner area; discal mark darker, indistinct; fringes paler.

Expanse, 44 millim.

Collection number, 1210.

One male from Arizan (7300 ft.), August, 1908.

Perhaps only a form of *D. taiwana*.

Dasychira (?) *cruda*, sp. n.

Head, thorax, and abdomen whitish, faintly brown tinged. Fore wings whitish tinged with pale brown, obscurely clouded with darker on the outer area; traces of a dark brown subbasal line below costa, followed by an elongate dark brown spot. Hind wings whitish.

Expanse, 37 millim.

Collection number, 661 a.

A female specimen reared on April 6th, 1908, from a larva obtained at Kanshirei, which had white tussocks of hair. Found on a rock, March 8th of the same year. The wings are thinly scaled and semi-transparent, owing no doubt to the fact that the imago was not observed for some days in the breeding-cage, and had time to damage itself.

In some respects the insect superficially resembles "*Antipha*" *basalis*, Walk. = *Dasychira mendosa*, Hübn.

Stauropus viridipicta, sp. n.

♂. Fore wings greyish brown, thickly sprinkled with bright green scales on the basal area, and sparingly over the rest of the wing; a dusky mark at end of the cell; transverse lines are not clearly defined, but the postmedial is blackish, wavy, and bent outwards at middle. Hind wings fuscous, darker on the costal area; fringes rather paler, preceded by a dusky line. Under side whitish, suffused with brown.

Expanse, 36-40 millim.

Collection number, 1235.

Two male specimens from Kanshirei (1000 ft.); one taken in May, 1907, the other in May, 1908.

Notodonta griseotincta, sp. n.

♂. Head and thorax dark grey; abdomen brown, mixed with dark grey on the hinder segments. Fore wings dark grey, clouded with brown on basal and outer marginal areas; a black indented mark at end of the cell, preceded by a pale grey cloud; subbasal line black, extending from costa only to middle, where it meets a short black longitudinal and slightly curved streak; antemedial line blackish, wavy, inwardly edged with brown, elbowed near costa, and crossed by a short black streak; postmedial line blackish, serrate, indented near costa, edged with pale grey at costa, and with brown at inner margin, followed by a pale grey point on each vein; submarginal line dark brown, marked with blackish, wavy. Hind wings dark fuscous. Under side dark fuscous; fore wings tinged with brown on costal area, a blackish spot edged on each side with grey beyond middle of costa; a blackish lunule at end of the cell on hind wings.

Expanse, 42 millim.

Collection number, 1795.

One male specimen from Rantaizan (7500 ft.), May 13th, 1909.

Notodonta furva, sp. n.

Fore wings brown mottled with paler; ante- and postmedial lines blackish, diffuse, the former outwardly oblique, the latter elbowed above middle and terminating on inner margin near the antemedial; some blackish streaks on basal and outer marginal areas. Hind wings pale fuscous brown. Under side pale brown; fore wings suffused with fuscous, postmedial line darker, almost straight; a dusky medial line on hind wings, almost parallel with outer margin.

Expanse, 50 millim.

One male specimen from Kanshirei (1000 ft.), April 29th, 1908.

(To be continued.)

NOTES AND OBSERVATIONS.

ENTOMOLOGICAL SOCIETY OF LONDON (CONVERSAZIONE).—We are asked to announce that the *Conversazione* of the Entomological Society of London, postponed from May last to December, has again been unavoidably postponed until next year. Due notice will be given as soon as a date has been fixed on some day either in May or early June.

NOTES ON LIFE-HISTORY OF *LEUCANIA L-ALBUM*.—In the 'Entomologist' for December, 1909, vol. xlii. p. 322, Mr. E. P. Sharp recorded the capture of a female specimen of *Leucania l-album*. He obtained a few ova. On November 4th he noticed they had begun to turn colour; on the 5th they went quite black and began to hatch in the evening. The larvæ ate up the empty egg-shells and some infertile eggs, but refused any other food, although he tried almost everything. They wandered about, and on being supplied with a section of an old reed stem they promptly entered it, and finding their way into the inner lining commenced to hibernate. The larva was about two and a half mm. in length, of a brownish grey colour, head and plate on prothoracic segment yellowish brown, and it had a few small bristles from tubercles. Mr. Sharp very kindly sent me five larvæ, and on February 22nd I noticed three had come out of the reed and were moving about (the other two had perished). They immediately changed their skins, and when this was over, they at once began to nibble some *Poa annua* which I gave them. Two more died during the second moult, but the remaining one grew up slowly, pupated on June 12th, and produced a fine female on July 14th. Mr. Sharp unfortunately lost all his larvæ. This species is double-brooded on the Continent, emerging in May-June and August-September. I think we may overlook the first brood in this country, as not many people work the south coast then. The larvæ seem hardy enough—mine were kept in an out-house, facing north, and it was not a particularly mild winter.—H. M. EDELSTEN; October 12th, 1910.

NOTES REGARDING THE BREEDING OF *CHILOSIA GROSSA*.—In August, 1909, when searching for larvæ and pupæ of *Gortyna ochracea*, I found, in stems of *Cnicus palustris*, some dipterous-look-

ing larvæ, which I fed up on the same thistle. The larvæ eat the pith, and I found them up to two or three feet from the ground. They pupate in the hollow skin at or near the ground level, as I subsequently found pupæ in this situation. This spring I bred from these pupæ two specimens of *Chilosia grossa*, and four ichneumons, which Mr. Morley has kindly identified for me as *Phygadeuon ambiguus* (Grav.).—C. G. NURSE (Lt.-Colonel); Timworth Hall, Bury St. Edmunds.

[The rediscovery of *Chilosia grossa* by Col. Nurse is extremely interesting on account of its economy, and most valuable scientifically, since it was on the highway to the oblivion so many insufficiently described species must inevitably attain, in spite of Taschenberg's details, elaborated by Brischke. My description of both sexes (Ichn. Brit. ii. 93) fits the present example exactly, though the species has never previously been found in Britain, since those upon which it was introduced by Desvignes in 1856 were referable to a distinct species, as I have pointed out (Entom. 1910, p. 172), and those taken by Bignell are very different. Probably our ignorance of the majority of Phygadeuonid hosts is accounted for by their dipterous, and consequently little-worked, nature.—C. M.]

THE GENUS *RETINIA* IN DEVONSHIRE.—On April 30th, at Woodbury Common, near Exmouth, I found thirty pupæ of *R. turionana* in shoots of *Pinus sylvestris*. This was the result of not much more than an hour's search. They began to emerge on May 17th, and not one failed to produce an imago. The same happy result was obtained last year, and seems to prove that in this locality, at any rate, this species is not subject to ichneumon attack. On the same date, a large number of larvæ were found feeding in the shoots of *Pinus pinea*. These subsequently emerged and turned out to be *R. sylvestrana*. Only six shoots of the pine were taken home, and these produced over twenty insects. As some larvæ were found dead, this confirms the statement that several larvæ feed in each shoot. From shoots of *Pinus sylvestris* in the same locality, *R. pinivorana* and *R. pinicolana* have been bred both this year and last in small numbers. I have not seen a published record for Devon of any of these four species of *Retinia*. Strangely enough, the much commoner *R. buoliana* has not yet been met with. Some larvæ were also found feeding on the dead stems of *P. sylvestris*. One only of these came through, and proved to be *D. abietella*. It may also be worth recording that in the same locality *P. hippocastanaria* occurs, as I see that Barrett does not give any more western county than Somerset and Dorset.—J. W. METCALFE.

ACTIAS SELENE, Hübn., IN BORNEO.—A fine male example of this large Atlas moth was brought into the Museum recently, having been taken in a house on the outskirts of Kuching. As the Museum possessed but a single specimen taken some nine years ago, I thought it must be rather rare in this country. On looking up Sir G. F. Hampson's remarks in 'Fauna British India,' I find the geographical distribution given as "China; throughout India, Ceylon, and Burma"; and apparently it has not been recorded from the Malay Archipelago before. The distribution of the genus *Actias* includes North America, Natal, Japan, and the Andamans, besides

the countries mentioned above. Exp. al. 158 mm. This is rather large for a male.—J. C. MOULTON; Sarawak Museum, September 12th, 1910.

NOTE ON THE SITUATION OF THE PUPA, AND THE EMERGENCE OF *COSSUS LIGNIPERDA*.—During the past few years I have had the opportunity of observing some numbers of *Cossus ligniperda* just after their emergence from pupæ, and of finding their empty pupa-skins *in situ*. In the great majority of cases, the empty pupa-skins were protruding from the loose, friable earth that had collected in the space between the bottom of the staves of which the fence, on which the moths were drying their wings, was built, and a stout skirting that at some time had been placed along the bottom of the fence; but in two cases the pupa-skins were sticking out from round holes in the staves, and in another from the stout skirting board, through which the larvæ had evidently bored when making their cocoons for final hybernation or pupation. All these were within a few feet of the trees where the larvæ had fed; but one other case is worthy of note as showing the distance to which the larva of this species will travel in order to find a suitable situation for spinning up. Evidently this larva had, when starting on its wanderings, got on to the asphalt path at the foot of the fence, and having reached the end of the skirting board, before finding a soft place, had encountered a brick wall along which it must have travelled for nearly a hundred yards until it found another fence; in the soft earth collected in the corner formed by the junction of the wall and the fence it had made up and from which the pupa-skin was protruding, the moth with wings still limp sitting on the fence just above it. The fences, on which all the moths were found, face due south, and therefore receive the full benefit of the noonday and afternoon sun, and the emergences all took place between five and seven o'clock in the evening.—ROBERT ADKIN; Lewisham, October, 1910.

FORFICULINE MATERNAL CARE.—The earwig referred to by Dr. Chapman (*antea*, p. 292) is a female specimen of *Anechura bipunctata*, Fabr. It is a mountain species in the palæarctic region; sufficiently common in much elevated districts in summer and autumn. It occurs in South France, Spain, Germany, and Austria at least.—W. J. LUCAS.

CAPTURES AND FIELD REPORTS.

LATE DATE FOR *CYANIRIS ARGIOLOUS*.—Following Mr. R. Adkin's note at page 295 upon the late appearance of *Cyaniris argiolus* in Abbot's Wood, Sussex, it may be of interest to report that on September 19th I observed females of this pretty Lycænid, in good condition, flying round the laurestinus bushes of a villa in the neighbourhood of Rennes (Ille-et-Vilaine), the home of one of the sons of M. Charles Oberthür.—H. ROWLAND-BROWN; Oxhey Grove, Harrow Weald, October 7th, 1910.

CYANIRIS ARGIOLOUS AT CHICHESTER.—Both broods of *Cyaniris argiolus* have occurred here this year. The earliest date recorded in

my diary is May 20th, when I noticed it flying round hollies in the garden. Of the autumnal brood specimens were seen on the wing as late as the third week in September.—JOSEPH ANDERSON.

ACRONYCTA ALNI IN LINCOLNSHIRE.—On September 17th I took a larva of *Acronycta alni* on the upper side of an oak-leaf in the Pelham's Pillar Wood; and in the same month another larva was taken in Bradley Wood by Mr. F. W. Sowerby, of Cleethorpes. The keeper in Bradley Wood, who pointed it out to Mr. Sowerby, said it had been on the same leaf for the last three days. Both larvæ spun up successfully.—G. W. MASON; Barton-on-Humber.

DAPHNIS NERII AT SYDENHAM.—A perfect specimen of *D. nerii* was taken at Sydenham on September 24th, 1910, and is now in the collection of Mr. Joicey, Bourne End, Bucks.—A. NOAKES; The Homestead, Bourne End, Bucks.

POLYPLOCA RIDENS THREE YEARS IN PUPA.—A fine *Polyploca ridens* emerged in my breeding-cage on March 22nd last, from a number of pupæ obtained in 1907.—JOSEPH ANDERSON.

ACHERONTIA ATROPOS IN IRELAND.—On Tuesday the East Surrey Regiment left Plymouth, where they had been stationed for about two and a half years, for Kinsale. We arrived at Queenstown about 9.30 a.m. on Wednesday, where about half a battalion disembarked. On leaving Queenstown about 12 p.m. the Sergeant Drummer discovered a very large specimen of *Acherontia atropos* running about the deck. I seized it and brought it here with me. It is a very large specimen but much damaged, the left fore wing being nearly without scales. It gave the well-known mouse-like squeak when handled or irritated. This makes the third I have got in the last two years in the British Isles.—HUGH F. STONEHAM; (Lieut.) 1st East Surrey Regiment, Kinsale Barracks, County Cork, Ireland.

EUPECILIA UDANA IN ESSEX.—Referring to Mr. Whittle's note (*antea*, p. 295), it may be interesting to him to know that I have occasionally taken this species in the neighbourhood of Witham, Essex. My first capture of it was in June, 1874.—W. D. CANSDALE; Sunny Bank, South Norwood, S.E.

SEZIA ANDRENIFORMIS IN GLOUCESTERSHIRE.—On July 7th last I had the good fortune to take a specimen of *S. andreniformis* amongst *Viburnum lantana*.—JOHN W. METCALFE.

NOCTUA DEPUNCTA IN DEVONSHIRE.—The capture of a fine specimen of *N. depuncta* at sugar, in a wood near Sidmouth, may be mentioned, as it seems to be a rare event in this county. The specimen is much greyer than those I have from the north.—JOHN W. METCALFE.

STIGMONOTA PALLIFRONTANA AND EPHESTIA SEMIRUFA IN GLOUCESTERSHIRE.—The capture of two specimens of *S. pallifrontana* at Nailsworth, Gloucestershire, is perhaps of interest. I took them on July 4th and 7th, flying over some kind of vetch. In a garden at the same place I also took this year one *E. semirufa*, on the exact spot where I took a specimen of this species two years ago. Both

were flying at dusk near some old ivy, and I have seen no record of its occurrence in Gloucestershire.—JOHN W. METCALFE; Ottery St. Mary.

ACRONYCTA MEGACEPHALA IN OCTOBER.—In 'Moths of the British Isles,' vol. i. p. 193, it is mentioned that *A. megacephala* once emerged on September 10th, from a larva taken on July 11th. It may interest you to know that one emerged to-day (Saturday) from a larva taken, almost fully grown, on August 31st, in the Old Kent Road district of Peckham.—R. EVERETT WARRIES; 6, Lytcott Grove, East Dulwich, S.E., October 10th, 1910.

SPRING BUTTERFLIES IN THE FOREST OF FONTAINEBLEAU, 1910.—I had the good fortune to enjoy a perfectly fine day in the Forest of Fontainebleau on May 27th last, and I write this note in the hope of inducing entomologists to try a day's collecting there in 1911, *en route* for Switzerland or the South of France, or in returning. It makes a long journey much less tedious, and saves much sunlight, given the correct weather. The best plan is to catch the nine p.m. train from Charing Cross, by which you are able to reach the station of Fontainebleau-Avon next morning at 8.30 a.m., leaving Paris from the Gare du Lyon at 7.20 a.m., and this allows for a nice long day in the forest. If proceeding further south, there is a suitable train from Fontainebleau at 5.13 p.m. or thereabouts, which connects at Dijon for south or east; or there is an equally suitable afternoon train from Fontainebleau to Paris to catch the night "Rapides" thence. Arrived at Fontainebleau Station, you are within a few minutes' walk of excellent collecting ground in the forest, which is practically all open ground to the entomologist. As you get out of the train from Paris at Fontainebleau Station, walk back in the direction of Paris, without crossing the line, for a very short distance, then cross the first bridge over the railway and take the first turn immediately to the right, and continue walking by the side of the railway without deviating, until an excellent clearing opens up, facing which, just across the railway, are some large advertisements, too obvious to be missed. It was in this clearing at the edge of the forest that I took a total of eighty-nine perfect examples of the following:—*Pyrgus sao*, *Nisoniades tages*, *Thymelicus thaumas*, *Hesperia malva*, *Chrysophanus phlaeas*, *C. dorilis*, *Cupido minimus*, *Agriades thetis* (= *bellargus*), *A. coridon*, *Polyommatus icarus*, *P. medon* (*astrarche*),* *Celastrina argiolus*, *Callophrys rubi*, *Nemeobius lucina*, *Iphiclides podalirius*, *Papilio machaon*, *Aporia crataegi*, *Pieris brassicae*, *P. rapae*, *P. napi*, *Euchloë cardamines* (almost equal quantity of both sexes), *Colias hyale*, *Gonepteryx rhamni*, *Brenthis euphrosyne*, *B. selene*, *B. dia*, *Melitæa cinxia*, *M. athalia*, *Pararge*

* It is interesting, in connection with Mr. Ashby's note on the occurrence of *P. medon* here, to observe that in a recent number of the 'Feuilles des Jeunes Naturalistes' (An. xxxix. sér. iv. p. 24) MM. Guiry and Guignon report the capture by them of var. *artaxerxes* in the Forest of Fontainebleau; but of course it is impossible, without seeing these examples, to say whether they are the real *artaxerxes* of the North Britain form or "approximates." So far as I am aware, there is no record of this form having ever been found in France hitherto.—H. R.-B.

megara, *P. egeria* var. *egerides*,* *Cœnonympha pamphilus*, besides several interesting specimens of Heterocera, Diptera, and Coleoptera. I intend to revisit the same locality later in the year, in 1911, as I regard it as an excellent ground to commence the study of the butterflies of Fontainebleau. A little farther on by the railway side towards Paris go under the first railway-bridge, which leads you to some excellent glades, where I expect the Nymphalidæ will also be flying gracefully in the height of summer.—E. B. ASHBY; 33, Park Road, Whitton, Middlesex.

ACHERONTIA ATROPOS TAKEN AT SEA.—It may be worth noting that the Migration Committee of the British Ornithologists' Club have twice had a specimen of the Death's-head moth sent to them, which had been taken at the Kentish Knock Lighthouse, *viz.*, one on May 27th, 1905, and one on September 15th, 1909. This light-vessel is situated well out, off the mouth of the Thames, and is about thirty-five miles from the nearest points of the Essex and Kent coasts. Were these true over-sea migrants? — THE MIGRATION COMMITTEE OF THE B.O.C.

NOTES FROM SOUTH-WEST CORNWALL.—The following summary of a fortnight's collecting in South-west Cornwall, in July of this year, may possibly be of interest. The locality mainly worked was a small stretch of rocky coast to the east of Cadgwith Cove, about two miles east of the Lizard Point. On leaving London on July 7th the sky was overcast and the temperature low, but as the express carried us westwards the weather improved, and when we reached Cornwall we found blue skies and warm sunshine awaiting us. A visit to a stretch of *Silene maritima* in the evening resulted in a few *Dianthacia* larvæ, which are no doubt *D. conspersa*. *M. galiata* and *H. serena* were taken flying. The next day was cloudless and hot, so I sought for *S. musciformis* along a sunny and sheltered path on the top of the cliff. A short series of eight was obtained, though it was not always easy to detect the clearwing amid the bewildering mass of insect life that besieged the flowers, and having "spotted" him, it was not always easy to bring off a capture. I hoped to secure a number of this pretty little insect, but evidently I only came in for the tail-end of the flight, as two were taken on the 9th and one on the 10th, after that no more. Sugaring flower-heads in a gap in the cliff on the 8th and 9th only resulted in one or two *Agrotis lucerneæ* and *A. lunigera*, amongst a host of commoner insects. A dark variety of *Argynnis aglaia* was taken on the 9th. On the 11th, 12th, and 14th, sugared flower-heads along the top of the cliff proved fairly attractive. In addition to a few more *A. lunigera*, *L. putrescens* was taken sparingly, and one *H. umbra*, which I failed to box. Beyond doubt the commonest insect, except *X. monoglypha*, was *L. conigera*, which was in fine condition. *Acronycta rumicis*, *Agrotis porphyrea*, *Hadena pisi* on sugar, and *Acidalia marginipunctata*, *Cnophos obscuraria*, *Acidalia imitaria* taken flying, and *D. conspersa*, seen but not captured, may perhaps be mentioned. About the 14th the weather, which had been good, broke up, and sea-fog, known

* Probably these would be examples of a second brood, as I found *egerides* quite common in the forest on April 18th, of the by-no-means-forward season of 1909.—H. R.-B.

locally as "dew," held sway for a few days. On the 18th sugar on the cliff again attracted *A. lunigera* (2) and *L. putrescens* (4), with a whole host of common insects. On the 19th trees and flower-heads were sugared, but nothing better than *H. derasa* and *T. batis*, *A. rumicis*, &c., resulted. The 20th, 21st, and 22nd being cold, wet, and windy in the main, no sugaring was attempted. Day-work produced nothing of much interest. The only butterflies seen were *A. aglaja*, *A. selene*, *E. tithonus*, *E. janira*, *C. pamphilus*, *H. sylvanus*, *H. thaumas*, *L. ægon*, *S. semele*, *P. brassicæ*, *P. rapæ*, *P. napi*, *V. urticæ*, and *V. cardui* (worn); and of day-flying moths, *M. stellatarum*, and a female *E. russula* (22nd). Collecting from the seed-capsules of the various kinds of *Silene* resulted in a fair number of *Dianthæcia* larvæ, and other larvæ taken included *S. carpini*, *A. rumicis*, *N. ziczac*, *B. rubi*, and *E. pulchellata*. I did not come across a single colony of *io* larvæ. I might perhaps, even at this late date, record that on August 17th, 1898, I took a fine variety of *P. cardui*, in a clover-field near Cadgwith. It is something like the var. that is, or used to be, figured on the cover of Greene's 'Insect Hunter's Companion,' though, if anything, rather more aberrant. Unfortunately it is somewhat worn.—E. MANNERING; 74, Bolsover Street, W.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 5th, 1910.*—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—The Secretary read the reply to the Address to the King and to Queen Alexandra.—The President announced that the Conversation postponed from last May was unavoidably postponed until next year. He also exhibited and passed round for inspection an impression of the new seal of the Society, prepared from a design made by Professor Selwyn Image, M.A., Slade Professor of Fine Art in the University of Oxford, and a Fellow of the Society.—Mr George William Vitalli de Rhe Philipe, of Calcutta; and Dr. Charles Ernest Lakin, M.D., M.R.C.S., F.R.C.S., of 2, Park Crescent, Portland Place, W., were elected Fellows of the Society.—Mr. G. C. Champion brought for exhibition two living examples of *Melanophila acuminata*, captured at Woking on September 17th last.—Mr. E. A. Butler exhibited specimens of three species of rare British Hemiptera, viz. (a) *Mesovelia furcata* M. & R., and (b) *Cicadula cyanæ*, Boh., both from leaves of *Potamogeton natans* in Epping Forest; and (c) *Cyrtorrhinus geminus*, Flor., from Broxbourne—a recent addition to the British list. He also exhibited living examples of *Mesovelia furcata*, and drew attention to the extraordinarily rapid movements of the species, which quite defy the eye.—Mr. A. H. Jones showed a series of *Pieris manni*, males only, from the valleys of the lower slopes of Mont Canigou, near Vernet-les-Bains, taken at the end of June last, with examples of *P. rapæ*, and *P. ergane* from Italy for comparison.—Mr. P. J. Barraud brought for exhibition a case containing Pieridæ from the neighbourhood of Formia, Central Italy, including *Pieris rapæ*, L., and var. *metra*, Stephens; *Pieris manni*,

Meyer, and var. *rossii*, Stefanelli, and ab. *erganoides*, Stefanelli; and *Pieris ergane*, Hübn. With these examples he showed also enlarged photographs of male and female specimens of the summer forms of the above-named species to illustrate the difference in the character of the markings and shape of the wing.—Commander J. J. Walker exhibited (a) a “co-type” of *Austrostylops gracilipes*, Lea., from Bridgetown, W. Australia; (b) a series of *Carabus violaceus*, L., var. *exasperatus*, Curtis, taken by Mr. F. C. Woodforde, at Bude, where this race appears entirely to replace the ordinary form of *violaceus*; and (c) four examples of *Hæmonia appendiculata*, Panz., taken near Kidlington, Oxon, August, 1910; also (d) a specimen of *Cryptophagus subdepressus*, Gyll, from Wytham Park, Berks, with the right antenna duplicated from the third joint.—Mr. W. F. H. Rosenberg showed a living beetle of the genus *Alindria*, received in a collection of preserved Coleoptera from Abyssinia. The insect has the habit of simulating death on being alarmed, which probably accounts for the collector having packed it up without noticing that it was alive.—Mr. H. St. J. Donisthorpe exhibited two nests of ants to illustrate his observations on the founding of nests of *Formica rufa* by a female of that species in nests of *F. fusca*, and also made some remarks on the association in nature of *F. rufa* and *F. exsecta*.—Mr. J. W. Tutt brought for exhibition a fourth British example of *Xylophasia zollikoferi* sent him for determination, taken in September, 1905, at Norwich, by Mr. Plunkett.—Dr. T. A. Chapman exhibited several cases containing series of *Agriades coridon*, var. *meridionalis*, Tutt, male (= *constanti*, Reverdin), and gave an account of his breeding experiments made to show that this form is double-brooded.—Mr. J. W. Tutt said the Rivieran race of *A. coridon* was exceedingly interesting, as providing the only case recorded where the species is certainly double-brooded. He also gave an account of the geographical distribution of the species, and the differences of marking in the various races.—Mr. G. Meade-Waldo exhibited an example of the Mantis *Hymenopus bicornis* in the larval state, and read a note on the subject of the “praying” attitude communicated by Mr. J. C. Moulton.—The Rev. G. Wheeler gave an account of an entomological excursion made by him this summer in the Abruzzi, and exhibited two drawers containing specimens taken at Assergi, Sulmona, Aquila, Roccaraso, Palena, Scanno and Villalago; and a few also from Subiaco in the Latian Apennines.—Mr. E. Dukinfield Jones brought for exhibition lantern slides of Lepidoptera in natural colours, photographed by the Dufay Dioptrichrome process. The advantages over other plates, he said, were the greater transparency and the facility of working: they were, in fact, very little more trouble than an ordinary negative.—Miss Margaret E. Fountaine communicated a paper on “Descriptions of some hitherto unknown, or little known, Larvæ and Pupæ of South African Rhopalocera, with Notes on their Life Histories.”—Professor A. Jacobi communicated a paper, “Remarks on the Cicadoid Genera *Lambeja*, Dist., and *Drepanopsaltria*, Bredd.”—Mr. Arthur M. Lea communicated a paper, “On the new Genus of *Stylopidae* from Australia.”—H. ROWLAND-BROWN, M.A., *Hon. Sec.*

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Vol. XLIII

DECEMBER, 1910.

(No. 571)

THE
ENTOMOLOGIST

AN

Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

ROBERT ADKIN, F.E.S.

H. ROWLAND-BROWN, M.A., F.E.S.

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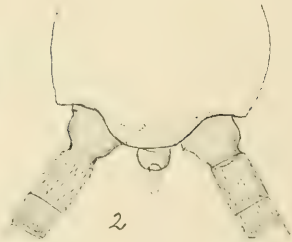
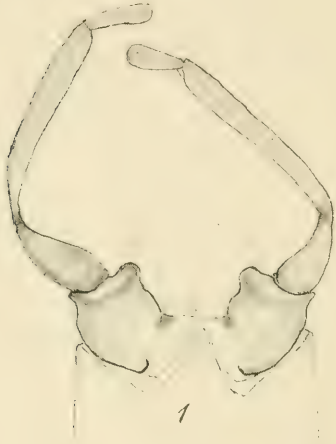
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BAËTIS CARPATICA, N. SP.

THE ENTOMOLOGIST

VOL. XLIII.]

DECEMBER, 1910.

[No. 571

A NEW SPECIES OF *BAËTIS* (EPHEMERIDÆ) FROM THE EASTERN CARPATHIANS.

BY KENNETH J. MORTON, F.E.S.

(PLATE VI.)

MR. JOSEF DZIEDZIELEWICZ, Gerichtsrat (retired), in Lemberg, a zealous student of the Neuroptera of his country, who has added a number of most interesting new species to our knowledge of the fauna of the Eastern Carpathians, some time ago sent to me a representative collection of the Ephemeridæ for confirmation by the Rev. A. E. Eaton. Mr. Eaton very kindly examined the collection and made a most useful report, but at the time circumstances did not admit of his undertaking the publication of anything concerning them.

Included is a species of *Baëtis* which was not known to Mr. Eaton, and which is apparently new. At the request of the discoverer I now describe it as

Baëtis carpatica, n. sp.

Imago (dried) ♂. Notum mainly piceous, sometimes with paler sutures and paler sides. Dorsum of abdomen brown passing to brownish piceous at the apex. Metasternum and abdomen beneath and the setæ paler. Forceps with the large basal joints fuscous or blackish, the other joints fuscous. Wings hyaline, with brownish neuration, faintly amber-tinted, slightly darker in the costal region.

♀. Almost entirely brown above; three terminal segments beneath pale yellowish.

Length of fore wing: ♂, 10–11 mm.; ♀, about 13 mm. Length of caudal setæ of ♂ about 22 mm.

Loc. In the region of Chomiak, in the Eastern Carpathians (a peak in the "Flussgebiet" of the Prut, 1544 metres).

EXPLANATION OF PLATE.—1. Apex of abdomen from beneath. 2. Apex of abdomen from above. 3. Hind wing of male (nat. length, 2.75 mm.).

NOTES ON A BUTTERFLY HUNT IN FRANCE
IN 1910.

II.—IN THE SOUTH-EAST.

BY H. ROWLAND-BROWN, M.A., F.E.S.

(Continued from p. 303.)

LEAVING Samoussy on June 27th, and travelling by Laon, we took the night express from Paris for Lyons and the south, arriving at the junction of Pierrelatte about eleven o'clock of such a clear blue day as we count upon in the Midi at this time of the year. With three hours to wait for the Nyons "parliamentary," we were glad to take our *déjeuner* under the oleander-shaded verandah of the little inn which seemed for the nonce to be tenanted chiefly by flies! Later in the day we completed the last stage of a decidedly long journey, and covered the remaining twenty miles or so in about three hours! The afternoon heat was terrific, and, as the coaches are invariably shunted in the blazing sun, ours was suffocating with its low-down roof, against which the head of my companion was continually brought in contact. Prospecting a new line of country, however, is always an agreeable occupation, entomologically speaking, and as we approached the limestone stone hills—the far-flung outposts of the Central Alps—we saw our first Satyrids—plenty of them—males of *Satyrus hermione*, and *S. circe* flying by the side of the railway, and had we been so minded I do not think a descent from the train in motion would have left us too far behind to resume our seats after a leisurely bottling of such examples as we might have wished to secure! But it was the true Midi—that was some consolation—with its almond trees, grey slanting olives, and burnt-ochre fallows: its white villages sheltered by hedges of laurestinus and tamarisk, with here and there the lofty spires of funereal cypress piercing the universal blue. Dry watercourses and stunted forests of ilex-oak, with tufts of lavender still unflowered, suggested also the southernness of the department of the Drôme, though I was quite unprepared for the further proof of this we were presently to experience among its butterflies.

Nyons is a very old-world picturesque town built in a sword-cut in the surrounding hills where the Eygues has cleft a way through from the mountains to the wide valley of the Rhône. Our most comfortable Hôtel-Colombiers at some time of remote history had been evidently a castle or a monastery, with its vaulted rooms and three-foot walls of solid stone. On the front it opened upon the public square, where until far into the night a company of strolling players screamed through interminable dramas, which never failed to draw good "houses," largely due to the fact that the majority of seats, being *al fresco*, were free!

But there were no fire-flies as I have seen them even higher up at St. Martin-Vésubie, and an extraordinary absence of Noctuids round the many electric lights. The restaurant of the hotel opened at the back upon an extremely Italian arcaded market-square, where three times a week a brisk business was done in silkworm cocoons, piled waist-high in primrose-coloured pyramids under the arches, and the gay umbrellas of the merchants.

In the late sunlight a few *Polygonia egea* were still fanning their wings on the roadway. The Diptera of Pierrelatte were, however, pleasantly conspicuous by their absence, and I may add that never once in the whole of July did we suffer the torment and inconvenience which in normal seasons the collector in the Midi may not hope to escape. We counted no fewer than fifty species of butterflies next day—June 29th—on our first expedition, following up the well-wooded, bamboo-fringed stream which falls into the main river half a mile, perhaps, away across the Roman bridge on the left bank. Again we encountered isolated examples of *P. egea*, and there was a long torrid wall facing the sun which we presently found to be much affected by this handsome "Comma." Yet it is a very hard butterfly to catch, and after many years' collecting I have still but a meagre series of decent specimens.

Following the watercourse amid luscious scented brooms and tall green rushes, we found a few battered *Melitæa deione* of the first brood, and evidently almost ended. *Cœnonympha arcania*, in contradistinction to the Samoussy race, was but freshly emerged, while *Hesperia sao*, *Thymelicus actæon*, and *T. lineola* were in the pink of condition. *M. athalia*, much lighter than those of the north, was also common, and most abundant of all *Rusticus ægon*; while of the other "blues," *P. bellargus* was nearly over, *P. hylas*, males and females superb, with equally resplendent *P. escheri*. And then the surprises began, Mr. Warren, who was in front, bidding me come and look at a wonderful Swallowtail which had fallen to his net. This was, of course, *Papilio alexanor*, though I could hardly believe my eyes; while a minute later I was busy with a perfectly fresh male example of *Epinephele pasiphaë*, presently found to be one of the commonest butterflies on the wing—all the more remarkable because at Hyères *pasiphaë* is an early May insect, and here were we on the threshold of July! After this I was prepared for anything in the way of true southern species, but still not for the two females of that loveliest of Lycænids, *Lycæna iolas*, secured by Mr. Warren, nor for the single *Polyommatus admetus* var. *rippertii*, the only one met with in the Drôme, which I took from a spike of lavender.

Evidently *L. iolas* only wants looking for to turn up in a much wider area than it is now known to inhabit in France. Between its most northerly habitat in the well-known Sierre locality and the *Colutea*-clad slopes of Digne, the heaths of Aix-

en-Provence, and the hot hills of the Bouches-du-Rhône, there are plenty of likely spots still wholly unexplored. But it is evidently a species requiring meridional heat for successful development, and just as it has not yet been reported west of the Rhône, I fancy Nyons will be found essentially to be its "furthest north" in this direction. And the same remark, no doubt, is applicable to *P. var. rippertii*, common enough in certain parts of the Basses-Alpes and the Alpes Maritimes, but hitherto reported by no collectors or writers west of the Durance Valley. Had we stayed on at Nyons later than we did, it is probable that we should have found it, the single male being obviously a precocious emergence. That it should be absent from Lozère—a country in many aspects exactly reproducing the eastern Rhône region—is also remarkable. Dr. Kane, I know, gives Lozère ('Handbook of European Butterflies,' p. 47), following Duponchel, who recorded a single female specimen from the Val d'Arriges Florac, or Berce, who incorporated Duponchel's statement without investigation. But M. Oberthür, in his last volume of 'Lépidoptérologie Comparée' (fasc. iv. pp. 257–8), leaves us in no doubt that Duponchel was mistaken; while I myself have twice collected in the Cévennes, in this locality, and so has Mr. A. H. Jones, without coming across anything but the female of *L. damon*, so easily confounded in the cabinet with *rippertii*, but in the field occurring quite a fortnight later than the last laggard of that species.

Another welcome capture was *Cœnonympha dorus*, the males becoming commoner and commoner every day; *Chrysophanus alciphron* var. *gordius* was not rare; and Mr. Warren took an unexpected male of the female ab. *midas*, Lowe, with *Cupido minimus*. Survivals of the first brood of *C. sebrus* were also in evidence, with occasional isolated specimens of *Carcharodus lavatera*. Once or twice also a vision of *Gonepteryx cleopatra* greeted our eyes, and it was interesting to identify on the wing for the first time the much-discussed *Pieris manni*, now unanimously "gazetted" to the rank of a true species. A few *Limenitis camilla* skimmed over the willows of the brook, where also *Leptosia sinapis* and male *Celestrina argiolus* moved restlessly from tree to tree. A fine light form of *Pararge egeria* haunted the shadier side of the valley, but by far the commonest butterfly on the wing was *Melanargia galatea* var. *procida*. Of these Mr. Warren took an interesting series, several individuals of which came as near to Ochsenheimer's ab. *galene* as any French specimens I have examined.* *Thecla ilicis* swarmed on the

* The tendency to local variation with this butterfly within extremely restricted areas is very curious. M. Postel (*in litt.*) tells me that *M. galatea* occurs throughout the department of the Somme, but at Mailly-Maillet he has never met with the typical female of Guenée, which is common enough on the cliffs of Tréport and Mesnile Val (towards Dieppe). "The female of the Upper Somme is the ab. *galene*, Ochs., with all the intermediates."

bramble-blossoms, and with them, worn and much less frequent, *T. acaciæ*.

To all appearances the weather had now settled, but in the night there was a change, and thenceforward the summer seemed to have taken wings. After a tremendous thunderstorm about ten o'clock next morning a walk up the Mirabel road revealed two broods of *Polyommatus corydon* overlapping, for we took very broken and old females flying with quite fresh male examples; Nyons, no doubt, with Mont Ventoux, producing the gen. *vernalis*, of which so much information has been recently made available by Dr. T. A. Chapman (Proc. Ent. Soc. Lond. 1909 and 1910), Dr. J. L. Reverdin, of Geneva, and Mr. J. W. Tutt. Flying about the low ivy-covered walls, *E. pasiphaë* was also not uncommon, but it is a short-lived insect, and before we left Nyons the females were already wasted.

A French engineer, who happened to be in the hotel, having informed us that *Papilio alexanor* was flying on the hills above les Pilles, six kilometres higher up the river, and presented us with a match-box containing two hopelessly damaged yet still living males, we made this the objective of our walk on July 1st. But the weather was overcast, and the long dusty road yielded literally nothing beyond a few *Pontia daplidice*. Nor did we encounter *alexanor* at the spot indicated, and returning on the opposite bank of the Eygues by midday had taken nothing worth recording, except two beautifully fresh and strongly marked *Anthrocera rhadamanthus*, a fine southern Zygænid not met with again. But after lunch, finding ourselves back at the entrance to our valley of June 29th, we again ascended, and late in the day, on one of the many grassy footways for the use of the foresters through the hillside woods, Mr. Warren came upon what we afterwards found to be the headquarters of *P. alexanor*. Here on the white melilot and scented scabious-heads this beautiful butterfly occurred not infrequently with occasional *C. lavatera* and females of *G. cleopatra*, and Mr. Warren took a single example of the essentially southern *Anthrocera lavandule* ab. *consobrina*, Germ. A tuft of early-flowering lavender also provided the first perfect example of *Lycæna arion*, while in the lower meadows a very fine bright form of *Chrysophanus dorilis*, with fresh *Issoria lathonia* and *Melitæa phæbe*, divided attention with several pretty specimens of *M. galatea* ab. *leucomelas*. The weather of July 3rd and 4th was entirely against collecting: cloud and wind and heavy thunder-rain, a long expedition in the hills to the north-west, returning by the cart-track, which is also for the most part the rough river-bed of a stream, past the tumble-down towers of Aubres, resulting in practically no captures. A final visit to the *alexanor* ground on the 5th, under same conditions, being hardly more successful, we determined

to change our ground again, and try the old familiar hunting-grounds of the Basses Alpes.

Accordingly, on the 6th we packed up our things, and drove to Serres in the Hautes-Alpes, some sixty-five kilometres to the east, the nearest point on the line from Grenoble to Digne, and, the morning being fine until about eleven o'clock, we spotted not a few *alexanor* on the precipitous cliffs and rough stony slopes which characterize the whole intervening country until the defiles of St. May, with its imposing ruins, are passed. By midday we had reached Rosans (Hautes-Alpes), and while waiting for *déjeuner* took advantage of a momentary gleam of sun to unfurl our nets. *Eugonia polychloros* was now observed, while a piece of rough ground near the village we found teeming with butterflies, principally a form of *Hesperia alveus*, *Melitæa phœbe*, *M. didyma*, and *P. corydon*. But we were not so fortunate as Dr. Vogt, of Paris, who followed us with M. Guerry, of Roanne, two days later, and took quite a number of the rarest of French Melanargias, *M. iapygia* var. *cleanthe*, not hitherto reported from the Hautes-Alpes, but apparently occurring throughout the hot uplands among the corn-fields, just as I found it some years since under precisely similar conditions on the arid Causse Méjean above Florac, in Lozère. From Rosans to Serres is but a matter of twenty-four kilometres, and collectors in search of *cleanthe*, who have hitherto failed to reach its other known headquarters by reason of the difficult approach to the Montagne de Lure from Sisteron, would do well to make a halt at Serres on their way south, and spend a day or two at the homely Rosans inn, which provided us with an excellent repast, and seemed well adapted for not too-exacting *pensionnaires*. As far as I can gather there is also decidedly promising country for the entomologist all round Serres, which, like Nyons, is well within the line dividing the Midi from the north of France. Meanwhile, as the Drôme appears to have received little attention from lepidopterists, and the late M. Rouast, of Nyons, author of a 'Catalogue des chenilles européennes connues,' published at Lyons in 1883, who lived some time at Nyons, left no record of his work in this particular locality, I venture to add in detail a list of all the butterflies observed by Mr. Warren and myself during our visit to the southern part of the department, June 28th to July 6th :—

HESPERIIDÆ.—*Carcharodus lavateræ*, *C. alceæ*; *Hesperia alveus* (Rosans), *H. malvæ*; *Pyrgus sao*; *Pamphila sylvanus*; *Thymelicus actæon*, *T. lineola*, *T. flavus*.

LYCÆNIDÆ.—*Chrysophanus alciphron* var. *gordius* (one ab. *midas*, male, taken by Mr. Warren, July 3rd); *C. dorilis*, *C. phleas*; *Lycæna arion*, *L. iolas*; *Cupido minimus*, *C. sebrus*; *Nomiades semiargus*; *Polyommatus admetus* var. *rippertii*, *P.*

corydon, *P. bellargus*, *P. hylas*, *P. escheri*, *P. icarus*, *P. medon* (*astrarche*), *P. baton*; *Rusticus argus*, *R. argyrognomon*; *Celes-trina argiolus*; *Thecla ilicis*, *T. spini*, *T. acaciæ*.

PAPILIONIDÆ.—*P. podalirius* ab. *zancleus*, *P. machaon*, *P. alexanor*; *Aporia crategi*; *Picris brassicæ*, *P. rapæ*, *P. manni* (Mr. Warren informs me that all the "whites" brought home by him are referable to this species); *Pontia daplidice*; *Leptosia sinapis*, and ab. *erysimi*; *Colias hyale*, *C. edusa*; *Gonepteryx cleopatra*.

NYPHALIDÆ.—*Dryas paphia*; *Argynnis aglaia*, *A. adippe*; *Issoria lathonia*; *Melitæa phæbe* (and Rosans), *M. didyma*, *M. deione*, *M. athalia*, *M. parthenie* (one); *Pyrameis cardui*, *P. atalanta*; *Eugonia polychloros* (and Rosans); *Polygonia egea*, *P. c-album*; *Limnitis camilla*.

SATYRIDÆ.—*Pararge mæra* var. *adrasta*, *P. megæra*, *P. egeria*; *Satyrus hermione*, *S. alcyone*, *S. circe*; *Hipparchia semele*; *Epinephele jurtina* and var. *hispulla*, *E. pasiphaë*; *Cænonympha arcania*, *C. dorus*, *C. pamphilus*; *Melanargia galatea* var. *procida*, ab. *leucomelas*, ab. *galaxæra*, Esp., and trs. ad ab. *galene*, Ochs., and *M. iapygia* var. *cleante* (Rosans, Dr. Vogt).

Before concluding this paper I should like to draw the attention of British "travelling" collectors also to the possibilities of the country immediately south of our little area of occupation. From several of the higher hills in the vicinity we could see Mont Ventoux, the last "alp" of any size west of the central chain; our French friends in a motor-car actually did a whole day's collecting there from Nyons. During the past few years my friend Mr. Henry Brown, of Paris, has worked assiduously both on the northern and southern slopes of this extremely interesting mountain, which seems to combine the southern fauna of the plains with not a few of the butterflies associated with the higher Alps. At some future time I hope to deal exhaustively with the Rhopalocera of the beautiful, and entomologically fertile region, east of the Rhône valley, bounded on the north by the Isère and the Drac; on the south by the Verdon and the Durance. Meanwhile, it is an encouragement to closer investigation to know that Vaucluse maintains a butterfly fauna hardly less rich and varied than that of the Mediterranean littoral itself, for while the lower elevations yield such characteristic meridionals as *Thais rumina* var. *medesicaste*, *Euchloë cuphe-noides*, *Leptosia duponcheli*, *Libythea celtis*, *Nomiades melanops*, and *Lampides telicanus*, on the mountain itself occur, besides *Erebia epistygne*, *E. scipio* (at 1500 m.), *E. neoridas*, *E. evias*, and *Parnassius apollo*.

(To be continued.)

THE NUMBER OF LARVAL INSTARS OF *CYANIRIS*
(*LYCÆNA*) *SEMIARGUS*.

BY T. A. CHAPMAN, M.D.

I OUGHT, perhaps, to say a word in elucidation of Mr. Frohawk's paper in the 'Entomologist' for November (p. 305). Mr. Frohawk had a larger number of larvæ surviving in the spring than I had, so that the presumption is in favour of his being able to make more satisfactory observations, as I could not afford to take undue liberties with my examples.

The discrepancy between us is not as to the autumnal history, where, Mr. Frohawk very truly says, observation is often difficult—we agree that hybernation takes place in the third stage. If I am in error, I missed a spring moult, which is not impossible, owing to my scanty material, though it is not out of place to say that this rendered me very unlikely to confound one specimen with another—and I kept a very close watch on my specimens.

On the simple question whether Mr. Frohawk or I have fallen into error, I think the probabilities are in favour of the lapse having been on my part. Though variation in the number of moults is by no means uncommon in many Lepidoptera, I cannot remember any butterfly clearly proved so to vary, and, certainly so far as my experience goes, no Lycænid; still, it is of course possible.

That I am perchance right has a rather weak support from the fact that most Lycænids have five stages, not a few only four. I cannot at the moment remember one with six, but this is no reason why *L. semiargus* should not have six.

There is, however, one very important point that convinces me that my observations are correct. It is one with which I did not supply Mr. Tutt; indeed, I fear I too often do not make my notes for his use so complete as they ought to be.

This point is one I have worked out in a number of species, and always found it determine correctly any case of doubt like the present as to number of moults. Whatever may be the case in such instances as *Arctia caja*, where the number of moults varies in different individuals to a great extent, apparently to meet various exigencies arising in hybernation, I find, wherever the number of moults is constant, that the size of the larval head after each moult shows a constant percentage of increase on that of the head in the preceding instar.

Now, on looking up my preserved specimens of larvæ and larva-skins of *L. semiargus*, and measuring as closely as I can the heads at each stage that I have preserved, I find the following results. The measurements are from the base of the jaws to the vertex, as I found that this was the easiest measurement to

take on my specimens, having regard to the necessity that it should be the same as nearly as was possible in each specimen.

From base of mandible to vertex:—

In first instar 0·16 mm.	In fourth instar 0·51 mm.
„ second „ 0·24 mm.	„ fifth „ 0·81 mm.
„ third „ 0·36 mm.	
(hybernating instar)	

If we assume that the increased size of the head at each moult in the case of *L. semiargus* is as 3 to 2 (fifty per cent.) in linear measure, we find we can construct a series thus:—

First instar 0·16 mm.	Fourth instar 0·54 mm.
Second „ 0·24 mm.	Fifth „ 0·81 mm.
Third „ 0·36 mm.	

I certainly did not expect the actual measurements and the calculated ones to agree so closely; that, I think, is a matter of (fortunate) accident. There might have been considerable discrepancies, and yet the point to be shown would have remained equally clear. It is obvious that no further instar could be interpolated without entirely destroying the regular rate of growth that obtains in all such cases.

I don't know whether Mr. Frohawk's last paragraph is intended to suggest that error underlies most observations as to variations in the numbers of moults, notwithstanding his immediately preceding appreciation of Mr. Merrifield's lecture; if so, it is obvious that Mr. Frohawk's work amongst the butterflies, where, I believe, his view would be, so far as I know, quite correct, should not lead him to generalize in the same sense; anyone working only with Arctiids might plausibly assert that there are no fixed stages in lepidopterous larvæ.

ON THE VARIATIONS OF *AGRION PUELLA*, LINN. (ODONATA.)

BY F. W. & H. CAMPION.

THE colour characters of *Agrion puella* are, in both the sexes, subject to a considerable amount of variation, and most, but not all, of the aberrant markings which occur in the species impart to the individuals exhibiting them a more or less close resemblance to the nearly related species *A. pulchellum*. The most striking resemblance of this description is borne by the variations of the male and female which are numbered herein 3 and 2 respectively. There can be little doubt that these two forms have been sometimes mistaken for the species which they simulate, and it may be remarked that both sexes of *pulchellum*

tend to vary in the direction of *puella*. But of course in all their disguises the two species can be readily identified by anatomical characters, such as the form of the posterior margin of the prothorax, and, in the male, the structure of the anal appendages.

The following are the principal variations which have come to our notice:—

MALE.

Variation 1.—In discussing the female forms presently, we shall have occasion to mention a specimen in the De Selys-Longchamps Collection without antehumeral blue stripes; this aberration finds a parallel in the sex now under consideration in two very aberrant males which we took in Epping Forest on July 22nd, 1905, and which also lack antehumeral stripes.

Variation 2.—Notwithstanding De Selys' declaration concerning this and some other species that "la répartition du noir sur le premier segment est aussi très-fixe et d'un grand secours pour la détermination," we have found that the basal black spot on segment 1 of the abdomen is liable to some variation both as to shape and size. The posterior edge may be almost straight instead of rounded, and may touch the black ring at the apical suture at one or more points.

Variation 3.—The U-shaped marking on the second segment may be connected with the posterior circle, as in *A. pulchellum*. In the 'Entomologist' for 1906 (p. 278) we recorded the capture in Epping Forest in that year of four males exhibiting this variation, and in 1907 we took a similar male at Byfleet, Surrey (Entom. xl. p. 213), and another at Hartford, near Huntingdon (*ib.*, p. 257). Mr. E. R. Speyer has been so good as to send us a fine example of the same description taken by himself in a Sussex locality on August 3rd, 1908. Furthermore, Mr. K. J. Morton is kind enough to inform us that he possesses a male of *puella* from Austria with the second segment marked as in *pulchellum*, or rather as in *A. ornatum*. It appears from a footnote on pages 165 and 166 of De Selys' Monog. Libell. Eur. that Fonscolombe had lately reported a variety of this kind from Provence, but that De Selys was unacquainted with it, and was not prepared to accept the correctness of Fonscolombe's identification without further investigation.

In Mr. Speyer's Sussex specimen the connecting longitudinal black line is as strongly marked as it is in normal *pulchellum*, but in most of the other examples which we have examined the connection has been slender, and has exactly corresponded with a condition not infrequently occurring in *pulchellum*, in which species the connection varies considerably in strength, and may be wanting altogether.

The variations in the shape of the spot on the second segment, numbered 4, 5, and 6, are represented in the De Selys Collection, at Brussels, and the specimens are labelled "Lch.," no doubt an abbreviation of Longchamps, the name of De Selys' home near Liège. Variations 4 and 5 are also figured by De Selys in Bull. Acad. Brux. x. (2) p. 162, fig. 3 (1843).

Variation 4.—Sometimes the lateral branches of the spot are entirely separated from the transverse line; this modification resembles the spot in *A. lunulatum*, male, and also in an analogous variation of *A. hastulatum*. Another specimen of this variety was taken by Mr. H. J. Watts at Lechlade, Gloucestershire, on June 15th, 1910, and is now, through the courtesy of Mr. Watts, in our own collection.

Variation 5.—More rarely the transverse line is strongly interrupted in the middle, and the spot then consists of two distinct portions.

Variation 6.—Again, the transverse line may carry a third branch, lying in the median position between the usual lateral branches; the spot is then converted into a trident. A male taken by ourselves in Epping Forest on July 14th, 1901 (Entom. 1902, p. 37), exhibits a similar variation, as well as other abnormalities, but in that specimen the trident-mark is neither so clear nor so symmetrical as it is in De Selys' beautiful example.

Variation 7.—The figure of Charpentier's *Agrion furcatum*, male (= *A. puella*, Linn.), in 'Libellulinæ Europææ' (pl. xl.), shows the U spot connected with the posterior circle by two widely separated curved lines. It is true that in this respect the figure is in conflict with the description—" [Segmentum] secundum macula furciformi, cum margine postico nusquam cohærente" (p. 158)—and that De Selys characterized it as "inexacte," but we have at least two males agreeing fairly well with the figure.

Variation 8.—The proportions of blue and black in the coloration of segment 6 vary a good deal, and the segment may be mostly blue or mostly black.

Variation 9.—The petasus-like black spot on segment 9 occasionally undergoes a good deal of change in shape and size; sometimes, for example, it may nearly cover the entire segment, and at other times it may be represented merely by a pair of separate lateral comma-like marks.

Cases are not infrequent in which supernumerary black dots and lines, irregular in outline and position, appear upon various parts of the abdomen. Such markings seem to be of a more accidental character than the variations previously considered, and may be so numerous as to cause a more or less general blackening of the insect, as in the cases recorded by us in Entom. 1909, p. 294.

FEMALE.

Variation 1.—As we have said already, the De Selys Collection contains a remarkable female, in which the antehumeral stripes on the thorax are practically obsolete. According to the labels attached to it, the specimen is unique, and was taken at Dolhain, in Belgium. The aberration is thus described by De Selys:—"J'ai pris une seule fois une curieuse aberration, chez laquelle les deux bandes jaunes antéhumérales étaient oblitérées, réduites à une petite tache basale au bord mésothoracique" (Bull. Acad. Belg. (2) xli. p. 1259, 1876).

We have a single female in which the antehumeral stripes are present, but interrupted as in normal *pulchellum*. The specimen was taken at Staines on May 22nd, 1910, at a pond yielding both *puella* and *pulchellum*, but we refer it to the former species by reason of the shape of the prothorax.

Variation 2.—A pair of conspicuous cuneiform green or blue spots may occur on abdominal segments 3, 4, 5, and 6; smaller spots of the like kind may be repeated on segment 7, and sometimes on segment 8. The normal thistle-spot on the second segment is not infrequently replaced by a mercury-spot. One of the descriptions of this variety written by De Selys is in the following terms:—

"La répartition du bronzé sur l'abdomen est aussi sujette à une variation analogue à ce qui existe chez le *pulchellum*, avec cette différence que, la variété la plus commune chez le *pulchellum* est la plus rare chez la *puella*. Voici l'indication du dessin chez un individu où il s'écarte le plus de la femelle type que j'ai décrite plus haut: 2° segment bleu, avec une tache trifide en avant bronzée (dans le genre de celle du mâle de l'*A. mercuriale*) touchant le bord postérieur; 3°, 4°, 5° et 6° segments, avec une tache dorsale, basale, bleue, bifide en arrière, occupant le quart ou le tiers du segment. Le 8° avec une tache semblable occupant sa moitié antérieure et le bord postérieur de même couleur.—Ces taches peuvent être vertes, blanchâtres ou aunâtres" (Rev. Odon. p. 202).

A specimen preserved in the British Museum Collection carries three labels, as follows:—"Agr. *puella* var. ♀ *annulatum*," "⁴⁶/₁₂₂," and "369." The first is a large oblong label in De Selys' own handwriting, but the others are printed labels, and reference to the Museum Register shows that the specimen is a Belgian one and was presented by De Selys, with other dragonflies, late in 1846. So far as we can ascertain, the name *annulatum* was never published, and it is possible that De Selys refrained from doing so in consequence of the varying extent to which different individuals of the variety approximate towards *pulchellum*.

The variety cannot be accounted a rare one. In addition to taking it in Epping Forest in 1904, 1908, and 1909, and in

Huntingdonshire in 1907, we have seen specimens from Sutton (Mr. W. J. Lucas, 1896), and Ockham Common (Mr. Lucas, June 23rd, 1900), Surrey; from Staines, Middlesex (Mr. H. J. Watts, June 13th, 1909); and from Hever, Kent (Mr. G. Meade-Waldo, June 18th, 1910).

The cuneiform spots are always present on segments 3 to 6; they are often repeated in an abbreviated form on segment 7, and occasionally on segment 8 also. When the spots extend from segments 3 to 8, as they do in the De Selys specimen, the two examples in Mr. Lucas' collection, and the specimen received from Mr. Meade-Waldo, the normal condition subsisting in the corresponding form of *pulchellum*, female, is exactly reproduced.

In some examples of the variety the cuneiform spots are green, whereas in other examples they are blue. It is not quite clear whether one colour passes into the other in time, or whether, as we are inclined to think is the fact, the green or the blue, as the case may be, remains unchanged throughout the life of the insect. We have never met with an individual whose coloration was of a transitional character, and we possess both a green-spotted specimen and a blue-spotted specimen which are so fully matured that the supposition that any future change of coloration might have taken place in those particular instances seems to be excluded. As to the dates of occurrence, we have so far taken green-spotted females in the month of July only, but our captures of blue-spotted females have ranged from June 21st (1908) to August 22nd (1909), and have therefore been earlier as well as later in the year than our captures of the green females; it has been already mentioned that the Hever female, which is also blue, was taken on June 18th (1910).

The superficial resemblance of this insect to one of the forms of *pulchellum*, female, is at all times very close. But when, as sometimes happens in the same individual, a mercury-spot is present on segment 2 and the cuneiform spots reach to the eighth segment, that resemblance is so much enhanced that it constitutes a very fertile source of confusion. Curiously enough, however, Stephens mistook the variety for *Agrion hastulatum*, as we learn from a specimen in the British Museum labelled "*hastulatum*, Charp.," and taken from his collection.

Now and again females of *puella* are found with the normal green ground colour replaced by blue on the anterior parts of the body, such as the postocular spots, the thorax, and the basal segments of the abdomen. Cases of this description, however, cannot be regarded as varieties, and the females of several other species of Odonata are apt to assume the andromorphic dress, especially in advanced life.

THE *ATHALIA* GROUP OF THE GENUS *MELITÆA*.

BY REV. GEORGE WHEELER, M.A., F.E.S.

(Continued from p. 262.)

THE information at my disposal with regard to the earlier stages of this group is so fragmentary that I hardly know whether it is worth offering; still, so far as it goes, it may help towards the elucidation of some doubtful points. There are but two species with the eggs of which I am acquainted, *parthenie* and *aurelia*. Excellent photographs of them were made by Mr. Tonge from ova laid in captivity which I sent to him. Those of *parthenie* are very noticeably larger than those of *aurelia*; the latter are laid more apart from each other, and consequently retain the regularity of their shape much more fully than the former. Both are somewhat lemon-shaped, the micropylar end being smaller than the base, and have a very slight sculpturing of longitudinal lines. Mr. Tonge also photographed some eggs, obtained by dissection from Reazzino *britomartis*, but they were so dried up that very little can be made out from them. They are of course of the same general shape, and in size seem to come between the other two; there appears also to be a greater difference in size between the micropylar and basal ends.

With regard to the larvæ, I should have liked to use Buckler's description of the larva of *athalia* as a standard of comparison, but as the expressions used for the positions of the spines do not all seem quite suitable, and as moreover the segments are not named in accordance with the usual practice, and one or two other points appear not quite satisfactory, I have modified this description somewhat, and shall call attention to any differences other than those of nomenclature. He says that the full-grown larva is about an inch in length and moderately stout. The head is indented on the crown, widest at the sides near the mouth, and rather flattened in front; the body is thickly covered with obtuse conical spines to the number of one hundred and thirteen, arranged as follows: there are eleven rows of spines on the first seven abdominal segments, one dorsal, two subdorsal, two supra-spiracular, two sub-spiracular, and four (or two double) ventral. The prothorax, he says, bears only two spines on each side—the two lowest—but this is not, strictly speaking, the case; only the dorsal is really absent, the remaining six being placed close together in the middle of the segment, but all quite distinctly visible with a lens (these six of course are not included in the total of one hundred and thirteen); the dorsal spine is absent on the meso- and metathorax, and on the latter the upper ventral pair are also represented. The eighth abdominal he describes as bearing ten spines, the lateral (*i. e.* upper ventral) pair being absent and the dorsal being doubled, one being placed in front of

the other; whilst on the ninth abdominal, he says, there are four spines, two on each side, in a line with the supra-spiracular row. It would, I believe, be more exact to say that the eighth abdominal bears nine spines, the *lower* ventral pair being absent and the dorsal being placed far forward on the segment—that the ninth bears three, *viz.* the supra-spiracular pair and the dorsal, the latter again being on the very front of the segment, and the tenth abdominal bearing the supra-spiracular pair only. With these modifications the description so far would apply equally well to the larvæ of *parthenie* and *aurelia*, except that the central rows of spines are much less developed in the former on the prothorax, better developed in the latter; in *parthenie* also the upper ventral pair are very slightly represented, and the lower ventral absent on the metathorax. I find also in my notes made from the living larvæ that in *parthenie* the supra-spiracular and in *aurelia* the sub-spiracular pair are present on the ninth abdominal, but as there is no spiracle on this segment this merely means that the pair present are placed somewhat higher in the former than in the latter. “Of all these spines,” says Buckler of *athalia*, and it would be equally true of *parthenie* and *aurelia*, “those in the two lowest rows are the most slender and the smallest, and those in the subdorsal rows are rather the largest.” With regard to colour, he continues:—“The ground colour of the back is black, becoming gradually blackish olive on the sides, the belly olive-brown, the anal flap and also the segmental divisions olive; all the skin is thickly covered with whitish spots that are very slightly raised, giving it a tessellated appearance, except that a dorsal stripe of the black ground is left.” This latter is not conspicuous. “There is a lateral series of three large irregular spots on each segment below the spiracles, which almost forms a broadish longitudinal stripe.” These spots are not raised like the small ones, and would, I think, have been better described as a rather broad, irregular, whitish stripe below the spiracles. “The head is black, with a transverse whitish stripe just above the mouth, and a group of whitish spots on the crown of each lobe, which, as does the rest of the head, emit fine black bristly hairs; on the front of the prothorax is a narrow, raised, semi-circular plate of greyish flesh-colour, also emitting black bristly hairs; the colour of the spines of the dorsal and subdorsal rows is orange-ochreous, growing whitish at the tip, and of the dorsal row also rather pale at the base; those of the supra-spiracular row are of a paler ochreous tint, with more of their tips whitish; all the spines are thickly set with straight, short, pointed black bristles at an acute angle, and, for the most part, each white spot on the body emits a fine, short black hair; the spiracles are black, ringed with whitish; the anterior legs black, the ventral prolegs of a pellucid drab colour, tipped with darker drab hooks.”

The following notes on larvæ I took from living specimens in my own possession :—

Aurelia.—Larvæ found at Sion, April 25th, in the middle of plantain-leaves, only one being found beneath. General appearance grey with white spines, apparently set on yellow-brown lines; rather closely resembling fallen alder-catkins. Seen through lens, the ground colour is shown to be black, thickly studded with white dots in transverse lines. There are eleven transverse rows of short spines or papillæ, the five central yellowish brown at the base, all being very white at the tips, the two lowest on each side white throughout. The five central rows have many black setæ pointing upwards, the sub-spiracular (which is placed on a white line) has the black setæ spreading out laterally. The double ventral row is much smaller, with few hairs. The arrangement of the spines is, except as described above, the same as in Buckler's description of the larva of *athalia*. Spiracles black surrounded by white. Head shiny, black with white dots. True legs black and shiny. Prolegs white, with slight greenish tinge. Head and prothorax retractile.

First went up April 27th; found as pupa (fallen) April 30th.

Parthenie.—Larvæ found at Charpigny, April 29th, on plantain-leaves, not disposed like *aurelia* to eat out the middle of the plant, but more frequently found on the edges or under the leaves. General appearance darker, brighter, and rather larger, also with browner spines than the *aurelia* larvæ from Sion. Spines arranged as in *athalia*, with the exceptions mentioned above. The white lateral line is less visible than in *aurelia*, and is succeeded beneath by a purplish-chocolate band, more or less broken, which is much less visible in *aurelia*. The larva is not unlike the last year's seeds of the plantain.

First went up April 29th, one on May 1st, two more on the 2nd, &c.

Dictynna.—Larva found at Caux, June 3rd. General appearance grey, with yellow-brown spines. Through lens, black ground with *much* white in spots and streaks. Spines yellow-brown to tip, which is just touched with white. Prolegs light semi-transparent greenish, hooks black. Legs black. Head black, with only a few white spots on the top, and a white streak above the mouth. Spines, as usual, in eleven rows. Only double ventral and slight indication of central* rows on prothorax; dorsal and sub-spiracular rows absent on meso- and metathorax, and the upper ventral truncated, especially on the latter. The long pair on the tenth abdominal appear to be the upper ventral. Otherwise as in *athalia*. The ventral pairs, especially the lower, much whiter than the other spines.

Full-fed larva of var. *berisalensis*, received from Wullschlegel,

* This does not include, I think, anything to represent the dorsal row.

May 17th. General appearance darker than *parthenic*; spines more orange. Through lens, the double row of ventral spines larger and more closely covered with setæ than *aurelia* or *parthenic*. No white line at the sides. Abdominal prolegs whitish with black hooks. White spots on body fewer and smaller than in the other species. Dorsal row of spines very noticeably smaller than the *two* rows on each side of it. Spiracles large and black, narrowly ringed with leaden grey. Not much white on head. Prothorax, double ventral spine and setæ of central rows present. On meso- and metathorax the double ventral row has the lower spine rudimentary and placed before the other. Dorsal spine absent. The former has a fairly well-developed, the latter a rudimentary, sub-spiracular. Spines whitish orange, and placed on rather brighter orange patches, the tips of the spines only being whitish; the two ventral rows are, however, white throughout. Sur-anal flap semi-transparent dark grey; anal prolegs the same colour, with whitish band above black hooks.

First larva pupated May 17th.

(To be continued.)

SOME AFRICAN BEES OF THE GENUS *ANTHOPHORA*.

By T. D. A. COCKERELL.

THE Ethiopian region is very rich in the swift-flying bees with banded abdomen, belonging to the group of *Anthophora* which Friese has named *Amegilla*. The typical member of this series, *A. quadrfasciata*, Villers, is very widely distributed, from Germany to South Africa. There are, however, very numerous closely allied forms of local distribution, which probably are adapted to different genera of tropical plants. In the north *A. quadrfasciata* and the related *A. albigena* are especially found at flowers of *Anchusa*, while another member of the group, *A. salviae*, is said to regularly visit *Salvia*. Some day, no doubt, observations of this sort will be made on the many tropical species, but at present all that students of bees can do is to describe the insects as they occur in museums, leaving the more interesting work of elucidating their natural history to others and to the future. The material on which this paper is based is in the British Museum.

Anthophora medicorum, n. sp.

♀. Length about 11 mm., expanse 20; mandibles (except apex), labrum (except a dusky spot in each upper corner) and clypeus (except a large quadrate black area on each side above) pale ochery

yellow; a very broadly triangular supraclypeal mark of same colour; scape ferruginous, mainly pale yellowish in front; flagellum ferruginous above and below; third antennal joint about or almost as long as the next three together, fourth very short; hair of head and thorax above very pale fulvous, with black intermixed; abdominal bands broad and very distinct, dull greyish white with a creamy tint; apex of fifth segment broadly tufted with dark fuscous hair; tegulæ clear rufofulvous; wings slightly dusky, stigma obsolete, nervures dark rufofuscous; hair of front legs white; of middle pair black on under side of femora and tibiæ, white on outer side of tibiæ, brown-black on tarsi, except the basal two-thirds of basitarsus on outer side, where it is white; hind legs with hair black, white on knees, posterior side of tibiæ (except a ferruginous stain below knee-plate), and tuft on base of basitarsus. Runs in Friese's table of Palæartic species to *A. albigena*, to which it is closely allied, differing by the redder tint of the thoracic hair; the very much greater amount of yellow on clypeus; the lower edge of clypeus narrowly brown, but not black; the interval between clypeus and eyes yellow throughout; and the red antennæ. The colour and arrangement of the hair on the hind legs is about the same in both. From *A. quadrifasciata* it is easily known by having the area between clypeus and eyes yellow, the antennæ red, &c. From *A. circulata* (Fabr.), which it much resembles, it differs by the narrower face, the light ochre-yellow eyes, and the much shorter third antennal joint. From *A. calens*, Lep., it differs by the broader and much whiter abdominal bands, &c.

Hab. Bohotle, Somaliland, 1903 (Vety.-Major A. F. Appleton). This has the aspect of a desert insect.

Anthophora zombana, n. sp.

♀. Length about 12 mm., expanse 19; base of mandibles, labrum, and clypeus a sort of pinkish white, the clypeus with a pair of small brownish spots above, but otherwise unmarked; mandibles dark red in middle, and beyond that most of the outer side straw-yellow; supraclypeal mark a narrow band; no lateral face-marks; antennæ dark, flagellum very obscurely reddish beneath, especially at apex; hair of head and thorax above, including face above clypeus, brilliant orange fulvous, mixed with black on thorax; beneath the hair is white as usual; tegulæ clear rufotestaceous; wings dusky, nervures piceous; hair of femora pale, but that of middle and hind tibiæ and tarsi black, except a very narrow line of white along hind edge of hind tibiæ; abdominal bands distinct but dullish, the first two or three orange fulvous, the fourth, and third at sides, purplish white; sides of fifth segment with white hair. This would be taken at first sight for *A. quadrifasciata*, but it is easily known by the light clypeus and the black hair of hind tibiæ and tarsi. The closest affinity seems to be with *A. nigratarsis*, Friese, but it is larger than that, and has the colour of the legs differently distributed. The labrum is coarsely rugose, and the third antennal joint is about as long as the following three together. The eyes are grey-purple.

Hab. Zomba, British Central Africa, April, 1906 (J. E. S. Old).

Anthophora leucophora, n. sp.

♂. Length about 15 mm., expanse about 24; hair of head and thorax coloured as in *A. zombana*; hair-band on first abdominal segment narrow and fulvous; segments two to four with very well-marked white hair-bands (not so broad as in *A. medicorum*), strongly contrasting with the black background; wings dilute fuliginous, about as in *A. basalis*, Sm.; anterior femora and tibiæ with much fulvous hair behind, and their tarsi on outer side covered with the same hair, otherwise the hair of the legs is black (a little pale along hind margin of middle tibiæ), including all of posterior tibiæ and tarsi. Basal half of mandibles, labrum, lateral face-marks (filling space between clypeus and eyes), clypeus (except two very large black areas, leaving a dagger-shaped central light band), and a very low supraclypeal triangle, all brownish or pinkish white, the lower margin of clypeus narrowly ferruginous; scape rather stout, with a large white mark in front; flagellum black, very faintly reddish beneath; third antennal joint about as long as the next three together, the fourth very short; mesothorax densely punctured; tegulæ ferruginous; apex of abdomen broadly shallowly emarginate.

Var. *a*. Clypeal marks reduced, emarginate below; posterior tibiæ with a patch of fulvous hair on middle of outer side, and a small white apical tuft.

Hab. Zomba, British Central Africa, April, 1906 (J. E. S. Old). This cannot be the male of *A. zombana*, for not only is it much larger, with differently coloured abdominal bands, but there is a difference in the venation. The third submarginal cell is very broad below, and conspicuously narrower above, whereas in *A. zombana* it is broader above than below. Superficially, *A. leucophora* looks exactly like *A. quadrifasciata* from Oran, but the dark clypeal marks, much more slender third antennal joint, and colour of hair on hind tibiæ readily distinguish it.

COMPARATIVE NOTES ON *V. URTICÆ*, L., VAR. *ICHNUSA*, BON., AND VAR. *TURCICA*, STAND. IS *V. URTICÆ*, L., THE "REDDEST" FORM AMONG ALL THE "TORTOISESHELL" *VANESSIDÆ*?

By T. REUSS.

(Concluded from p. 281.)

THE var. *turcica** is, on the other hand, often most faithfully pictured in a single aberrative specimen of *urticæ*, the form often emerging under normal external conditions; and if only the upper side is considered, this aberration is perhaps a little more frequent in England than in Central Europe, but the

* Considered as a *local* race, variable in itself.

under side of British specimens is often too black.* The extreme form of var. *turcica*, with almost obsolete inner marginal spot and puncta, also appears in aberrations of *V. urticae*, but only under the influence of high temperature or of strong contrasts of temperature, and *not every* brood of *V. urticae* larvæ will produce it, the influence of temperature often not being sufficient to overcome possible hereditary tendencies in another direction.

The "tawny" appearance of var. *turcica* is produced by the darkening of the yellow spots with orange; in addition, this form has a brownish tinge in the ground colour, which, however, also appears often in the ground colour of specimens of northern *V. urticae*. This browning of the ground colour must not be confounded with the yellowish colouring often produced by less favourable temperature conditions abnormally retarding the larval and pupal period, or with the dulling of the ground colour caused by extreme conditions; compare var. *polaris*, Stdgr., always assuming that under this name specimens from Northern Europe are understood, *which among themselves may vary considerably*,† and specimens of var. *turcica* from Syria may also be compared, as often showing the effects of extreme conditions of another kind.

In this connection it is also necessary to remember that an upper side facies like that of *turcica*, with the yellow parts almost obsolete and changed to the ground colour, appears as an atavism, as is shown by the developing wing in every pupa of *urticae*, in which the yellow spots are at first *not differentiated* from the ground colour.

Fiery specimens of *urticae*, such as ab. *igneae*, Rynr., are very different from the southern varieties; but I do not wish to imply that *ichnusa* and *turcica* might not also develop *red* aberrations under suitable conditions. I would note, however, that *V. urticae* from Persia seems also to be distinguishable by a warmer coloured yellow-brown under side and a very clear orange-golden upper side with somewhat reduced black and yellow markings (var. *persica*), so that, generally, these southern forms appear *less red*—but more brilliant from a greater unbroken expanse of colour—than their northern kindred. The *actual colour* seems to be least different from *V. urticae* of Central Europe in var. *ichnusa*; but *to the eye* the difference is greatest just in this variety, which, by the character of its facial detail, again invites two questions which have arisen before: Is *ichnusa* an insular "relic"? May it claim specific rank?

* Also specimens from the western parts of continental Europe seem to exhibit the *black* under side facies oftener than specimens from more eastern parts. In Tuscany the brown form is already the most common, if I may trust my experience.

† To me the var. *connexa* of Japan has little to do with the var. *polaris*.

Aberration in *urticæ*, type, shows that *ichnusa* is much more than merely a climatical variety—like, for instance, *turcica*, *persica*, *polaris*—and forms of *urticæ* with small or obsolete puncta or inner marginal spot can scarcely be considered to be *ichnusa* if the spots are not also *displaced*, as in *ichnusa* also the ground colour of *urticæ* *must not be changed* in such forms, for it is already *ichnusa*-form in all *normal* bright specimens; instead, a *spread* of the ground colour would be wanted, and in addition a *spread* also of the basal suffusion. And this, as has already been shown, is not all. Still other alterations of the facies would be needed before it could be said that an aberration of *urticæ* deserved—by its facies—the name of the Corsican form *ichnusa*. Thus the description of *ichnusa* quoted by Mr. Raynor in the Ent. Rec. pt. 1, 1909, "Variation of *V. urticæ*," was quite insufficient to characterize this form, and *if* he based the statement upon it that *ichnusa* had appeared in England (made on page 7), then perhaps it would be found that the specimens Mr. Raynor referred to were only *in some ways* *ichnusa*-form, but were perhaps more like *turcica*, for reasons already dealt with.

No doubt the var. *turcica* is *ichnusa*-form, at least in the spread of the ground colour. This "all-orange" facies appears occasionally by aberration in *urticæ* *under almost all kinds of external conditions* of development; most easily, however, does it show itself after development (both larval and pupal) has taken place in a low, contrastless temperature. This colouring is no doubt atavic, as already noted. And also, from other facial details, it seems that *ichnusa* and *turcica* represent old forms, while *urticæ* is comparatively progressive, so that its only excuse for posing as the "type" rests with the fact that it is the most common and widely distributed modern form among its kindred. The resemblance noticeable in *ichnusa*, female, to the atavic *V. io* ab. *fischeri** gives evidence of atavic features retained in the facies by *ichnusa*. It may also be not without interest to note that, whereas shadowy median puncta appear in *male ichnusa*, but are absent in the female, the reverse is the case in the American *milberti*. This species, which is usually without puncta, shows traces of them first in the *female* specimens, and in these they appear in the same relative position as in *urticæ*. When comparing the *position* of the puncta in other "tortoiseshell" *Vanessidæ*, one finds that the variable *levana* shows these markings in almost every possible form of variation, as they are found in other *Araschnids* and in some *Pyrameids*,

* In *antea*, vol. xlii. pt. 12, p. 311, I figured *V. io* ab. *fischeri* together with two forms of *V. io* common in the field. In the accompanying text I had suggested that each of the latter forms was mainly dependent on certain conditions of temperature. Having satisfied myself of the truth of this by suitably conducted experiments on ova, larva, and pupa, I will now name the spotted form, fig. 2, ab. *mesoides*, and the banded form, fig. 3, ab. *teloides*.

but also as in *ichnusa* and as in *urticæ*; and usually the *ichnusa*-form puncta are found in the female.

The *Grapta*-species also in their *female* forms show the puncta mostly in the same position as in *ichnusa*. These species, with their "four puncta," are of special interest, one puncta coinciding with the "nota" of *ichnusa-urticæ*, the fourth near the costa reminding of the projection to the second costal blotch of *V. io*, which helps to round off the ocellus in that species. I have found this fourth spot to occur separately in *urticæ*-aberrations. *Polygonia*-species show the puncta too near the margin to be quite *ichnusa*-form, but the puncta are placed in the same slanting position as in *ichnusa*, those in the many forms of *c-album* approaching nearest to the corresponding markings in *Grapta*-species. The puncta of *Eugonia polychloros*, of *xanthomelas*, and of *L. album* are quite *urticæ*-form; only the puncta in *californica*, together with the small inner marginal spot, remind of the markings in *ichnusa*. The interesting yellowish and black basal suffusion in *ichnusa* can be found developed to a similar degree in *L. album*, and is also fairly well marked in *californica*; it is less conspicuous in normal *polychloros*, and still less apparent in *xanthomelas*, in which species it resembles more a darkening of the ground colour, and this is also the case in the *Grapta*-species. The forms of *Polygonia* usually exhibit a very clear basal area, but *c-album* is an exception, and occasionally shows the black and yellowish basal suffusion very strongly. In *A. levana* the basal upper side parts show up the under side markings—a yellowish ring, which is black in the under side of *V. urticæ*; the general yellowish basal suffusion is almost wanting, thus leaving the base black. This black basal colouring, which is very variable in extent, turns up also in aberrations of *V. urticæ* (ab. *basi-nigra*). As regards the marginal developments in the "tortoiseshell" Vanessids, most of these also are suggested by the facies of *A. levana* and its many forms.

Thus the outer margin will be found to be dark, unmarked (as in *V. io*, *ichnusa* female, *xanthomelas*), but with a white border fringe in *levana*; or usually the margin will be of the ground colour, marked by a dark line, as in most forms; or occasionally almost wholly of the ground colour. The "lunules" either appear as separate black spots or form a continuous black (or brown) band—for instance, in species of *Grapta* (brown markings), *Polygonia* (brown, brown-black), *Eugonia*; or they are marked by straight or irregular blue lines (only in the hind wings as in other Araschnids, in normal *E. polychloros*, *xanthomelas*); or they appear as well-defined blue lunules in both wings (or only in the hind wings), as in *urticæ* and many of its local forms. By aberration, specimens of *xanthomelas* from Asia (Amur, Tianschan) occur with yellowish grey outer mar-

gins (ab. *griseomarginata*, parallel to *V. urticæ* ab. *griseomarginata*), which look strikingly *antiopa*-form.*

No marginal markings in a "normal" tortoiseshell *Vanessa* approach nearer to those in *V. io* ab. *fischeri* than the markings in female *ichnusa*.

Comparing, now, the *ground colour* of all the tortoiseshell *Vanessids*, it becomes apparent that various shades of more or less brilliant yellow-brown, sometimes orange or golden in tint, are common to them all, including *V. urticæ* and its related varieties; but that *V. urticæ* differs from all the other forms by its marked tendency to develop a reddish and even a red ground colour at slight inducement. Even the finest, most brilliant examples of *xanthomelas* from Japan (large) or from Switzerland (smaller), which I have, are rich yellow-brown, not red-brown in colour, and the same is the case with *E. polychloros* var. *erythromelas* (Algiers). Comparison with reddish specimens of *V. urticæ* (for which I suggest the name var. *igneiformis*, as the extreme ab. *ignea*, Rynr., is either extremely rare or unknown even in the field) quickly dispels any possible doubt. I do not wish to imply, however, that red forms are quite impossible in the other species as exceptional aberrations, though I have so far not been able to find any tendency to red in their ground colour. And it is not without interest, perhaps, to note that the "brown" *xanthomelas* seems facially related to the "brown" *antiopa*, much as the "red" *urticæ* is related to the "red" *V. io*.

A NOTE ON THE OVUM AND YOUNG LARVA OF *SCOPARIA MURANA*.

By ALFRED SICH, F.E.S.

In July, 1909, Mr. South kindly handed me some ova of *Scoparia murana*, laid by a moth he had taken at Bishop Auckland on the 15th of that month. They were laid in groups of three to five and some singly, not very firmly attached. From the manner in which some of the eggs were laid round a puncture in the lid of the box, I should imagine that in nature

* The peculiar facies of *Euvanessa antiopa*, like that of *V. io*, is developed from the "tortoiseshell" facies, as was shown by Prof. Standfuss in his 'Handbook of Palearctic Macro-Lepidoptera,' with the help of an excellent atavic aberration of *antiopa* (figured pl. vii. fig. 3), showing traces of the median puncta on the fore wings, and of the orange-brown ground colour; also the specimen exhibited a narrow grey margin. The ground colour of *antiopa* may be called a deep rich brown tinged with violet, that of *io* a rich orange-brown tinged with red. In Japan, *V. io* var. *geisha*, female, occurs with a brown ground colour, tinged orange—probably an atavism—and in America *antiopa* often exhibits a purely brown colour and a darkened margin, which also, perhaps, are atavic features.

they would be thrust down into the moss. When first laid they were, as Mr. South informed me, pale straw colour. When I examined them about ten days later, the black head and red body of the larva were visible through the shell. In shape ovoid, rounded at both ends; length about 0.5 mm., and greatest width 0.37 mm. They varied somewhat in size. The whole surface was very minutely pitted and broken up into irregular pentagonal cells. The newly hatched larva measured 1.5 mm. and the width of the head was 0.25 mm. The body tapers gradually to the anal extremity and is slightly flattened. The segmental and subsegmental divisions are very well marked. The head is dark olive-brown, the prothoracic shield brown with a pink tinge, meso- and metathorax greenish-grey. The abdominal segments are red with a scarlet tinge, except the ninth and tenth, which are again greenish-grey. The legs are large, and the prolegs rather long and slender. The spiracles are large, circular, and dark ringed. The meso- and metathorax have each three subsegments, the tubercles being on the second subsegment. In the abdominal segments, tubercles one and three are on the first subsegment, while two is on the second subsegment. Tubercle four is below and slightly behind the spiracle; five, quite separate, below and in front of four. Tubercle six not seen, probably absent; seventh represented by a pair of tubercles. The tubercles are grey, and, I believe, bear a single simple rather long seta, but of this I have no note. There are a few rows of spicules on each subsegment.

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

(Continued from p. 313.)

Notodonta (?) *basinotata*, sp. n.

Fore wings brownish, greyish on costal area, a black patch on basal fourth; a whitish patch at end of cell, enclosing a black dot; antemedial line black, twice angled towards the inner margin diffuse towards the costa; postmedial line black, crenulate, terminating on inner margin near the antemedial; veins marked with black, blackish streaks between them on the outer area; fringes brownish, chequered with black. Hind wings pale fuscous, brownish hairs on the inner margin, veins darker, a black cell spot. Under side whitish buff, suffused with blackish on costal two-thirds of fore wings, powdered with blackish on costa of hind wings; all the wings have a blackish cell mark, and an incomplete postmedial line.

Expanse, 56 millim.

Collection number, 1197.

One male specimen from Kanshirei (1000 ft.), April 27th, 1908.

Pydna albifusa, sp. n.

♂. Head and thorax pale brown, whitish mixed; abdomen whitish, anal tuft pale brownish. Fore wings ochreous brown, suffused with whitish on the basal area; veins and a streak from middle of the base to the apex rather darker, the latter tapered at each end; some darker transverse lines on the outer margin. Hind wings and the under side of all wings whitish.

♀. Rather larger and without anal tuft.

Expanse, ♂ 43 millim., ♀ 48 millim.

Collection number, 1230.

One example of each sex from Kanshirei (1000 ft.); the male taken April 30th, 1908, and the female in August, 1907.

Near *Pydna obliqua*, Hampson.

Tyana acypera literata.

Fore wings green, costa and fringes yellowish white; apex flecked with purplish brown; a purplish brown S-like mark about middle of the wing. Hind wings and the under side of all wings white.

Expanse, 34 millim.

Collection number, 731 a.

A female specimen from Daitōzan (8500 ft.), September 20th, 1906.

Panthea grisea, sp. n.

Head and thorax grey; abdomen blackish, posterior edges of segments greyish. Fore wings grey, orbicular stigma represented by a black point, reniform outlined in black, with a black spot at lower end; subbasal and antemedial lines black, the former not extended to the inner margin, the latter angled above the inner margin, bent towards the costa, and inwardly edged with white; medial line black, irregular; postmedial line black, crenulate, bent inwards below middle, angled on inner margin, outwardly edged with white; submarginal line white, sinuous, partly shaded inwardly with black; fringes chequered. Hind wings smoky grey; a dusky discoidal spot, and two dusky bands enclosing a paler one beyond. Under side of the fore wings blackish inclining to greyish on the margins, postmedial line darker, followed by a whitish band; hind wings whitish grey with blackish discoidal mark, and three transverse bands.

Expanse, 42 millim.

Collection number, 1794.

One male specimen from Rantaizan (7500 ft.), May 11th, 1909.

Anonychia sinuosa, sp. n.

♂. Fore wings blackish brown, striated with ochreous on costal area, and sprinkled with paler on basal area; antemedial line whitish, sinuous, not distinct, edged with black at each extremity; postmedial line whitish, slightly angled near costa, thence sinuous to inner margin; a dusky central shade enclosing a black discoidal mark. Hind wings fuscous, discoidal spot blackish, traces of a dark edged white postmedial line. Fringes dark brown marked with pale brown.

♀. Agrees with the male, except that the postmedial line of hind wings is traceable to the costa.

Expanse, ♂ 34 millim., ♀ 39 mm.

Collection number, 837.

An example of each sex from Arizan (7300 ft.), September, 1906.

There are three specimens from Tokio, Japan, in the British Museum Collection.

Ab. brunnea, nov.

The general colour of all the wings is browner, and the middle sinus of the postmedial line is rather deeper.

A male specimen and also a female taken at Arizan with the type.

Heterolocha arizana, sp. n.

Fore wings yellow; antemedial line pinkish, wavy; postmedial line pinkish, incurved at middle, very slender, and dotted with black from costa to vein four, followed by a pinkish cloud towards the inner margin; discoidal mark ringed with pinkish. Hind wings yellow; a diffuse pinkish cloud on outer marginal area towards dorsum. Under side yellow, heavily freckled with pale violet-brown; inner margin of fore wings whitish; postmedial band violet-brown, interrupted by the veins.

Expanse, 31 millim.

Collection number, 864 a.

A male specimen from Arizan (7300 ft.), August 8th, 1908.

Near *H. rubrifera*, Hampson, and may be only a local form of that species.

Heterolocha marginata, sp. n.

Differs from *H. arizana* in having the yellow ground colour faintly green tinged; the area beyond postmedial line is purplish; fringes yellow. Under side purplish, costal area of the fore wings yellowish; fringes yellow.

Expanse, 34 millim.

Collection number, 865 a.

A male specimen from Arizan (7300 ft.), August 18th, 1908.

Quite possibly this also may prove to be a form of *H. rubrifera*.

Heterolocha taiwana, sp. n.

♂. Fore wings pale brown, violet tinged; ante- and postmedial lines purplish brown, bent towards each other below the middle, enclosed space rather darker brown, slightly yellow tinged in some lights; discoidal mark faintly darker, indistinct. Hind wings paler and more violet tinged; discoidal dot dusky, faint; postmedial line brownish, faint towards the costa. Fringes and under side brown, reddish tinged.

Expanse, 33 millim.

Collection number, 865.

A male specimen from Arizan (7300 ft.), September 23rd, 1906.

Near *H. nipponica*, Butler.

Nadagara umbrifera, sp. n.

♂. Fore wings greyish brown, clouded with darker brown, costa ochreous, strigulated with brown; antemedial line brown, diffuse and indistinct, excurved in the cell; postmedial line brown, nearly straight; a brown slightly curved line from costa, near apex, to below vein six, a few whitish scales on its outer edge, space between it and postmedial line brownish; a brownish cloud from postmedial line to tornus; fringes pale brown marked with darker. Hind wings greyish brown, a central ochreous cloud, outer area suffused with ochreous, basal area dusky; a brownish medial line, slightly sinuous; fringes brown, tips paler. Under side greyish, violet tinged; costa of fore wings and veins of all the wings ochreous.

Expanse, 34 millim.

Collection number, 873.

A male specimen from Kanshirei (1000 ft.), April 30th, 1908.

Hyposidra virgata, sp. n.

Pale cinnamon-brown, clouded and suffused with darker. Fore wings violet-brown at base and along costal area almost to a similar coloured dash over the postmedial line; a violet-brown apical patch; antemedial line dark brown, edging the basal patch; postmedial line dark brown, nearly straight, slightly angled near costa; submarginal series of whitish marks, partly edged with blackish, the two nearest inner margin black and punctiform. Hind wings have indications of a dusky antemedial line, and a well-defined dark brown postmedial line; traces of a submarginal series of pale-edged dusky marks.

Expanse, 36 millim.

Collection number, 855.

A male specimen from Kanshirei (1000 ft.), June 18th, 1906.

Ab. pallida, nov.

Pale whity brown sprinkled with brownish; the markings, except basal patch of fore wings and postmedial line of all wings, less clearly defined.

Expanse, 33 millim.

Collection number, 854.

A male specimen from Kanshirei, September 26th, 1906.

Leptodontopera (?) *taiwana*, sp. n.

Fore wings pale brown on basal two-thirds and along costa to apex, tinged with ochreous below the cell; antemedial line dark brown, slender and flexuous to lower end of cell, where it is sharply angled, thence oblique, inwardly shaded with brown, to inner margin near base; postmedial line dark brown, angled below costa, gently curved towards the inner margin, closely followed by a diffuse blackish line, which curves from the angle of the line to the apex of the wing; the outer marginal area, limited by the postmedial line and the apical continuation, is suffused with dusky; a black dot at end of cell; two black marks beyond the postmedial line, one above the

middle, the other towards the inner margin, both outwardly flecked with whitish. Hind wings brown, paler towards the base, and darker towards the outer margin; a black dot at end of cell; a dark brown, curved, slender submarginal line, followed by a whitish line, which does not extend to the costa.

Expanse, 34 millim.

Collection number, 874.

An example of each sex from Kanshirei (1000 ft.). The male taken in May, and the female in August, 1908.

In colour and markings very close to *L. codra*, Swinhoe, but the fore wings are not scalloped, and the hind wings are less crenulate on outer margin.

Gonodontis variegata, sp. n.

Fore wings pale brown, faintly mottled with ochreous, and sprinkled with blackish scales except on outer margin; ante- and postmedial lines blackish, flecked and spotted with whitish, the largest spot at the costal end of each line; space between lines reddish brown, enclosing ochreous clouds; postmedial line followed by a brownish shade, most distinct on the costa, less distinct between veins four and six; discoidal spot blackish, oval, flecked with whitish. Hind wings pale brown much flecked with darker; an almost round discoidal spot, and straight postmedial line, both blackish, the latter partially edged outwardly with whitish. Under side pale brown, clouded and freckled with blackish, chiefly on basal three-fourths; a black discoidal spot, and postmedial line on all the wings.

Expanse, 42 millim.

Collection number, 856.

A male specimen from Arizan (7300 ft.), September 16th, 1906.

Garæus luteus, sp. n.

♀. Orange-yellow, clouded with darker orange. Fore wings have a black discoidal dot, and two purplish transverse lines; first line wavy, slightly curved; second line elbowed below the costa, thence parallel with outer margin; a wavy orange-brown line traverses the outer marginal area, commencing in a small patch of the same colour at the apex. Hind wings have a black discoidal dot, and a straight purplish postmedial line. Fringes brownish, tips variegated with whitish.

Expanse, 36 millim.

Collection number, 858.

A female from Daitozan (8500 ft.), September 25th, 1906.

Arichanna picaria, sp. n.

♂. Head, thorax, and abdomen yellow, spotted with black; anal tuft yellowish, mixed with black at base. Fore wings white, with four bands composed of more or less confluent black spots; the medial band is most complete, the third band is short, and there are scattered black dots between the bands. Hind wings white with a few black dots and spots on the disc, traces of black bands on the

inner marginal area, and an interrupted black border on the outer margin.

♀. Similar to the male, but the medial band of fore wings encloses three spots of the ground colour—one on the costa, one about middle, and one on the inner margin.

Expanse, ♂ 63 millim., ♀ 69 millim.

Collection number, 1667.

A male from Rantaizan (7500 ft.), May 8th, 1909; and a female from Toroyen, Arizan district, (4000 ft.), June, 1908.

Note.—Page 290, line 3, delete "*variegata*, sp. n."

(To be continued.)

NOTES AND OBSERVATIONS.

DARWIN MEDAL OF THE ROYAL SOCIETY.—Our readers will be interested to know that this year the "Darwin Medal" of the Royal Society is presented to Mr. Roland Trimen, M.A., F.R.S., F.E.S., in recognition of the services rendered by him to entomological science, especially in connection with the work of the author of the 'Origin of Species.' As Mr. Trimen's labours have been concentrated almost wholly upon Lepidoptera, the honour bestowed upon him will be generally appreciated by Lepidopterists throughout the United Kingdom. It may be observed, also, that the Entomological Society of London, at their meeting on November 16th, unanimously approved the despatch of a letter of congratulation to the recipient of what is regarded as one of the highest distinctions in the gift of the Royal Society.—H. R.-B.

ENTOMOLOGICAL SOCIETY OF LONDON.—Mr. H. Rowland-Brown asks us to state that he will not seek re-election as one of the Honorary Secretaries of the Entomological Society of London at the Annual General Meeting to be held on January 18th, 1911. His successor-designate is the Rev. George Wheeler, M.A., known to many of us as the author of that very useful handbook 'The Butterflies of Switzerland and the Alps of Central Europe,' and a valued contributor to the pages of the 'Entomologist' as a high authority on the western palæarctic Melitæids.

FURTHER NOTES REGARDING THE BREEDING OF *CHILOSIA GROSSA*.—In my note on the breeding of this dipteran, in the 'Entomologist' for November, line 3, p. 314, should read: "They pupate in the hollow stem." But from my experience of this year it appears that this is not invariably, or perhaps even generally, the case. I found in August last a patch of *Cnicus palustris*, in which were larvæ of *Chilosia grossa* in some numbers. I took only about half-a-dozen, intending to take the pupæ later on in the hope of breeding more specimens of the ichneumon for Mr. Morley. To-day, November 5th, I visited the place, but only succeeded in finding one pupa, though the working of the larvæ was apparent in many of the thistle stems. Most of the stems which had contained larvæ

were eaten through near the base, and the larvæ had disappeared, probably having pupated in the ground. I also find that the working of the larva is usually confined to the lowest portion of the thistle stems, though they are sometimes found in the upper portion. Mr. Morley's remarks on my note on p. 314 of the 'Entomologist' for November should read "The re-discovery of *Phygadeuon ambiguus*," &c., as, of course, *Chilosia* is a well-known insect.—C. G. NURSE (Lt.-Colonel); Timworth Hall, Bury St. Edmunds.

CARPOCAPSA NIMBANA, H. S.—The two dark moths Mr. Whittle bred from beech-mast are no doubt this moth, so much wanted in nearly all collections. I first bred it, a single specimen, in May, 1889, and since those days have bred a fair quantity but always in small numbers; one lucky season I bred fifteen, but never so many before or since. I have never seen the feeding larva, but no doubt it feeds in beech-mast. I only on one occasion met with the imago, four specimens, at rest on the beech-trunks, after a heavy gale the previous night. Although I have spent very many hours in searching the trunks of beech-trees at all hours of the day from 6 a.m. till dusk, I never found any other specimens. To breed the moth I prise off any little pieces of loose bark I can find on the trunks of the large trees during the month of April, and once in a while a little cocoon will be found, sometimes containing a larva, or later in the month a pupa, but *very* much more frequently it will be an empty one! Searching for these cocoons where there is no lichen or moss to peel off, as is alas! generally the case in the London district, is one of the most dreary, monotonous occupations imaginable, and often a very disappointing one. Always use silver pins, as the moth, unlike its near relative, *C. juliana*, is very subject to grease and verdigris. The imago comes out early in May.—A. THURNALL.

EUPECEILIA UDANA, Gn.—I was much surprised to read in the October number of the 'Entomologist' (p. 295) that so experienced a collector as Mr. Whittle had not met with this species until July last. I found the larva the first time I looked for it! This was on Hackney marshes as far back as 1885. Since then I have hardly ever failed to find larvæ wherever the food-plant (*Alisma plantago*) grows freely. The perfect insect is not so often seen. The best way to obtain the species is to search by splitting open a few of the dead stems, and the larvæ, if present, will be found throughout the winter months spun up in little cocoons attached to the side of the stem; they are easily overlooked, but if the pith shows signs of having been gnawn and frass is scattered about, one may be sure that the larva is somewhere in the stem, usually in the upper half. Now gather a good bundle, trimming off the branches, and stick the main stems in the garden; towards the end of May bring them into the house and they will soon come straggling out, often over a period of many weeks. Pin them with *silver* pins to avoid verdigris.—A. THURNALL; Wanstead, November 12th, 1910.

EMERGENCE OF COSSUS LIGNIPERDA.—With reference to Mr. Robert Adkin's note on *Cossus ligniperda* (*ante*, pp. 315), I have

had some little experience in breeding and noting the emergence of this interesting moth. I have always noticed that the pupa protrudes a great part of its length during and after the emergence of the moth through the cocoon, and in some cases where the cocoon is buried at some little depth, either in earth or wood, showing through this also. On numerous occasions in the breeding cage I have been able to watch the commencement of the emergence, when the head of the pupa breaks through the cocoon and gradually by movements almost imperceptible works itself partly out of the cocoon, then resting awhile before the moth actually commences to burst away the head of the pupa and work its way out and crawl to some suitable spot to expand and dry its wings, though in a good many cases it will cling to the cocoon to dry these. I have a piece of decayed willow with cocoons and earth, measuring $5\frac{1}{2}$ in. \times 4 in. \times 3 in., from which fourteen *Cossus* emerged this year, and I think I had every one under observation while they came out: seven on June 26th; one male on the 27th; one male and two females on the 28th; one female on the 30th and two females on July 1st. In all cases they commenced breaking through the cocoon between 1.15 and 2 p.m. and were clear and commencing to expand, the earliest at 2 p.m., and the latest at 2.40.—LAURENCE S. HODSON; Maissonnette, Palmers Green, N., November 14th, 1910.

LEUCANIA LOREYI, &c., IN THE SOUTH OF IRELAND; LEUCANIA VITELLINA, &c., IN KENT.—Among a number of Lepidoptera captured this year in the neighbourhood of Queenstown by my friend Commander R. S. Gwatkin-Williams, R.N., and which he sent to me to determine for him, was a fresh-looking example of *Leucania loreyi*. Upon writing for further particulars, Commander Gwatkin-Williams informs me that he beat the moth from ivy-bloom on his garden wall, about thirty yards from the sea, on October 6th. The night was fine and clear but rather cold, and calm, after a succession of south-easterly gales. It was a male in bright and perfect condition, with the exception of a small slit in one of the hind wings, which was probably done at the time of capture; the fringes were entire, and I should imagine it had not flown far. It is much paler than the figure given in South's 'Moths of the British Isles,' plate 149, fig. 6; but Newman's figure, No. 444, of 'Illustrated Natural History of British Moths,' gives a very good idea of it. The larva and food-plant are apparently unknown, so far as I can ascertain from books in my possession. If, however, anything should be known about either, I shall be glad of information on the subject. Among the other insects sent for determination I found *Dianthæcia cæsia*, *D. capsophila*, *Leucania straminea*, *Tapinostola fulva*, *Hydræcia micacea*, &c., all captured in the same locality. Commander Gwatkin-Williams only began collecting two or three years ago, and last year he sent me some insects he had taken in Kent to name for him, and among them I found a couple of *Leucania vitellina*, *C. fluctuosa*, *Argyrolepis æneana*, &c. The *vitellina* were taken at sugar, near Sheerness, late in September. It is proverbial how lucky beginners are!—GERVASE F. MATHEW; Dovercourt, Essex, November 16th, 1910.

THE RAYNOR GROSSULARIATA, AND THE TURNER COLLECTION.—On Tuesday, October 25th, just over two hundred specimens, all more or less remarkable varieties of *Abraxas grossulariata* reared by the Rev. Gilbert H. Raynor, were offered at auction at Stevens's Rooms. It was not the first time that such varieties of the species had been disposed of. It will be remembered that some three years ago (October 22nd, 1907, Entom. xl. p. 294) Mr. Raynor sold his collection of British Lepidoptera, and included with it were a number of aberrations of *A. grossulariata* that he had accumulated during his pedigree breeding experiments with this species. The more direct results of the said experiments were, we believe, presented with their data to the Cambridge University Museum. Since that time Mr. Raynor appears to have devoted a large measure of his energies to rearing this species with a view to obtaining varieties, and those offered on October 25th included the more abnormal forms. Among them were some truly remarkable specimens, but it is doubtful, having regard to the very scanty data with which each of the two hundred and odd lots into which they were divided was accompanied, whether they were of any great scientific value. "Lancs. ex No. 4. 08. Bred 22. vi. 09. Raynor," for example, may be all very well in its way, but it conveys no intelligible meaning to one's mind. Indeed, one would suppose that, to fully appreciate their bearing upon any particular lines of variation that the species might be taking, it would be necessary to have the whole of the specimens comprised in the various generations leading up to these extreme forms before one; but as they stood, lot by lot, they conveyed little information beyond the fact that in certain conditions of interbreeding, which were not disclosed, forms dissimilar to any found under natural conditions might be produced. No doubt Mr. Raynor has this information, and it is to be hoped that some day he may see his way to publish it in such a form that the meaning of these remarkable aberrations may be apparent. This present lack of detail did not, however, prevent very high prices being obtained. A large, almost unicolorous, pale buff, example with black markings along the costa, catalogued as "Wonderful female, combining *nigricostata* with *lacteasparsata*," brought £11, which is, we believe, a record for any variety of this species; and a somewhat similar but slightly smaller specimen £7 10s. Three typical pairs of ab. *lacticolor* sold at 15s., 14s., and 14s. per pair, respectively, while various modifications of this form sold separately brought from 5s. to 37s. 6d. each, the latter price being for an "extreme var., with all markings on fore wings much suffused." Ab. *chrysostrata* varied between 8s. and 30s. apiece, and ab. *iochalca* between 7s. and 52s. 6d., the more typical specimens apparently being the least sought after. Two female *gloriosa* sold for 45s. and 42s. each, and one described as "Magnificent, with three-fourths of fore wings solid black and chocolate intermixed," ran up to six guineas, while several ab. *nigricostata* brought from 35s. to 70s. apiece, and sundry *centralipunctata* and its modifications realized from 14s. to 30s. per specimen. Three pairs of ab. *albipalliata* sold at 17s. to 22s. per pair, ab. *flavipalliata* at 11s. to 30s. each, while a couple of fine richly-coloured examples brought 60s. and 55s., respectively, and "an extraordinary iridescent female" 65s.,

the total realized for the two hundred and odd lots being nearly as many pounds.

In contrast with the scramble for the above-mentioned curios was the apparent apathy displayed towards the collection of Lepidoptera formed by Mr. E. Turner which was then offered. The specimens were, as a rule, in good order, but, except in the case of some few of the rarer species, without any data; and perhaps for this reason, as on some former occasions, many of the lots of the more ordinary species were disposed of with difficulty, sometimes two or three lots having to be lumped together before a buyer could be found even at a few shillings. The highest price given for *Polyommatus dispar* was 65s., others going at 63s., 60s., 20s., and two together for 18s. A lot containing eight *Thecla pruni* and some seventy other hairstreaks brought 20s., and another in which seven *Sesia scoliiformis* and six *S. sphegiformis* (bred; Sussex) were included, 18s. Two pairs of *Lalía cænosa* (H. Doubleday, 1851, from Rev. Joseph Green's collection), 30s. per pair; a rather nice specimen of *Lasiocampa ilicifolia* (R. Weaver, from Rev. J. Green's collection), 45s.; and *Hydrilla palustris* taken by E. Turner, Wicken Fen, June 7th, 1907, 35s. Two males of *Cleora Viduaria* (H. Doubleday, 1851) were sold for 18s.; a lot of 147 geometers, in which a variety of *Zonosoma trilinearia* without markings was included, made 7s.; and one of 111, among which was a "black" form of *Acidalia aversata*, 14s.; and a fine light variety of *Triphæna fimbria*, one of two taken at Folkestone, July, 1905, 47s. 6d.—R. A.

CAPTURES AND FIELD REPORTS.

MICRO-LEPIDOPTERA AT MALVERN WELLS AND WEST MALVERN.—I spent the last week of July, 1910, at Malvern Wells, and I took or observed the following species:—*Botys ruralis*, *Crambus perlellus*, *C. culmellus*, *Mimæseoptilus pterodactylus*, *Tortrix unifasciana*, *T. viridana*, *Dictyopteryx læstingiana*, *Grapholitha penkleriana*, *G. nevana*, *Symæthis oxyacanthella*, *Swammerdamia griseo-capitella*, *Orthotelia sparganella* (pupa), *Monochroa tenebrella*, and *Argyresthia nitidella*. These were all taken on the Worcestershire side of the hills. In the Croft Farm Woods I took, on July 27th, *Scopula olivalis*, *Crambus culmellus*, *Dictyopteryx forskalæana*, *Hedya dealbana*, *Grapholitha penkleriana*, *Pædisca corticana*, *P. occultana*, *Ephippiphora tetragonana* and *Argyresthia nitidella*. As so few lepidopterists collect Micros, I make it a practice to send my list of observations when away from home, however meagre they may be, for the benefit of those who keep the records for their respective counties. Much pleasure is to be derived from studying these small creatures, and they help to swell the bag when Macros are few and far between. Among the latter the two best things observed were *Acidalia emarginata* (a female) and *Triphæna interjecta*, both near Malvern Wells, the former laying several ova, from which I have larvæ hibernating. Mr. E. A. Atmore, King's Lynn, has

kindly verified a few of my captures about which I was not reasonably certain.—G. W. MASON; Barton-on-Humber.

SCARCITY OF WASPS IN THE NEW FOREST.—During the past summer and autumn wasps have been more than scarce; in fact, I have seen only two—the one flew into the house during the latter part of September, and the other I found in my sweeping net about the same date. This seems all the more curious as in the spring the queens were exceptionally common. Members of the local horticultural society are congratulating themselves on having exterminated wasps, as prizes are given each year to those persons who kill the largest number of queens; the number sent in this season being over three thousand. Although this slaughter may account for the scarcity in a measure, it is not a satisfactory explanation, as I hear reports of a similar dearth of wasps from other parts of the New Forest, where insect-hunting horticultural societies do not exist.—G. T. LYLE; Brockenhurst, October 22nd, 1910.

SCARCITY OF WASPS IN THE CHICHESTER DISTRICT.—There has been a great scarcity of wasps here, and in the neighbourhood, this year. My gardener tells me that he has not seen a single nest. In contrast with the paucity of wasps has been the extraordinary number of flies (*Musca domestica*), which have been a cause of considerable annoyance in many ways.—JOSEPH ANDERSON; Alre Villa, Chichester, October 26th, 1910.

OCCURRENCE OF NYCTIBORA SERICEA, BURM., A WEST-INDIAN COCKROACH, IN THE ISLE OF WIGHT.—A fine specimen of this cockroach has been recently presented to the British Museum by J. Taylor, Esq., of Sandown, Isle of Wight. It was found in that town among bananas imported from Jamaica about mid-summer, 1906. I have not been able to find any previous record of this species in Britain, no mention being made of it in Barr's 'British Orthoptera.'—G. MEADE-WALDO.

CYANIRIS ARGIOLUS IN OCTOBER—I have a specimen of *C. argiolus* taken on October 29th, 1899, in my kitchen garden at Greenhithe. It is a female, absolutely perfect; in fact, it had only just dried its wings on some ivy in the hedge.—A. B. FARN; Breinton Lodge, near Hereford, November 3rd, 1910.

[Mr. Dennis (Proc. S. Lond. Ent. and Nat. Hist. Soc. 1902, p. 106) states that on October 9th of that year he found all stages of *C. argiolus* among ivy at Earl's Colne, Essex.—ED.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 19th, 1910.*—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—Dr. A. Feynes, M.D., of 61, East Colorado Street, Pasadena, California, U.S.A.; Mr. Thomas Henry Geary, of Enderby, Leicestershire; and Mr. Edward Barton White, M.R.C.S., L.R.C.P., of the City Mental Hospital, Cardiff, were elected Fellows of the Society.—

Mr. A. M. Lea sent for exhibition two interesting examples of *Lissotes* beetles, which he had presented to the British Museum (Natural History) Teratological Collection: *L. curvicornis*, Ber. var. 3, with an additional leg jutting out from the left front coxa; and *L. punctatus*, Lea, an hermaphrodite having the left side male and the right female.—Mr. H. St. J. Donisthorpe exhibited an example of *Helcon ruspator*, L., a Braconid new to Britain, taken at Cannock Chase on the 16th July last, in a cell of *Strangalia 4-fasciata* in a fallen birch tree, and an example of the host captured at the same time. He pointed out that this very fine addition to the British List is recorded as parasitic on the same beetle on the Continent.—Mr. P. J. Barraud showed examples of two new forms of *Melitæa aurinia* from Italy:—(a) var. *aurunca*, Turati, from the Aurunci Mountains, southern central Italy, first discovered in May, 1909, by Sig. Querci, of Formia, the most striking feature of which is the wide black median band on the upper side, contrasting with a rather pale ground colour, and (b) var. *comacina*, Turati, from above Como.—Mr. A. E. Gibbs exhibited a case of butterflies containing a representative collection of the twenty-eight species met with by him at Blidah and Hammam R'irha, &c., during an entomological excursion to Algeria made at the end of May and the beginning of June this year. The weather was extremely bad throughout, being cold, wet, and windy; the most interesting species taken in the first-mentioned locality were *Euchlōe eupheno* and *Cænonympha arcanioides*; in the latter, *Dryas pandora* and *Melitæa ætheria* var. *algerica*.—Mr. W. J. Kaye exhibited many remarkable wasp-like and beetle-like Syntomidæ, with their models, the wasps and beetles from British Guiana, South-east Brazil, and Venezuela. Attention was particularly drawn to the wonderfully close habits of the one to the other, so much so that it was impossible in some instances to distinguish the moth from the model until it settled. This was especially the case with *Pseudosphex noverca* and the wasp *Zethus binodis* which Mr. Kaye had caught on *Ageratum* flowers at Fernandes Pinheiro, in Parana. A new species of *Pseudosphex* was taken with the Vespid *Meganthopus cassununga*. These two insects so closely resembled one another that, even at a distance of eighteen inches or less, it was not an easy matter to distinguish them. From Caracas, Venezuela, were shown the Syntomid *Macrocneme lades*, with a Pompilid wasp of an undescribed species. The two insects had been caught flying together. In the discussion which followed, the President said that cases of close similarity with insects of different orders were always welcome, and that in this instance Mr. Kaye had shown that the resemblance extended not only to outside appearances, but to the habits of the several mimics and their models. Arguments based upon cabinet specimens alone as to the supposed resemblance of originals in the field were to be accepted with caution. Mr. J. W. Tutt, Mr. C. J. Gahan, Mr. G. C. Champion, the Rev. F. D. Morice, Mr. A. Sich, and Dr. Chapman also joined in the discussion.—Mr. E. D. Nevinson showed bred series of *Xanthia ocellaris* developing three distinct aberrant forms, and examples of *X. fulvago* and *X. gilvago* for comparison, the exhibit demonstrating the apparent transition from one species to the other

through the typical and variant forms. The only other series bred from British ova by Mr. Mills in 1908 displayed no variation of any kind, and were all typical specimens.—The Hon. N. C. Rothschild exhibited a number of Anthrocerids captured in Great Britain, and called attention to some remarkable specimens secured at Ashton Wold, Oundle, which belonged to the form known as *Anthrocerus hippocrepidus*. The exhibitor also showed some very large specimens of *A. filipendulæ* from the same locality, and pointed out that this large race had apparently exterminated *A. hippocrepidus* in a locality where that species had only recently appeared.—Mr. J. W. Tutt said that he had also found *A. hippocrepidus* confined to rough pastures, and also with a tendency to die out in one spot and appear in a similar at no great distance. It was usually on the wing in June, early or late, according to season, but in the same season well ahead of *A. filipendulæ*. The two other sets of Anthrocerids exhibited by Mr. Rothschild he thought were *A. filipendulæ*.—Sir George H. Kenrick communicated a paper “On some Undescribed Butterflies from Dutch New Guinea.”—Mr. A. E. Wileman read a paper on “New Species of Heterocera from Japan.”

Wednesday, November 2nd, 1910.—Dr. F. A. Dixey, M.A., M.D., F.R.S., President, in the chair.—Mr. H. E. Andrewes, of 8, North Grove, Highgate, N.; Mr. J. R. Charnley, of Lyndhurst, Fulwood, Preston; the Rev. Archibald Downes-Shaw, of Kettlestone Rectory, Fakenham, Norfolk; Mr. G. E. Frisby, of 40, Windmill Street, Gravesend; Mr. O. M. Schmidt Göttmann, of 2, Forest Villas, Whipps Cross Road, Leytonstone, N.E.; Mr. Ernest Purnell Jones, of 7, Nantwich Road, Crewe; and Count Emilio Turati, of 4, Piazza S. Alessandro, Milan, were elected Fellows of the Society.—The President handed round for inspection a copy of the plaque designed in honour of M. J. H. Fabre, of Sérignan, Vacluse, an Honorary Fellow of the Society.—Professor T. Hudson Beare exhibited examples of the rare British beetle *Pterostichus aterrimus*, recently taken by him at Stalham, Norfolk.—Commander J. J. Walker brought for exhibition the following rare Coleoptera:—(a) a specimen of *Lathrobium longipenne*, Fairm., a beetle recently introduced as a British species, taken at Tubney, Berks; (b) a specimen of a remarkable ants’-nest beetle, communicated by Mr. C. French, from the Atherton district, N.S.W., and described by Mr. A. M. Lea under the name *Tretothorax cleistoma*, representing a new family of Coleoptera, the Tretothoracidae; also the ant with which the beetle was found; and (c) two specimens of *Thomosis guanicola*, Broun, a beetle allied to *Sphæridium*, &c., taken by Dr. L. Cockayne among penguin guano on the Bounty Islands, 490 miles south-east of New Zealand. Mr. G. C. Champion was of opinion that this beetle was a member of the Heteromrous section of the Coleoptera, and Mr. G. J. Gahan that it belonged to the newly constituted family Rhyssopaussidae.—Mr. R. J. le B. Tomlin brought for exhibition examples of the following British Coleoptera:—(a) *Macronychus 4-tuberculatus*, Müll., recently re-discovered in the River Teme; (b) *Enicmus histrio*, Joy and Tomlin, sp. nov.; (c) *Laccobius regularis*, Rey, from small *sphagnum* pools at Newbury; (d) *Cionus longicollis*, Bris., taken at Harewood Forest on

Verbascum thapsus on June 26th, 1909, the only previous capture in Britain being by Mr. Moncreaff at Portsmouth in 1871; and (e) *Bembidium tibiale*, Duft., a melanic example taken this summer by the River Monnow. Mr. Tomlin also exhibited, on behalf of Dr. David Sharp, F.R.S., examples of *Laccobius ytenensis*, Sharp, sp. nov.; and *Crepidodera impressa*, Fab., a littoral species recently introduced to the British list by Dr. Sharp from Hayling Island, since found in an exactly similar locality at Poole Harbour by Colonel Yerbury.—Mr. G. T. Bethune Baker showed an Asilid which he had taken at Macugnaga in August, with a dead female *Nomiades semiargus* in its mouth.—Professor E. B. Poulton, F.R.S., said that undoubtedly the Asilids inject, through the proboscis, a poison into their prey which kills them immediately.—Mr. H. St. J. Donisthorpe showed a specimen of *Claviger longicornis*, Müll., with its host *Lasius umbratus*, Nyll., taken by Father Schmitz in Germany. He said this species should occur in Britain with the same ant, and Father Schmitz had told him that April was the best month in which to look for it in the nests of *umbratus*, under deeply embedded, heavy stones.—Dr. T. A. Chapman exhibited a teratological example of *Pterostoma palpina*, one of a number of similar specimens bred from one brood of larvæ, and which may be called as a varietal (or aberrational?) name, var. *brevipennis*; also, on behalf of the Rev. C. R. N. Burrows, a specimen of malformation of the male appendages in *Acronycta tridens*, no similar specimen having been recorded.—Mr. H. M. Edelsten exhibited a bred example of *Leucania l-album*, obtained from ova laid by a female specimen taken by Mr. E. P. Sharp (Entom. vol. xlii. p. 322 (1909)). The species is double-brooded on the Continent, emerging in May to June and August to September; the first brood in this country might therefore have been overlooked, as the larvæ seem hardy enough.—Mr. R. South showed an exceedingly interesting and rather variable series of *Luperina guenéei*, Doubleday, sent him by Mr. W. Yates, of St. Anne's-on-Sea, who obtained them, chiefly this year, on the Lancashire coast. The first specimen in the series agreed well with the original description of *L. guenéei*, the others showed the typical ochreous coloration but were variable in marking. Mr. Yates considered four of the specimens melanic forms of *L. guenéei*, but the exhibitor expressed his opinion that they were certainly dark aberrations of *L. testacea*, probably referable to ab. *nigrescens*, Tutt. Mr. South also exhibited three of six specimens of *Oria (Synia) musculosa*, taken in the Salisbury district, in August, 1909, by Mr. H. Haynes, who captured others in August of the present year. The hind wings of the specimens exhibited were darker than those of most British or Continental specimens in collection.—Mr. F. C. Oldaker showed a case containing various aberrant forms of Lepidoptera, including (a) a very darkly marked example of *Argynnis glaucia*, from Switzerland; (b) examples of *Polygonia c-album* bred from ova, including one specimen, a female, of a very pale form; (c) a series of *Noctua ditrapezium*, including a form in which the ground colour of the fore wings is almost uniform dark reddish brown, the usual black markings being only slightly darker than the rest of the wing, and very faintly discernible; and (d) a series of *Epione advenaria*, bred from

ova at Haslemere, 1907; one of a remarkable race very much smaller than usual, and of a uniform dull brown colour, with white fringes, but no markings on the wings (Entom. vol. xli. p. 157), being similar to the male recorded (Entom. vol. xliii. p. 201) by Captain Cardew.—Mr. A. H. Jones exhibited a series of *Melitæa dictynna* var. *vernetensis*, Obth., taken by him this year at Vernet-les-Bains, Pyrénées-Orientales, and said that he regarded the so-called variety as probably a distinct species. With it he also showed examples of *M. dictynna* type, and *M. athalia* for comparison.—Dr. Malcolm Burr, D.Sc., M.A., communicated a paper entitled "A Revision of the Labiidæ, a Family of Dermaptera."—The Rev. F. D. Morice read a paper entitled "Hymenoptera Aculeata collected in Algeria: The Sphegidæ," being part v. of the work commenced by the late Edward Saunders, F.R.S., F.E.S., in the Trans. Ent. Soc., 1904, p. 515.—Professor E. B. Poulton, D.Sc., M.A., F.R.S., communicated a paper entitled "Experiments with the Larva and Pupa of *Uropteryx sambucaria* in Connection with their Colour Surroundings," by Elizabeth Bridges. At the close of the discussion which followed, the President proposed a special vote of thanks to Miss Bridges, who was present, and this was carried unanimously.—H. ROWLAND-BROWN, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*August 25th*.—The President in the chair.—Mr. Adkin exhibited a series of *Hesperia malva*, and read notes on the peculiar resting habit of the species.—Mr. Edwards, a box of Satyrinæ, and called attention to the varied local forms of *Ergolis ariadne*.—Mr. West (Greenwich), a series of the rare homopteron, *Typhlocyba cruenta*, from Box Hill, and specimens of *Oncotylis viridiflorus* from Ranmore.—Mr. Newman, an intermediate form of *Odontopera bidentata*; a female *Bithys quercus* with *adonis*-blue blotches on fore wings; bred examples of *Argynnis paphia* var. *valesina*; a female *Euchloë cardamines* with a thin streak of bright yellow scaling on the left fore wing, and another much darker at base of wings, with aberrant marbling on the under side; a partially gynandromorph of *Amorpha populi*; and a very darkly marked specimen of *Pseudoterpnæ pruinata* (*cytisaria*).—Mr. Hugh Main, the larva of a glowworm.—Mr. W. J. Kaye, a long series of *Morpho cytheris* (*thamyris*), taken by him at Castro Parana, South America.—Dr. Chapman, rich brassy examples of *Anthrocera filipendulæ*, and specimens of *Pieris rapæ* from near Hospenthal, of large size and single-brooded.—Mr. Sich, a specimen of *Aventula flexula* from Wisley, a series of *Coleophora albicosta* from Sheen, and a cocoon and imago of *Nepticula centifoliella*.

September 8th.—Mr. A. Sich, F.E.S., Vice-President, in the chair.—Mr. P. Barrett exhibited bred *Hyles euphorbiæ* from Sicily; also a number of reeds from which larvæ and pupæ of *Nonagria arundinis* had been extracted by birds.—Mr. Ashby, a series of *Anomala frischi* from the New Forest, three-fourths of which were of the beautiful blue-green variety.—Mr. West (Greenwich), a short series of the rare Homopteron, *Oliarius leporinus*, from Holmsley, New Forest.—Mr. Newman, long varied series of *Agrotis cinerea*

from N. Kent, and *Pachnobia alpina* from Rannoch, *Euchelia jacobææ* with red markings united, a number of *Spilosoma fuliginosa* bred in August from Aberdeen ova, laid in June, of the red southern form, and a varied series of *Amorpha populi*, including a unicolorous specimen and one with a greenish band.—Mr. Step, for Mr. Bishop, a cluster of *Drosera intermedia* from Cut-mill, which had captured a dragonfly *Agrion puella*.—Dr. Hodgson, a gynandromorphous *Brenthis euphrosyne* from Ashdown Forest.—Mr. Sieh, shells of the ova of *Coleophora niveicostella* on thyme, cases of *C. potentillæ* (?) and of *C. parvipennella*, and mines of the larvæ of *Cemiostoma scitella*, in hawthorn.—Dr. Chapman showed a series of slides illustrating various, chiefly structural, points in relation to the "blues," especially *P. argus*, *A. corydon*, and *A. thetis* (*bellargus*): their larvæ at various stages, characteristic hairs, honey glands, &c.; pupal structure, such as the curious pocket in *P. argus* and *A. thetis* between segments four and five of the abdomen, to receive the ends of the legs and antennæ; the male appendages, to illustrate their characteristic forms in the Plebeiiids; a series of specimens of the teeth at the end of the clasp of *P. argus* and also of a number of allied species, showing the great variation of these parts in *P. argus* and quite impossible to confound with the other species, where variation might be equally great, but specimens were not available for this. The specimens were all pressed quite flat so as to be perfectly comparable.

September 22nd.—Mr. W. J. Kaye, F.E.S., President, in the chair.—Dr. Chapman exhibited a bred series of a second brood of *Agriades corydon* from ova laid by spring imagines taken in the Riviera.—Mr. West (Ashtead), a bred series of *Malacosoma neustria*, containing a good proportion of very light and very dark forms in both sexes.—Mr. Andrews, short series of the Diptera, *Pegomyia setaria* and *Isopogon brevirostris* from Chattenden and Shoreham, Kent, respectively.—Mr. Newman, a *Celastrina argiolus* female with very wide black margin and spotted fringe, a *Pachnobia hyperborea* in which a radial segment of the hind wing has the rich markings of the fore wing, an orange *Arctia caja* with fore wings having only a few small blotches of dark marking, several forms of *Angerona prunaria* uniform and rich marbled, an *Adopæa lineola* with xanthic discal patches on all wings, and an *Abraxas grossulariata* extremely pale, with only a few scattered traces of black and yellow markings.—Mr. Kaye, for Mr. Percy Richards, a curious and unique specimen of the genus *Zanclognatha* with a combination of the markings of both *Z. grisealis* and *Z. tarsipennalis*, but considered as being the former species.—Mr. Step, the galls of *Cynips kollari* (?) from Bookham and compared them with *C. tinctoria* (?) brought from the Riviera by Dr. Chapman.—Mr. Turner, a box of Geometers which he had received from West Australia and was going to hand to Mr. Prout for identification.—HY. J. TURNER, *Hon. Rep. Secretary*.

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RECENT LITERATURE.

Memoirs of the Department of Agriculture in India. Entomological Series, vol. ii., No. 8. "Life-Histories of Indian Insects.—Coleoptera I." By H. MAXWELL-LEFROY, M.A., F.E.S., &c. Pp. 139–163, plates xiii.–xix. (June, 1910.) Thacker, Spink & Co., Calcutta and London.

DEALS with the life-histories of seven Indian beetles—*Phyllognathus dionysius*, *Anomala varians*, *Galerucella singhara*, *G. rugosa*, *Apomecyna pertigera*, *A. histrio*, *Cylas formicarius*, and *Cionus hortulanus* var. *major*. The various stages of all these insects, except *A. histrio*, are beautifully depicted on the plates.

The following have also been received:—

An Introduction to the Study of Rocky Mountain Bees. By T. D. A. COCKERELL and W. W. ROBBINS. Pp. 179–195, with eight plates of figures showing wing and other structural details. (Reprint from 'University of Colorado Studies,' vol. vii., No. 3; Boulder, Colorado, March, 1910.)

The Type-Species of the North American Genera of Diptera. By D. W. COQUILLET. (Reprint from 'Proc. U.S. Nat. Mus.,' vol. 37, pp. 499–647, Aug. 4th, 1910.)

Hawaiian Sugar Planters' Association. Division of Entomology. Bulletin 207.—"Army Worms and Cut Worms on Sugar-Cane in the Hawaiian Islands," by O. H. SWEEZEY (pp. 32, plates 3). Bull. No. 8.—"A Bibliography of Sugar-Cane Entomology," by G. W. KIRKALDY (pp. 72).

Insects and Entomologists: their Relations to the Community at Large. By Professor JOHN B. SMITH. Pp. 209–226 and 467–477. (Reprint from the 'Popular Science Monthly,' March, May, 1910.)

Injuries to Forest Trees by Flat-headed Borers. By H. E. BURKE. (From 'Year-book of Department of Agriculture for 1909,' pp. 399–415.)

U.S. Department of Agriculture. Bureau of Entomology: Technical Series:—No. 18: "The Anatomy of the Honey Bee," by R. E. Snodgrass. No. 19, pt. i.: "The Parasites Reared or supposed to have been Reared from the Eggs of the Gipsy Moth," by L. O. Howard, Ph.D. Part ii.: "Descriptions of Certain Chalcidoid Parasites," by J. C. Crawford.

Bulletins:—64, pt. viii.: "The Woolly White Fly: a New Enemy of the Florida Orange," by E. A. Back, Ph.D. 80, pt. v.: "On the Nut-feeding Habits of the Codlin Moth," by S. W. Foster. 82, pt. iv.: "The Life-History and Control of the Hop Flea Beetle" (*Psylliodes punctulata*), by William B. Parker. 85, pt. iii.: "The Clover-root Curculio," by V. L. Wildermath. pt. iv.: "The Sorghum Midge (*Contarinia sorghicola*, Coq.)," by W. Harper Dean. Pt. vi.: "Contributions to a Knowledge of the Corn Root-Aphis," by R. A. Vickery. Pt. viii.: "The Cow Pea Curculio," by Geo. G. Ainslie.

EXCHANGE.

[The publication of Notices of Exchange, or of Advertisements, in the 'Entomologist' is in no way a guarantee for the British nationality, authenticity, or good condition of the Species. This Notice is not given to throw doubt on the bona fides of Exchangers or Advertisers, but to absolve the Editor from responsibility, in case the liberty allowed should be abused.] *Marked * are bred.*

Duplicates.—Paniscus and Betulæ*: finest procurable; black pins; 1910.
Desiderata.—Local and uncommon insects only.—*C. Jolly*; 12, *Cheltenham Street, Old Basford, Nottingham.*

Desiderata.—Atomalis, Basistrigalis, Ulmella, Cembræ, Grevillana, Paludana, De Greyana, Anthemidana, Conspurcatella, Reticella, Douglasi, Birdella, Bison-tella, Politella.—*Hon. N. Charles Rothschild*; *Arundel House, Kensington Palace Gardens, London, W., England.*

Duplicates.—Cardamines,* Selene, Hyperanthus (under sides), Rubi, Argiolus, Malvæ, Tages, Linea, Sylvanus, Hamula* (2), Fagi (1), Trepida (3), Ditrapezium,* Triangulum,* Festiva, Herbida, Tenebrata, Promissa (2), Silaceata* (3), Albulata, Plagiata, &c. *Desiderata.*—Asiliformis, Ligniperda, Æsculi, Trifolii, Alni, Occulta, and many others.—*F. A. Oldaker*; *The Red House, Haslemere.*

Duplicates.—Some butterflies in papers from several countries. *Deside-rata.*—Butterflies from anywhere; many Europeans wanted.—*L. D. Symington*; *Looe, Cornwall.*

Duplicates.—Most of the Macros well-set in fine condition. *Wanted Specially.*—Fine Pupæ. S. Ligustri, Porcellus, Orion, Dodonea, Dictæa, Dictæoïdes, Carmelita, Vinula, Furcula, and many others; liberal exchange.—*L. W. Newman*; *Bexley, Kent.*

Duplicates.—Micacea, Tiliaria, Fuscantaria, Bipunctaria, Rivata (6), Conigera, (4), Lithoxylea (4), Interjectaria (4), Uncula (4), C-Nigrum (5), Plecta (6), Caniola (4), Oleracea (6), Bisetata (4), Nictitans (4), Literosa (4), Canitata (5), Unidentaria (7). *Desiderata.*—Numerous.—*Stanley A. Blenkarn*; "Norham," *Cromwell Road, Beckenham.*

Duplicates.—Pupæ: S. Populi, Ocellatus, Versicolor, Ligniperda, Prasinana, Hamula, Subumbrata, Obliquaria. *Desiderata.*—Pupæ of Bidentata and A. Betularia, especially melanic forms.—*W. Bowater*; 20, *Russell Road, Moseley, Birmingham.*

Duplicates.—Calysismæ Justinella, Orsotriæna Medus, Ypthima Stelleræ, and Lampides Ælianus. *Desiderata.*—Named British or Foreign insects of any order. *F. W. Sowerby*; *Stafford House, Cleethorpes.*

Duplicates.—Campanulata,* Subceiliata,* Absinthiata,* Actæon, Geryon, Griseola, B. Quercus, Derasa, Megacephala, Lithargyria, Sublustris, Gemina, Triangulum, Trapezina (red var.), Affinis, Lucipara, Apiciaria,* Tiliaria, Fuscantaria,* Pennaria, Dilutata,* Alchemillata,* Rubidata,* Tersata,* R besaria,* Mensuraria, Palumbaria, ova of Fuscantaria. *Desiderata.*—Numerous.—(*Rev.*) *A. M. Downes*; *Batheaston Vicarage, Bath.*

Duplicates.—Ova: Tiliaria (Forres), Chi (var.), Olivacea from very dark females, Elinguaria. Larvæ: Unanimis. Pupæ: S. Populi, Pisi, Bidentata. Imagines: Bidentata, Chrysitis, Pulchrina, Batis, Orbona,* Chi, var. Olivacea (very dark forms), Nebulosa. *Desiderata.*—Ova, larvæ, or pupæ of Syringaria, Bilunaria, Fuscantaria, Autumnaria, Erosaria, and Pennaria; also numerous imagines.—*Alfred Wm. Lynn*; 37, *Rodsley Avenue, Gateshead.*

Duplicates.—Chrysorrhœa,* Consortaria,* Illustraria,* Cervinaria,* Promutata,* Rivata,* Silaceata,* Moneta,* Comitata,* Subnotata,* Scabiosata, Macu-lata, Bipuctaria, Actæon, Bondii, Punctulata. *Desiderata.*—Numerous.—*J. Kenward*; 1, *Norfolk Gardens, Lower Addiscombe Road, Croydon.*

Duplicates.—Popularis, Cæruleocephala,* Pisi,* C. Nigrum, Cruda, Brunnea,* Baja,* Oleracea, Fimbria,* E. Alniaria* (from wild British parents), Belgiarina, Defoliaria, Aurantiaria, Boreata, Leucophaearia, Prunaria,* Obliquaria,* Strigil-laria. *Desiderata.*—Numerous, especially Sesidiæ.—*J. B. Morris*; 14, *Ranelagh Avenue, Barnes.*

Duplicates.—Melanopa. *Desiderata.*—Strigula, Sericea, Hamula, Ridens, Rufa, Bondii, Cribralis, Turfosalis, Glabraria, Muricata, Asthena, Sylvata, Pygme-ata, Virgaureata, Sexalata, Associata, and Griseata. Black pins and data.—*Francis C. Woodbridge*; *The Briars, Gerrards Cross, Bucks.*

Duplicatae.—A few of the dark variety (Nigrofulvata*) of *M. Litrata*.
Desiderata.—*N. reticulata* (Saponariæ), *Lychnitis*, varieties and offers.—*J. Arkle*; 2, *George Street, Chester*.

Duplicatae.—*Flammea*, *Bondii* (few), *Neurica* (2), *Sparganii* (3), *Phragmitidis*, *Putrescens*, *Leucophæa* (2), *Porphyrea*, *Populeti*, *Croceago*, *Gilvago*, *Aurago*, *Conspersa*, *Genistæ*, *Lychnitis*, *Asteris*, *Absinthii*, *Petrificata*, *Cracæ*, *Fluviata*, *Prunata*, and (not black pins) *Agathina* and *Ashworthii*, and many others.
Desiderata.—*Fluctuosa*, *Conspicillaris*, *Bajularia*, and *Fraxinata* (1), and to improve rows, *Trepida*, *Suspecta*, *Pygmæata*, *Rhamnata*, and *Gracilis* (red).—(*Rev.*) *A. Day*; *The Vicarage, Malvern Link*.

Duplicatae.—Very fine bred *Repandata*, var. *Nigra*, ditto *Nebulosa*, var. *Robsoni*, *Papilionaria*. *Desiderata*.—*Melanica* vars. *A. Ligustri*, *Menyanthidis*, *Arundinis*, *Morpheus*, *Agathina*, *Cruda*, *Abruptaria*, *Gemmaria*, *Roboraria*, *Consortaria*, *Consonaria*, *Cambricaria* (*W. Riding*); also pallid forms of many species, fine well-set species only.—*Wm. Mansbridge*; 4, *Norwich Road, Wavertree, Liverpool*.

Duplicatae.—*Cardamines*, *Ægon*, *Putrescens*, *Hispidus*, *Anomala*, *Caniola*, *Carpophaga*,* *Lichenea*,* *Dominula*,* *Mendica*,* *Nigra*, *Chi*, *Gracilis*, *Ripæ*, *Præcox*, *Fimbria*, *Ianthina*, *Tritici*, *Saucia*, *Chamomillæ*, ova or larvæ of *Lichenea*, *Nigra*, and *Lucerneæ*, pupæ of *Absinthii* and *Hirtaria*. *Desiderata*.—*Lychnitis*, *Bractea*, *Palæacea*, *Muscerda*, *Promissa*, *Fagi*, *Bicuspis*, *Furcula*, *Sicula*, pupæ or ova of *Gonostigma*, *Porcellus*, *Elpenor*, *Orion*, *Machaon*, *Carmelita*, *Ridens*, and unset *Exotics*, or books on *Exotic Insects*.—*J. Walker*; 7, *Mount Hermon Road, Torquay*.

Duplicatae.—*Plantaginis*,* *Lubricipeda* var. *Fasciata*,* *H. Sylvinis*, *Hectus*, *Fulva*, *Cordigera*, *Cracæ* (4), *Carbonaria*, *Sobrinata*,* *Vespertaria*, *Elymi*, *Captivuncula*, *Comes* var. *Curtisii*,* &c., *Graminis*, *Lunaria** (*Northern form*), *Bicolorata* var. *Plumbata*, *Subfulvata** vars., *Isogrammata*,* *Fluviata*,* *Cambria* (dark vars.), *Trifasciata* (dark), *Olivata*, *Tristata*, *Cervinata*,* *Cæsiata*,* *Badiata*,* *Runicis*,* *Snasa*,* *Glaresosa*, *Lutosa*, *Nigricans*. *Desiderata*.—Same as last month, and the following:—*Paniseus*, *Leporina*, *Myricæ*, *Lychnitis*, *Promissa*, *Sexalisata*, *Simulata*, &c.—*T. Ashton Lofthouse*; *The Croft, Linthorpe, Middlesbrough*.

Duplicatae.—*Cilialis*, *Margaritellus*, *Pascuellus*, *Inquinatellus*, *Phragmitellus*, *Hastiana*, *Caledoniana*, *Sordidana*, *Bimaculana*, *Ophthalmicana*, *Geminana*, *Fœnella* (2), &c. *Desiderata*.—*Furcatellus*, *Ericellus*, and many *Pyrales*, *Crambi*, *Tortrices*, and *Pterophori*.—*T. Ashton Lofthouse*; *The Croft, Linthorpe, Middlesbrough*.

Desiderata.—*Scoliaformis*, *Sphegiformis*, *Centonalis*, *Cænosa*, *Sicula*, *Strigosa*, *Simulans*, *Flammatus*, *Subrosea*, *Sobrina*, *Alpina*, *Barrettii*, *Armigera*, *Flexula*, &c. and offers in early stages. *Exchange*.—*Owen Wilson's* larvæ, forty coloured plates. 'Entomologists' Record,' from commencement to date, bound; and other works on *Lepidoptera* and other branches of *Natural History*.—*Ernest A. Rogers*; "Thorndale," *Hermosa Road, Teignmouth*.

Duplicatae.—Pupæ: *Ocellatus*, *Sagittata* (a few). *Imagines*: *Ocellatus*,* *Elpenor*,* *Ravida* (a few), *Unaninnis*, *Fimbria*,* *Gracilis*, *Iota*, *Xerampelina*,* *Gilvago*, *Advena*, *Sambucaria*, *Prodromaria*, *Unangulata*. *Desiderata*.—*Pinastri*, *Galii*, *Euphorbiæ*, *Bombyliformis*, *Apiformis*, many of the *Clearwings*, *Chlorana*, *Senex*, *Urticæ*, *Binaria*, *Cultraria*, *Ridens*, *Chryson*, *Bractea*, *Promissa*, *Roboraria*, *Cytisaria*, *Porata*, *Blomeri*, and very many others.—*James D. Coward*; *Haverholme Gardens, Sleaford*.

Duplicatae.—*Præcox*,* *Cursoria*, *Ripæ*,* *Tritici*, *Valligera*,* *Litoralis*,* *Literosa*, *Blanda*, *Morpheus*, *Zonaria*, *E. Succenturiata*, *E. Absinthiata*. *Desiderata*.—*Or*, *Quercana*, and numerous others. Preserved larvæ.—*T. Baxter*; *Min-y-Don, Bromley Road, St. Anne's-on-Sea, Lancs*.

Duplicatae.—*Chi** and vars., *Vetusta*,* *Juliaria*,* *Rhomboidaria** (dark), *Pudibunda** (large), *Spartata* and pupæ, *Mendica*, &c. *Desiderata*.—*Selene*, *Sinapis*, *Alsus*, *Lucina*, *Actæon*, *Paniseus*, *Senex*, *Mundana*, *Caniola*, *Testudo*, *Flavicornis*, *Ridens*, *Muralis*, *Parthenias*, and *Notha*. None but well black-pinned and set required or sent. Early stages preferred. Accepted offers answered, three days.—*H. W. Baker*; 73, *Limetree Place, Stowmarket, Suffolk*.

Duplicatae.—*Blandina*, *Ægon*, *Salicis*,* *Mundana*, *Flavicornis*, *Fuliginosa*,

Rurea* (dark), Baia,* Festiva* vars., Iota, Marginata, Gracilis, Chi and vars., Cambrica, Templi, Impluviata (dark), and Repandata* (fine Yorks and Delamere farms (4). *Desiderata*.—Numerous.—*W. G. Clutton*; 132, *Coal Clough Lane, Burnley, Lancs.*

Duplicates.—Caniola, Geryon, Lacertula, Puta, Ambigua, Obelisca, Putrescens, Literosa, Serena, Obscurata, Pedaria, Pennaria, Defoliaria, Designata, and Prunaria (4). *Desiderata*.—Numerous.—*H. Woodhead*; 55, *West End Road, Southall, Middlesex.*

Duplicates.—Muralis, Sphinx, L. Comma, Geryon, Aurata, Marginepunctata, Perla, Galatea, Jasioncæta,* *Desiderata*.—Stellatarum, Plantaginis, Pigra, Alsines, Nigricans, Triangulum, Populeti, Macilenta, Citrago, Carpophaga, Cucubali, Adusta, Consonaria, Porata, Certata, Prunata, N. Strigula, Muscerias, Sericea, S. Urticæ, Asella, Furecula, Bifida, Dodonea, Cuculla, Ridens, Myricæ, Albovenosa, Canna, Neurica, N. Reticulata, Depuncta, Caliginosa, Rectilinea, Venustula, Lychnitis, Glabraria, Diffinis, Brunneata, Sagittata.—*H. A. McNaught*; *Hazeldene, Penbury Street, Worcester.*

Duplicates.—Corydon, Z. Trifolii, Sylvinus (very large females), Derasa, Batis, Diluta, Flavicornis, Ochracea,* Putris,* Rurea and var. Combusta, Hepatica, Persicaria,* Gemina, Vestigialis, Tritici, Glareosa, Augur,* Ditrapezium,* Triangulum,* Brunnea,* Dahlii, Ianthina,* Fimbria,* Parthenias, Unca, Albicillata, Ulmata, Repandata,* Fulva (red and white forms), Vetusta, Exoleta, Oxyacanthæ and var. Capucina. *Desiderata*.—Very numerous.—*W. H. C. Bolton*; 48, *Phil-beach Gardens, Earl's Court, S.W.*

Duplicates.—Io,* Blandina, Sylvanus, Caia,* Dispar,* Pennaria, Pilosaria, Atomaria, Ulmata, Rupicaprararia,* Leucophaæaria (males), Aurantiaria (males), Defoliaria, Æscularia,* Multistrigaria, Albulata, Suffumata, Badiata, Falcula, Flavicornis, Perla, Rumicis, Fulva, Rurea and var. Combusta, Graminis, Gemina, Brunnea, Baja, Gothica,* Rubricosa, Instabilis, Cruda, Macilenta, Rufina, Litura, Satellitia, Cerago,* Silago,* Ferruginea, Chi, Nebulosa, Typica,* &c. *Desiderata*.—Very numerous, to extend and renew. Only fine insects, well-set on blackpins.—*G. Fleming*; 9, *Fairview Terrace, Merthyr Tydfil.*

Duplicates.—Commexa (Yorks, 1895), Rectilinea,* Exigua (6, fine), C. Reticulata (1), S. Andreniformis (1), Conspicularis (5), Geniste,* Furva,* Albicolon,* Contigua,* Geryon,* Thalassina,* Meliloti, Umbra,* Flammea,* Scolapacina, Abietaria,* Jasioncæta* (few), Cespitis,* Unca, Argentula, Dolobraria, Luctuosa, Aurago,* Ditrapezium,* Abjecta, Anceps, Basilinea,* Ochroleuca, Cinerea (6), Lithorhiza,* Fuscula, Arbuti,* Interrogationis, Persicariæ, Orichalcea* (3), Cracæ,* Rubricata, Dimidiata, Biserata, Repandata and vars. Adusta, Salicis, Leporina,* Humuli var. Hathlandica (2), Arundinis (Castanea), Dodonea,* Trepida, Porcellus,* Orbona var. Curtisii (3), D. minula,* Dispar,* Festucæ (3), Carpini* (4), Straminea, D. oo (1), Nigra, Alhi (1), Rufa, Quercana* (4), Lappanaria (2 females), Ambigua, and the following (on white and gilt pins): Sulphuralis, Venustula, Lichenaria, Glabraria, and Asellus, all good cabinet specimens. *Desiderata*.—Many local species for renewal (bred where possible, and well set), especially Sesias, various pupæ, ova and larvæ, especially Grossulariata from Midlands.—*Lawrance*; 2, *Arthur Street, New Oxford Street, London, W.C.*

Duplicates.—Iris,* Polychloros,* Sibylla,* Lucina,* Bombyliformis,* Meliloti,* Undulanus,* Quadra,* Plantaginis,* Fuliginosa var. Borealis,* Humuli var. Hethlandica, Velleda, Fascelina,* Cratægi* (dark), Calluna,* Versicolor,* Carpini,* Duplaris, Orion, Menyanthidis,* Turca, Haworthii, Lunigera, Agathina,* Glareosa (black), Subsequa, Piniperda,* Gracilis* (red), Rubiginea,* Cospersa* (black), Glauca,* Rectilinea, Solidaginis, Absinthii,* Bractea, Interrogationis,* Melanopa, Promissa,* Cracæ,* Fasciaria,* Dolobraria,* Syringaria,* Alniaria,* Glabraria,* Lichenaria,* Repandata var. Conversaria,* Abietaria,* Roboraria,* Orbicularia,* Immorata, Pictaria,* Alternata,* Grossularata* (fine vars.), Cusiata,* Salicata, Albulata var. Thules,* Blandiata, Dubitata,* Undulata,* Psittacata,* Populata,* &c. *Desiderata*.—Many Geometre to extend, and varieties or local forms of any species.—*Arthur Horne*; 60, *Gladstone Place, Aberdeen, N.B.*

Duplicates.—Rare Saturniæ and Parnassius. Cocoons: Saturnia Pyretorum, South China; Attacus Ricinii, Edwardsi, Atlas. Imagines: Edwardsi, Ricinii, Atlas (giants ex Java), Cricula Andrei (new sp.) life-histories; also Nudaurelia Ringleri, Menippe, Caffraria, E. Bauhinæ, Argema, Mimosa, Leto, Selene, Luna;

S. Ceanothi, Gloveri, Colombia; Calijula Simla and Japonica; also ova of same. Antherea Mysitta and var. Silvalica; Hemileuca Maia, Hera, Nevadensis; Parnassius Romanori (male and female), Nubilosus (male and female), Intermedius (male and female), Appolonius (male and female) and ab. Flavomaculata (male), Staudingeri (male and female), Clodius (male and female), and many others. Cocoons of many of above shortly. *Desiderata*.—Cocoons, pupæ, ova, set or papered specimens of rare and interesting Saturniæ and Parnassiinae. Correspondence desired with collectors in West Africa.—*J. Henry Watson; 70, Ashford Road, Withington, Manchester.*

Duplicates.—Paphia (white pins), Selene, Aurinia (2), Io, Galatea, Alexis, S. Populi, Ligustri (1), Elpenor (1), Apiformis (5, fair), Salicis (4), Carpini, Versicolor (2, white pins), Vinula (4), Nubeculosa (1, fair), Derasa, Flavago, Popularis, Graminis, Cespitis (fair), Valligera, Puta, Lunigera (1), Lucernea (1), Lunosa, Irregularis (2), Herbida (5), Nebulosa (pale form, 4), Vetusta, Melanopa (3), Cracca. *Desiderata*.—Cardui, Lucina, Actæon, Tipuliformis, Arundinis, Velleda, Asellus, Testudo, Strigula, Centonalis, Mendica, Rubi, Fasciaria, Tiliaria, Lapponaria, Glabraria, Extersaria, Obfuscata, Auroraria, Luteola, Omnaria, Piniaria, Sacraria, Gylvaria, Cassiopa, Sexalisata, Viretata, Firmata, Unangulata, Psitticata, Corylata, Spinula, Plumigera, Dodonea, Cæruleocephala, Tridens, Venosa, Lutosa, Petasitis, Abjecta, Anceps, Agathina, Simulans, Depuncta, Sobrina, Neglecta, Leucographa, Satellita, Cucubali, Lupulenta, Occulta, Advena, Glauca, Rectilinea, Cordigera, Myrtilli, Sulphuralis, Luctuosa, Venustula, Fuscula, Argentula, Notha, Urtica, Triplana, Fulvæ, Acrea.—*E. T. B. Reece; 185, Newport Road, Cardiff.*

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December 8th.—Paper, with Lantern: "An Entomological Tour in S. Brazil, by Messrs. W. J. Kaye, F.E.S., and Dukinfield Jones, F.E.S."

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Duplicates.—Larvæ: *Betularia*, *Pudibunda*. Pupæ: *Mendica*. *Desiderata.*—Larvæ: *Chlorana*, *Monacha*, *Fascelina*, *Fuliginosa*, *Dictæoides*, *Ziczac*, and *Anachoreta*.—*Herbert M. Baker*; 73, *Limetree Place, Stowmarket, Suffolk.*

Duplicates.—Few bred specimens of *Sesia Andreniformis* (N. Kent) and *D. Bicuspis*; also a quantity of bred *Præcox* (Lancs.). *Desiderata.*—Rare and local species in exchange for *S. Andreniformis* and *D. Bicuspis*, and many local species for renewal in exchange for *Præcox*.—*N. Dethoir*; 113, *Darling Place, Prestwick, Ayrshire.*

Duplicates.—*Corydon*, *Adonis*, *Ægon*, *Astrarche*, *Malvæ*, *Tages*, *Lineola*, *Aglaia*, *Semele*, *Caniola*, *Batis*, *Diluta*, *L. Comma*, *Putrescens*, *Favicolor* (fair, types), *Hepatica*, *Anceps*, *Gemina*, *Suasa*, *Instabilis*, *Munda*, *Miniosa*, *Rubiginea** (few), *Lutulenta* (4), *Anomala* (male), *Umbratica*, *Glyphica*, *Absinthii* (4), *Dodonea* (2), *Chrysomuchellus*, and many odd insects. *Desiderata.*—*Micacea*, *Rurea*, *Aquilina*, *Agathina*, *Umbrosa*, *Subsequa*, *Retusa*, *Oo*, *Diffinis* (3), *Semibrunnea*, *Iota*, *Triplasia*, *Dipsacea* (4), *Interrogationis*, and many *Geometra*.—*W. Crocker*; 53, *Park Terrace, Gillingham, Kent.*

Duplicates.—Larvæ: *Lucipara*, *Jacobææ*. Imagines: numerous. — *Desiderata.*—Numerous.—*S. A. Wallis*; 84, *Melton Road, West Bridgford, Nottingham.*

Duplicates.—Larvæ: *Vinula*. Pupæ: *Geminipuncta* (Sussex). Imagines: *Obscurata* (Lewes forms). *Desiderata.*—*Betula* (males), *Pruni*, *Paniseus*, *Sinapis*, *Furva*, *Elymi*, *Obsoleta*, *Littoralis*, *Pudorina*, *Pinastri*, *Unanimis*, *Ophiogramma*, *Fibrosa*, *Ravida*, *Ripæ*, and many others.—*Guy E. H. Peskett*; *Simla, Preston, Brighton.*

Duplicates.—*Cinxia** (under sides), *Aurinia**, *Selene*, *Ægon*, *Paphia*, *Corydon*, *T. Rubi**, *Cardamines* (under sides), *Galatea*, *Piniarius*, *Tipuliformis*, *Z. Trifolii**.—*Desiderata.*—Numerous.—*Sydney T. Thorne*; *Holmdale, Acland Road, Bourne-mouth.*

Duplicates.—Fine, well-set *Scopula*, *Decrepitalis*, and *Alpinalis*. *Desiderata.*—Well-set local *Macros*, larvæ, pupæ, &c.—*Thos. Salvage*; *The Plaquet, Arlington, Sussex.*

Duplicates.—Imagines: *Pisi**, *Moneta**, *Lythoxylea*, *Typica*, *Caja*, *Io*, *Strigilis*, *Plecta*, *Pallens*, *C-Nigrum*. *Desiderata.*—Larvæ: *Lanestris*, *Ligustri*, *Dominula*, *Machaon*, *Bicuspis*, *Ligniperda*, *Dispar*, *Ocellatus*, *Senecio*, *Dromedarius*, *Cucullia*, *Vinula*. Ova: *Quercifolia* and numerous others.—(Rev.) *E. Everett*; *Broughton Hill, Letchworth, Herts.*

Duplicates.—Larvæ of *Picata*, *Rivata*, *Unangulata*, *Thymiaria*; pupæ of *Rubidata*; imagos of *Putrescens*, *Nigra**, *Fibrosa*, *Cespitis*, *Suspecta**, *Haworthii**, *Cinxia**, *Io**, *Polychloros**, *Aglaia*, *Selene*, *Tages*, *Malvæ*, *Comma*, *Lineola*, *Actæon*, *T. Quercus**, *Minima*, *Galatea*, *Anomala*, *Adustata*, *Pyraliata*, *Affinitata* var. *Combusta*, *Oxyacanthæ* var. *Capucina**, *Dealbata* (2). *Desiderata.*—Fine and well-set pairs of insects, numerous.—*T. Blandford*; 6, *Weirfield Road, Exeter.*

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Duplicates.—Ova: Bidentata. Larva: Hirtaria. Pupa: Typica. Imagines: Ægon, Pudorina, Hirtaria,* Bidentata,* Pedaria, Strigillaria, Atomaria, Piniaria, Exanthemata, Dilutata, Leucophaëria. *Desiderata.*—Very numerous.—*G. Brooks; Ivyside, North Finchley.*

Duplicates.—Imagines*: S. Cecropia, A. Tau, A. Cynthia, A. Atlas, S. Scolia-formis, melanic A. Betularia and Bidentata. Larvæ: Bidentata (melanic), Cecropia, Japonica. *Desiderata.*—Larvæ of melanic forms of Geometers, or old numbers of 'Entomologist' or 'Barrett.'—*W. Bowater; Brandon Lodge, Russell Road, Moseley, Birmingham.*

Duplicates.—Larvæ: Tiliæ, Carpini, Hirtaria, Bidentata. Pupa: Z. Trifolii. Imagines: Selene, Cinxia (6). Ægon, Tjupuliformis, Trifolii (and fresh killed), Pudorina, Lucipara,* Derasa,* Moneta,* Bidentata,* Betularia and vars. Atomaria, Piniaria, Strigillaria, Palumbaria. *Desiderata.*—Numerous.—*G. Brooks; Ivyside, North Finchley.*

Duplicates.—Pupæ: Quercana, Potatoria. Imagines: Caja, Io, Pisi, Lithoxylea, Moneta (very fine). *Desiderata.*—Ova: Tiliæ, Ligustri, Ocellatus, Crceago. Larvæ: Bifida, Furcula, Tremula, Cuculla, Batis, Monacha, Carpini, Nupta, Machaon, Lanestris. Imagines: Trifolii, Buraria, Patheias, Luctuosa, Semele, Epiphron, Sibylla, G. C-Album, T. Betulæ, Edusa, Sinaïis, Athalia. Hope to get Salicis larvæ and pupæ in a week; glad to exchange.—*Rev. E. Everett; Broughton Hill, Letchworth, Hitchin.*

Duplicates.—A. Cratagi,* Rapea,* Paphia* var. Valezina,* Edusa, Davus, Cinxia,* Euphrosyne, Aglaia, Artemis,* Polychloros,* Urtica,* Io,* Galatea,* Blandina,* Egeria, W-Album,* T. Quercus,* Phlœas,* Adonis,* Corydon,* Minima, Lucina,* Malvæ, Tages, Linea, Lineola,* Actæon, Comma, Villica,* Prunata,* Putrescens, larvæ of Russata (nice forms), Pulveraria, Vinidata, pupæ of Suffumata, Unidentaria. *Desiderata.*—Fine and well-set pairs of insects; numerous.—*F. Blanchford; 6, Weirfield Road, Exeter.*

Duplicates.—Numerous Lepidoptera, Coleoptera, Hymenoptera, Diptera, &c. Many good species. *Desiderata.*—Pyrales, Crambi, and local Micros; especially Tortrices, Northern Biting Flies (Tabanus, &c.), Lophyrus Fini (aly stage), Sirex, Rhyssa Persuasoria; also numerous Fen insects.—*Bernard Smith Harwood; 94, Station Road, Colchester.*

Duplicates.—Bimetii, Mendica, Pastinum, Persicaria. Larvæ: Casirensis. *Desiderata.*—Numerous.—*Postmaster; Frindsbury, Rochester.*

Duplicates.—Paphia, Valezina, Artemis, W-Album, Betulæ, Artaxerxes, Tiliæ, Cribrum, Meliloti, Carniola, Orion, Herbida, Abietaria, Cinctaria, Orbicularia,* Albulata var. Thules, Immanata (Shetland vars.), Venerata (Shetland var.), Consersa (fine melanic vars.), Humuli (fine Shetland vars.), Confua (Shetland, unset, 1909), Emutaria, Senex, Trepidaria, and many others. *Desiderata.*—Pupæ only of the following: Grossulariata, Caja, Paphia, Adippe, Villica and Fascelina (Northern). Fertile females or ova only: Atomaria (Northern), Clathrata, Grossulariata (Northern).—*Percy M. Bright; Fairfield, Wimborne Road, Bournemouth.*

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Duplicates.—*Andreniformis** (few), *Vitellina* (1, good). *Desiderata.*—*Scoliiformis*, *Sphægiformis*, *Albimacula**, rare *Noctuæ.*—*P. P. Milman*; *Cyprina*, *Paignton, South Devon.*

Duplicates.—*Carniola**, *Villica**, *Fuliginosa**, *B. Quercus*, *Potatoria**, *Vitellina* (1, fair), *Elymi* (fair), *Matura*, *N. Rubi*, *Typica**, *Verbasci**, *Umbratica*, *Flavocincta*, *Chi. Nigra*, *Lun. sa*, *Bidentata*, *Immorata* (4), *Fluviata**, *Tersata*, &c. *Desiderata.*—*Formiciformis*, *Sericea*, *Ocularis*, *Aceris*, *Alni*, *Coryli*, *Oo. Ciesia*, *Olivacea*, *Iota*, *Glabraria*, *Rubricata*, *Berberata*, *Munitata*, *Lapidata*, *Griseata*, &c.; *Deltoides*, *Pugs* on black pins, or rare British marine shells.—*P. P. Milman*; *Cyprina*, *Paignton, South Devon.*

Duplicates.—*Galatea*, *Lucina*, *Tages*, *Malvæ*, *Tithonus*, *Phlæas*, *W-Album*, *Cinxia**, *Egeria*, *Euphrosyne*, *Actæon*, *Selene*, *Adonis*, *Corydon*, *T. Quercus**, *Linea*, *Lineola**, *Comma*, *Salmacis* (few), *Flammea* (few), *Helmanni* (few), *Castaneæ* (few), *Aprilina**, *Suspecta**, *Fulva*, *Fuliginosa**, *Mesomella*. *Io**, *Polychloros**, *Aglaiæ*, *Prunata*, *Adustata*, *Piniaria*, *Luteata*, *Arbuti*, *Russata** (nice forms), *Anomala*, *Mendica*. *Desiderata.*—Fine and well-set pairs of insects, especially *Clearwings.*—*F. Blanchford*; 6, *Weirfield Road, Exeter.*

Duplicates.—*Cinxia**, *Astrache* (*Surrey*), *A. Comma*, *Lonicæræ**, *Meliloti*, *Lacertinaria**, *Pigra**, *Persicariæ**, *Capsincola**, *Tritici*, *Triplasia**, *Geminipuncta**, *Macularia*, *Pulveraria**, *Ulnata*, *Autumnaria**, *Alniaria**, *Tetralunaria* (*Æstiva*)*, *Ferrugata*, *Siderata*, and many others. *Desiderata.*—*Lycænidæ* from *N. England*, *Scotland*, and *Ireland.*—*Richard South*; 96, *Drakefield Road, Upper Tooting, London, S.W.*

Duplicates.—*Larvæ*: *Salicis*. *Pupæ*: *Hirtaria*. *Imagines*: *S. Ligustri**, *S. Populi**, *Lurideola*, *Jacobææ*, *Humuli* (female). *Salicis**, *Monacha*, *Pudibunda**, *Potatoria**, *Vinula** (female), *Dersa*, *Perla*, *Cæruleocephala*, *Lithargyria*, *Pudorina*, *M. Flammea*, *Straminea*, *Canna*, *Gemina*, *Arcuosa*, *Putæ*, *Augur*, *Pistacina*, *Circellaris*, *Viminalis*, *Aprilina**, *Lucipara**, *Meticulosa*, *Nebulosa*, *Protea*, *Prunaria*, *Alniaria*, *Pennaria*, *Hispidaria** (male and female), *Roboraria*, *Piniaria* (male). *Leucophæaria* (male), *Bipunctaria*. *Desiderata.*—*Sesiidæ*, *Dianthocæie*, *Eupitheciæ*, and many others. List on application.—*Lloyd Chadwick*; 7, *Northgate Street, Warwick.*

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Duplicates.—*Barrettii* var. *Ficklini*, a few fine. *Desiderata.*—*Pronubana*, and other local *Tortrices.*—(*Rev.*) *W. Claxton*; *Navestock Vicarage, Romford.*

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Duplicates.—*Minima*, *Argiolus*, *Tages*, *Lineola*, *Neustria*, *Cultraria*, *Binaria*, *Glaucata*, *Dersa*, *Hepatica*, *Pyramidea*, *Plecta*, *Festiva*, *Oxyacanthæ*, *Trifolii*, *Chrysis*, *Syringaria*, *Quercinaria*, *Crepuscularia*, *Pruinata*, *Linearia*, *Adustata*, *Bicolrata*, *Ocellata*, *Designata*, *Testata*, *Plumbaria*, *Albicillata*. *Desiderata.*—*Numerous.*—*D. P. Betts*; 65, *Waterloo Road, Leyton, Essex.*

Duplicates.—*Nebulosa* var. *Robsoni*, *Suspecta*, *Scolopacina*, and other local insects. *Desiderata.*—Many southern insects.—*G. Bunce*; 1, *Johnston Street, Wakefield.*

Duplicates.—Salmacis, including one Allous, Ripæ, Cursoria, Præcox. Larvæ: Ruberata, Impluviata (black), Menyanthidis (black form), Salicella (some melanic). Ova: Cervinata, Chi var. Olivacea, &c. *Desiderata*.—Pupæ only of Gothica, Galiata, Stabilis, Munda, Rivata, Hispidaria, Hirtaria, Propugnata, or offers.—*John Baxter*; 13, *Birtley Lane, Birtley, S.O., Durham*.

Duplicates.—Chi, Perla, Lucipara, Psi (a few), Galatea. *Desiderata*.—Only the following ova or young larvæ of S. Populi, Ocellatus, Ligustri. Larvæ: Plantaginis, Dominula, Villica. Imagines: Hyale, Stellatarum, Porcellus.—*C. B. Holland*; 22, *Watson Road, Broomhill, Sheffield*.

Duplicates.—Endomychus Coccineus, Rhagium Bifasciatum, Grammoptera Ruficornis, Strangalia Armata, S. Melanura, &c. *Desiderata*.—Very numerous in all orders of insects.—*F. W. Sowerby*; *Stafford House, Cleethorpes*.

Duplicates.—Larvæ of Bractea. *Desiderata*.—Local species and varieties.—*J. E. R. Allen*; 16, *Richmond Road, Altrincham*.

Duplicates.—Caja, Literosa, Blanda, Sublustris, Rivata, Interjectaria, Conigera, Putris, Sibylla, Oleracea, Tages (5), Lithoxylea (6), Juniperata (3), Gemini-puncta,* Griseola (4), Caniola (4), Polyodon var. Æthiops (4), Rurea var. Combusta (3), Cribrum (2), Helveticaria* (1), Togata* (2), Geryon (3), Stramineola (1), Picata (3), Bipunctaria, Incanaria. Larvæ: Chenopodii. *Desiderata*.—Nearly all the Clearwings, many Eupithecia, Fuciformis, Bombyliformis, Apiformis, Crabroniformis, Annulata (6), Pendularia (6), Auroraria, Belgiana, Humiliata, Straminea, Holosericata, Subsericeata, Degeneraria, Trigemina, Rubiginata, and many others.—*Stanley A. Blenkarn*; *Norham, Cromwell Road, Beckenham*.

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Duplicates.—Paphia, Galatea, Blandina, Sibylla, Io, W-Album, T. Rubi, Adonis, Lucina, Tiliæ, Meliloti, Undulans, Senex, Plantaginis, Monacha, Falcula, Hamula, Dictæa, Palpina, Ziczac, Dromedarius, Consortaria, Irrorella, Albulata var. Thules, Rubiginata, Montanata (Shetland vars.), Fluctuata (melanic Shetland), Immanata (Shetland ones), Venusta (Shetland var.), Batis, Pudorina, Graminis, Serena, Oxyacanthæ, Herbida, Miniosa, Prunaria, Illustraria, Orbicularia, Emutaria, Belgiana, Pictaria, Albicillata, Psitticata, Absinthiata. *Desiderata*.—Pupæ, especially V. Urticæ, Machaon, Conspersa, Punctaria, Pendularia, Ocellatus, S. Populi, Tiliæ, ova or larvæ of Atomaria and Clathrata.—*P. M. Bright*; *Fairfield, Wimborne Road, Bournemouth*.

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Duplicates.—Selene, Egon, Tiliæ (3), Tipuliformis, Trifolii,* Senex, Griseola, Pudorina, Straminea, Phragmitidis, Putris, Lithoxylea, Persicariæ,* Arcuosa, Blanda, Lunigera (5), Nigricans, Augur,* Orbona,* Typica,* Affinis, Viminalis, Lucipara,* Cassinea (5), Moneta,* Chrysis, Bidentata,* Zonaria* (4), Pennaria, Pedaria, Betularia (vars.), Clathrata, Atomaria, Piniaria, Strigillaria, Leucophæaria, Dilutata, Russata,* Testata, Plumbaria. *Desiderata*.—Globulariæ, Ridents, Populeti, Opima, Tincta, Lichenaria, Luridata, Punctularia, Vernaria, Pendularia, Sylvata, Blomeri, Cambrica, Ornata, Inornata, Alternata, Notata, Murinata, Dealbata, Salicata, Alchemillata, many Pugs, Berberata, Certata, Undulata, Paludata, and very many others.—*G. Brooks*; *Iwyside, North Finchley*.

Duplicataes.—Io,* Blandina, Sylvanus, Dispar,* Monacha,* Atomaria, Ulmata, Leucophaearia. Aescularia,* Multistrigaria, Albulata, Suffumata, Flavicornis, Rumicis, Rurea and var. Combusta, Graminis, Gemina, Strigilis, Tenebrosa, Corticea. Brunnea, Festiva, Cruda, Nebulosa, Parthenias, Typica,* &c. *Desiderata*.—Numerous; fine and well-set on black pins.—*G. Fleming*; 9, Fairview Terrace, Merthyr Tydfil.

Duplicataes.—Pilosaria (black), Leucophaearia var. Marmorinaria.—*Desiderata*.—Sesias, Mamestra, Dianthæcia, and Eupithecia.—*Sam Hainsworth*; 60, George Street, Saltaire, Yorkshire.

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Duplicataes.—*Andreniformis** (1910). *Desiderata*.—Local butterflies; good moths and vars. Data.—*G. B. Oliver*; Tettenhall, Wolverhampton.

Duplicataes.—Larvæ: Pudibunda. Imagines: *S. Ligustri*,* *Salicis*,* *O. Dispar** (females, normal size), Pudibunda.* *Desiderata*.—*Sinapis*, *Euphrosyne*, *Cinxia*, *Athalia*, *Polychloros*, *Egeria*, *Astrarche* (Medon) *Icarus* (Alexis), *Bellargus* (Adonis), *Minima* (Alsus), *Lucina*, *Malvæ* (Alveolus), *Lineola*, *Comma*, *Fascelina*, *Pavonia* (Carpini), and many common species.—*R. Laddiman*; 25, Drayton Road, Norwich.

Duplicataes.—Fine bred specimens of *S. Andreniformis*, *D. Bicuspis*, and *D. Rubiginea*; also *Concolor* (4), *Præcox*,* and pupæ of *E. Absinthiata*.—*Desiderata*.—*Iris*, *Scoliaformis*, *Sphegiformis*, *Centonalis*, *Castaneæ*, *Trifolii*, *Harpagula* (*Sicula*), *Algæ*, *Impar*, *Musculosa*, *Albipuncta*, *Cinerea*, *Sobrina*, *Ocellaris*, *Cæsia*, *Albimacula*, *Xanthomista*, *Empyrea*. *Exulis*, *Atriplicis*, *Semibrunnea*, *Gnaphalii*, *Orichalcea*, *Ni*, *Peltigera*, *Armigera*, *Gonostigma*, *Lapponaria* (males), *Limbaria*, *Consignata*, *Irriguata*, *Subciliata*, *Dodoneata*, *Togata*, *Lapidata*, *Rufata*, &c. Only the rarer species in exchange for *Andreniformis*, *Bicuspis*, *Rubiginea*, and *Concolor*.—*Norman Dethier*; c/o Post Office, Lynnmouth, N. Devon, till Sept. 12th. then "The Beech Wood," Beaconsfield, Bucks.

Duplicataes.—Imagines: *Plecta*, *Gothica*, *Inpura*, *Strigilis*, *C-Nigrum*, *Dispar* (female), *Salicis*, *Caja*, *Humili*, *Ianthina*. *Desiderata*.—Numerous imagines, Geometers, and Noctuas. Larvæ: *S. Ligustri*, *Ocellatus*, *Elpenor*, *Porcellus*, *Carpini*, *B. Rubi*, *Batis*, *Derasa*. Pupæ: *Lanestris*, *Vinnula*, *Piniperda*.—(Rev.) *E. Everett*; Broughton Hill, Letchworth.

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Duplicates.—Imagines: Strigilis, Psi,* Impura, Dispar,* C. Nigrum, Gothica. *Desiderata.*—Imagines: Spartiata, Lacertula, Hamula, Flavicornis, and many Geometers. Pupæ numerous, especially Elpenor, Lanestris, Carpini, Ligustri. Larvæ: Quercus and Quercifolia.—*E. Everett; "Ashleigh," Broughton Hill, Letchworth, Herts.*

Duplicates.—Z. Trifolii,* Autumnaria* (3). Pupæ of following: Pudibunda, Jacobæa, Lucipara, Persicaria, Bidentata, ova of Pistacina and Antiqua, and larvæ of Lunosa and C. Nigrum. *Desiderata.*—Very numerous; ova, larvæ, pupæ, and imagos.—*B. S. Williams; 77, Durham Road, East Finchley, N.*

Duplicates.—Valezina, Lathonia (3 types), W. Album, H. Urticæ, Coryli,* Fuscantaria,* Cinctaria, Consortaria, Extersaria,* Rusticata, Inornata, Degeneraria, Unifasciata,* Pulchellata,* Venosata,* Fluviata,* Lapidata, Vitalbata,* Rhammata, Curtula,* Plumigera,* Trepida,* Tridens,* Leporina (2), Myricæ* (2), Scolopacina,* Abjecta, Arcuosa, Ambigua,* Cursoria, Depuncta, Miniosa,* Rubiginea (2), Aurago, Xerampelina, &c. *Desiderata.*—Gueneei, Lutulenta (dark Irish forms), Empyrea, Gnaphalii, Grotiana, Ocellaris, and many Pyralides and Tortrices to complete series.—*C. Fenn; Eversden House, Burnt Ash Hill, Lee, Kent.*

Duplicates.—Cinxia, Lanestris. *Desiderata.*—Betula, W. Album, Lineola, Arion, H. Comma, &c.—(*Miss*) L. Wood; *The Red House, Rushams Road, Horsham.*

Duplicates.—Most of the Macros well-set, in fine condition. *Wanted Specially.*—Fine Pupæ: S. Ligustri, Porcellus, Orion, Dodonea, Dictæa, Dictæoides, Carmelita, Vinula, Furcula, and many others; liberal exchange.—*L. W. Newman; Bealey, Kent.*

Duplicates.—Templii (fair). *Desiderata.*—Pupæ of S. Urticæ, D. Mendica, A. Sylvata, and other pupæ of variable species.—*L. G. Esson; 376, George Street, Aberdeen, N.B.*

Duplicates.—Plecta, Hectus, Serena, Promissa, Croceago, Lacertula, Fulvago, Caniola, C. Nigrum, Xerampelina, Tiliaria, Sponsa, Gilvago, Falcua, Citrago, Chi, Aurago, S. Urticæ (fair), Arundinis, Flavicornis, Moneta, Flavago, Dominula, Humuli var. Hethlaudica. *Desiderata.*—Testudo, Tineta, Muscerda, T. Cratægi, Pygmæola, Strigula, Hera, Centonalis, B. Trifolii, Furcula, Fagi, Or, Bifida, Dodonea, Fluctuosa, and many others; also larvæ of Grossulariata and pupæ of many species.—*Stanley A. Blenkarn; "Norham," Cromwell Road, Beckenham.*

Duplicates.—Central African butterflies (in papers). *Desiderata.*—British and Exotic Lepidoptera, Leaf and Stick Insects, Exotic Coleoptera.—*Joseph Anderson; Alre Villa, Chichester.*

Duplicates.—Pupæ: Bidentata, Fraxinata, Minutata, Impluviata. Ova: Chi, Olivacea, Pyraliata, Filigrammaria, Autumnata (melanic and type), Spartiata, Tiliaria. *Desiderata.*—Pupæ of any Hawk Moth, Illunaria, Lunaria, Illustraria, Pilosaria, Absinthiata, Rivata, Stabilis, Instabilis, Gothica, &c.—*H. Preston; 110, Abingdon Road, Middlesbrough.*

Duplicates.—Rare Saturnide and Parnassius. Cocoons: Saturnia Pyretorum, South China; Attacus Ricinii, Edwardsi, Atlas. Imagines: Edwardsi, Ricinii, Atlas (giants ex Java), Cricula Andrei (new sp.) life-histories; also Nudaurelia, Ringleri, Menippe, Caffraria, E. Bauhine, Argema Mimose, Leto, Selene Luna; S. Ceanothii, Gloveri, Colombia; Caligula Simla and Japonica; also ova of same. Antherea Mylitta and var. Silvatica; Hemileuca Maia, Hera, Nevadensis; Parnassius Romanovi (male and female), Nubilosus (male and female), Intermedius (male and female), Apollonius (male and female) and ab. Flavomaculata (male), Staudingeri (male and female), Clodius (male and female), and many others. Cocoons of many of above shortly. *Desideratu.*—Cocoons, pupæ, ova, set or

papered specimens of rare and interesting Saturniæ and Parnassiinæ. Correspondence desired with collectors in West Africa.—*J. Henry Watson; 70, Ashford Road, Withington, Manchester.*

Duplicates.—Plantaginis,* Lubricipeda var. Fasciata,* H. Sylvinis, Hectus, Fulva, Cordigera, Cracæa (4), Carbonaria, Sobrinata,* Vespertaria, Elymi, Captuncula (fair), Comes var. Curtisii,* &c., Graminis, Lunaria* (Northern form), Bicolorata var. Plumbata, Subfulvata* vars., Isogrammata,* Fluviata,* Cambria, (dark vars.), Trifasciata (dark), Olivata, Tristata, Cervinata,* Cæsiata,* Badiata,* Nigra, Rumicis,* Suasa,* Glareosa, Lutosa, Nigricans. *Desiderata*.—Same as last month, and the following:—Tiliæ (pupæ), Myopiformis, Sphegiformis, Formicæformis, Guenei, Ligniperda, Flexula, Obfuscata, Lapponaria, Sagittata, Salicalis, Alpinalis, Decrepitalis, Extimalis, Niveus, Rhododactylus, Paludum, Pinellus, Semialbana, Umbrana, Logiana, and many others.—*T. Ashton Lofthouse; The Croft, Linthorpe, Middlesbrough.*

Duplicates.—T. Concolor (fine). *Desiderata*.—Many rare and local species; accepted offers only answered.—*R. Geoffrey Todd; The Limes, Hadley Green, Barnet.*

Duplicates.—Brassicæ,* Napi, Cardamines, Euphrosyne, Selene, Rhamni, Urticæ, Janira, Lucina, Hyperanthus, Tages, Alveolus, Sylvanus, Atalanta,* Io,* Fuciformis, B.B., Z. Trifolii, Caja, Dispar, Potatoria,* Bucephala,* Tridens,* Psi,* Pallens, Testacea, Segetum, Typica, Augur, C-Nigrum, Rubi, Stabilis. *Desiderata*.—Æsculi, Sylvinus, Senex, Mundana, Irrorella, Miniata, Mesomella, Helveola, Dominula, Fascelina, Gonostigma, Coryli, Castrensis, Lacertula, Hamula, Unguicula, Diluta, Or, Flavicornis, Aceris, Ligustri, Menyanthidis, Venosa, and many others.—*F. J. Rasell; Weedon Road, Northampton.*

Duplicates.—Campanulata,* Subciliata,* Absinthiata,* Actæon, Geryon, Griseola, B. Quercus, Derasa, Megacephala, Lithargyria, Sublustris, Gemina, Triangulum, Trapezina (red var.), Affinis, Lucipara, Apiciaria,* Tiliaria, Fuscantaria,* Pennaria, Dilutata,* Rubidata,* Tersata,* Ribesaria,* Mensuraria, Palumbaria, ova of Fuscantaria. *Desiderata*.—Numerous.—(Rev.) *A. M. Downes; Bathaston Vicarage, Bath.*

Duplicates.—Napi,* Selene, Hyperanthus, Rubi, Argiolus, Malvæ, Tages, Linea, Sylvanus, Carpini, Falcula, Trepida, Psi, Leporina, Megacephala, Ditrapezium,* Triangulum,* Festiva, Dentina, Viminalis, Arbuti, Ænea, Margaritaria, Nigrofasciaria, Promissa (2), Plagiata. *Desiderata*.—Vespertaria, Glabraria, Lichenaria, Roboraria, Extersaria, Obfuscaria, Trepidaria, Filigrammaria, O. Autumnaria, Flavinetata, Salicata, Affinitata, Decolorata, Unifasciata, Blandiata, Pimpinellata, Valerianata, Indigata, Hexapterata, Sexalata, Sparsata.—*F. A. Oldaker; The Red House, Haslemere.*

Duplicates.—Galatea, Ægon, Actæon, T. Populi (2), Diluta (3), Filipendulæ,* Hepatica, Anceps, Rurea and var. Combusta, Thalassina, Basilinea, Segetum, Oleacea, Augur, Lucipara, Comitata. *Desiderata*.—Very numerous.—(Miss) *B. A. Coney; Pucklechurch, Gloucestershire.*

Duplicates.—Euphrosyne, Galatea, Corydon, Actæon, Alveolus, Festiva, Instabilis,* Gothica,* Derasa,* Hepatica, Lucipara, Aprilina,* Moneta,* Trilinea, Fasciuncula, &c. *Desiderata*.—Very numerous.—*W. Wallace Macmillan; Bellevue, Castle Cary, Somerset.*

Duplicates.—P. Brassicæ,* Napi,* Paphia, Io, Galatea, Semele, Davus, T. Quercus,* Corydon, Ægon, Actæon, Malvæ, S. Populi,* Lonicæræ,* Griseola, Lurideola, Jacobææ, Caja, Hectus, Auriflua, Potatoria,* Pavonia (2, males), Spinula, Palpina, Ziczac,* Cæruleocephala, Puta, Impura, Fulva, Nictitans, Micæca, Popularis, Basilinea, Strigillis, Plecta, Festiva, Brunnea* (Scotch), N. Rubi, Comes, Rubricosa, Incerta, Gothica, Cruda, Stabilis, Pistacina, Lunosa, Vaccinii, Ligula, Satellitia, Silago, Trapezina, Oxyacanthæ,* Oleracea,* Pisi, Glyphica, Bilunaria, Aversata, Taminata, Grossulariata,* Assimilata, Marginaria, Æscularia, Didymata, Viridaria, Elutata, Albicillata, Unidentaria, Badiata, Immanata, Rusata, Prunata,* Testata, and odd specimens of many others. *Desiderata*.—Very numerous indeed. Exchange lists invited.—*Leslie H. Mosse Robinson; 2, Margaret Villas, Portchester, Hants.*

Duplicates.—Blandina, Adippe, Fascelina, Dominula, Ziczac, Anachoreta, Cruda, Gracilis, Flavicornis, Tincta,* Moneta,* Straminea (fair), Arcuosa, Hepatica, Suspecta (fair), Caja, Alsines, Nigra (fair), Anceps, Parthenias, Advenaria, Macu-

laria, Hippocastanaria, Cæsiata, Lunaria,* Aurantiaria, Consonaria (3), Obscuraria (Lewes). *Desiderata*.—Numerous.—*Harold E. Winsor; Kent House, Cranleigh Surrey.*

Duplicates.—*M. Cinxia*, well set on black pins; bred condition, 1910. Pupæ Consortaria. *Desiderata*.—*E. Blandina*, *E. Epiphron*, *M. Athalia*, *L. Sinapis*, and other local species, on black pins.—*G. Nobbs; North Lodge, East Cowes, Isle of Wight.*

Duplicates.—Numerous imagines; send lists of desiderata. *Desiderata*.—Fine healthy pupæ of very many species.—*Arthur Horne; 60, Gladstone Place, Aberdeen, N.B.*

Duplicates.—*P. Brassicæ*,* *Napi*,* *T. Betulæ*,* *Apiformis* (a few), *Dominula*,* *Aprilina*, *Litura*, *Scabriuscula*, *Fimbria*,* *Comes*,* *Triangulum*,* *Pendularia*, *Certata*,* *Miata*,* *Juniperata*, *Russata*,* *Repandata*,* *Ochroleuca* (a few), *Farinalis*, *Cagnagellus*,* &c. *Desiderata*.—Numerous; fine condition and black pins indispensable.—*A. E. Tonge; Aincroft, Reigate.*

Duplicates.—*Io*,* *Rubricosa*, *B. Rubi*, *B. Quercus*, *Carpini*, *Repandata*, *Pistacina*, *Fasciaria* (few), and many odd specimens. *Desiderata*.—Numerous.—*Sydney T. Thorne; Holmdale, Acland Road, Bournemouth.*

Duplicates.—*Ova*: *Sponsa*. *Desiderata*.—Numerous; especially Northern types.—*C. E. Newnham; "Netheravon," Ringwood.*

Duplicates.—*Corydon*, *Z. Trifolii*, *Sylvinus* (very large females), *Derasa*, *Batis*, *Flavicornis*, *Ochracea*,* *Putris*,* *Rurea* and var. *Combusta*, *Hepatica*, *Persicaria*,* *Gemina*, *Vestigialis*, *Tritici*, *Glareosa*, *Ditrapezium*,* *Triangulum*,* *Brunnea*,* *Dahlia*, *Ianthina*,* *Parthenias*, *Exoleta*, *Vetusta*, *Oxyacanthæ* and var. *Capucina*, *Fulva* (red and white forms), *Repandata*.* *Desiderata*.—Very numerous.—*W. H. C. Bolton; 48, Philbeach Gardens, Earl's Court, S.W.*

Duplicates.—*Ripæ*, *Præcox*,* *Valligera*, *Tritici*, *Cursoria*, *Littoralis*, *Blanda*, *Literosa*, &c. *Desiderata*.—Numerous; lists exchanged.—*T. Baxter; Min-y-don, Bromley Road, St. Anne's-on-Sea, Lancs.*

Duplicates.—*Ocellatus*,* *Ravida* (fair), *Lutosa*, *Xerampelina*,* *Ditrapezium* (3), *Gilvago*, *Gracilis*, *Fimbria*,* *Advena*, *Iota*, *Bilunaria* and *Fulcaria*,* *Pilosaria*, (males), *Prodromaria*,* *Unangulata*, *Aglaia*. *Desiderata*.—*Sinapis*, *Hyale*, *Athalia*, *Argiolus*, *Lucina*, *H. Comma*, *Undulata*, *Rhamnata*, *Sinuata*, and many others, especially Pugs.—*James D. Coward; Haverholme Gardens, Sleaford.*

Duplicates.—*Flavicornis* var. *Scotica*, *Advenaria*, *Glareosa*, *Galatea*, *Bellargus*, *H. Comma*, *Ulnata*, *Triangulum*, *C-Nigrum*, *Nictitans* (Aberdeen), *Ferruginea*, *Haworthii* (very fair), *Olivata* (very fair), *Hirtaria*, *Illustraria*, *Capsincola*, *Fulva* (Aberdeen), &c. *Desiderata*.—*Piniaria* (Irish, Welsh, North England, Isle of Man), *Lucens*.—*E. A. Cockayne; 16, Cambridge Square, London, W.*

Duplicates.—*Edusa*, *Ægeria*,* *C-Album*,* *Valesina*, *Cinxia*,* *Caja*,* *Villica*,* *Ziczac*,* *Rumicis*, *Lucerneæ*, *Suffusa*, *Illustraria*.* *Desiderata*.—*Pruni*, *Paniscus*, *Convolvuli* (1, male), *Versicolor* (2, females), *Typhæ*, *Lutosa*, *Anomala*, *Ambigua*, *Caliginosa*, *Lunigera*, *Ravida*, *Præcox*, *Ashworthii*, *Pyrophila*, *Sobrina*, *Opima*, and many others.—*Guy E. H. Peskett; 138, Harley Street, London, W.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*December 8th*.—Paper, with Lantern: "An Entomological Tour in S. Brazil, by Messrs. W. J. Kaye, F.E.S., and Dukinfield Jones, F.E.S."

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Duplicates.—Fine well-set P. Brassicæ,* Napi, V. Urticæ,* Atalanta,* Selene, Typhon, Pamphilus, Artaxerxes (also few var. Quadripuncta), Carpini,* T. Cratægi,* Fascelina,* Caia,* Fuliginosa* (dark), Vinula,* Furcula,* Dictæa,* Ziezac,* Menyanthidis,* Myricæ,* Myrtilli,* Coryli,* Psi,* Glauca,* A. Urticæ,* Pulcherrina, Grossulariata* (very fine dark and other forms). *Desiderata.*—Local forms and vars. of most butterflies in perfect condition; also old British and Colonial postage stamps.—*G. E. Hartley; 46, Chapel Street, Aberdeen, N.B.*

Duplicates.—Ova: Nupta, Antiqua. Pupæ: Tiliæ, Jacobæa. Imagines: Rhamni (a pair), Selene, Tiliæ (3), Tipuliformis, Trifolii,* Senex, Griseola, Dictæa, Hectus, Monacha,* Pudorina, Straminea, Hellmanni, Phragmitidis, Putris, Lithoxylea, Scoloparia, Persicaria, Orbona,* Typica,* Suspecta, Affinis, Viminalis, Lucipara,* Moneta,* Chrysis, Bidentata,* Zonaria,* Pennaria, Pedaria, Betularia and Double-dayaria, Orbicularia, Clathrata, Atomaria, Piniaria, Strigillaria, Leucophæaria, Dilutata, Ericetata, Dubitata, Testata, Plumbaria. *Desiderata.*—Populeti, Opima, Tincta, Trabealis, Lichenaria, Luridata, Punctularia, Vernaria, Pendularia, Sylvata, Blomeri, Cambrica, Ornata, Inornata, Alternata, Notata, Murinata, Salicata, Alchemillata, Berberata, Paludata, most Pugs, &c.—*G. Brooks; Ivy-side, North Finchley.*

Duplicates.—Most of the Macros well-set in fine condition. *Wanted Specially.*—Fine Pupæ. S. Ligustri, Porcellus, Orion, Dodonea, Dictæa, Dictæoides, Carmelita, Vinula, Furcula, and many others; liberal exchange.—*L. W. Newman; Bexley, Kent.*

Duplicates.—Cinxia,* C. Albun,* A. Comina, Lonicæræ,* Meliloti, Lacertinaria,* Pigra,* Tritici, Triplasia,* Pulveraria,* Punctularia, ab. Sylvata, Alniaria,* Orbicularia,* Siderata, Gilvria, Ochrearia, Juniperata (Scotch), and many others. *Desiderata.*—Defoliaria, Dilutata, Filigrammaria, Autumnata, Citrago, Aurago, Gilvago, Circellaris, Diffinis.—*Richard South; 96, Drakefield Road, Upper Tooting, London, S.W.*

Duplicates.—Valezina, Muralis, Gilvago, Batis,* Cucubali,* Derasa, Arcuosa, Capsincola,* Cytherea, Cespitis, Aurago, Duplaris, Ambigua,* Anceps, Cræceæ, Abjecta, Pudorina, Saponaria, Depuncta, Elymi (4), Scolopacina,* Miniosa,* Micæa, Myricæ (2),* Straminea (3), Tridens,* Saucia, Leporina (4), Lucerneæ (3), Rhizolita (4), Serena, Valligera, Phragmitidis, Lunosa, Menyanthidis,* Xerampelina (5), Xanthomista (2),* Lencophaea (2), Impluviata, Psittacata, Cinctaria, Ziezac,* Trepida,* Curtula,* Reclusa,* Chrysorrhæa,* Monacha, Fascelina,* Dominula, H. Urticæ (3), Bifida (1),* Sylvinus, Palpina,* Plumigera,* Testudo (2), Dictæa,* Coryli,* Furva (4), Haworthii, Hispidus, Cursoria, Consortaria, Dubitata, Quercinaria,* Fuscantaria,* Alniaria,* Dclobraria (4), Emarginata, Rusticata (4), Immutata, Degeneraria, Inornata, Ornata (4), Certata, Cervinata, Gilvria, Citraria, Tersata,* Hispidaria (3 males), Pulveraria, Vitalbata,* Extersaria,* Consonaria, Pulchellata,* Venosata,* Amataria, Rhamnata, Undulata, Isogrammata, &c. *Desiderata.*—Lutulenta (dark Irish and Scotch forms), Atriplicis and Gnaphalii.—*C. Fenn; 83, Burnt Ash Hill, Lee, Kent.*

Duplicates.—Nebulosa (Melanic vars.), Suspecta, Scolopacina (a few). *Desiderata.*—Numerous.—*W. Fletcher; 5, Johnston Street, Wakefield.*

Duplicates.—British Fraxini.* *Desiderata.*—Daplidice, Lathonia, Acis, Galii, Lineata, Celerio, Nerii, Formiciformis, Andreniformis, Scoliformis, Sphægiformis, Arundinis, Asellus, Cœnosa, Albulalis, Bicuspis, Nubeculosa, Crenata, Carmelita, Bicolor, Trilophus, Alge, Dodonea, Fluctuosa, Ocellaris, Strigosa, Auricoma, Flammea, Agathina, Ditrapezium, Rhomboidea, Albimacula, Olegina, Occulta, Zinckenii, Lychmitis, Gnaphalii, Ni, Chamomille, Absinthii, Interrogationis, Alchymista, Laponaria, Alternata.—*F. J. Russell; Weedon Road, Northampton.*

Duplicates.—Machaon,* Cratægi, Brassicæ, Rapæ, Napi, Cardamines, Selene, Euphrosyne, Paphia, Cinxia, Urticæ,* Io,* Atalanta,* Galatæa,* Blandina (Forbes), Semele, Davus (Forbes), T. Quercus, Lonicera, Filipendulæ,* Mundana, Senex, Griseola, Jacobæa,* Caja,* Auriflua,* Carpini,* Palpina,* Camelina,* Ziezac,* Bucephala,* Perla,* Rumicis,* Cæruleocephala, Putrescens, Littoralis,*

Pudorina, Flammea, Straminea, Ochracea,* Nictitans, Micacea, Putris, Rurea* var. Combusta,* Lithoxylea, Polyodon var. Infusca, Popularis, Graminis, Testacea, Albicolon, Furva, Brassicae, Basilinea, Gemina, Oculca, Strigilis, Literosa, Trilinea, Morpheus, Cubicularis, Tenebrosa, Valligera,* Segetum, Exclamationis, Corticea, Ripa,* Cursoria,* Tritici* var. Aquilina, Praecox,* Lucerneae, Augur, Plecta, C. Nigrum, N. Rubi, Umbrosa, Fimbria,* Orbona,* Tragopogonis, Typica, Rubricosa, Gothica, Gracilis (dark), Munda, Lota,* Lunosa, Litura, Crocago, Citrago, Cerago, Silago, Aurago, Capsicola, Chi, Viminalis, Oxyacanthae var. Capucina, Lucipara, Pisi, Sambucaria,* Apiciaria, Prunaria, Illunaria, Tiliaria, Pennaria, Pilosaria (and Melanic forms), Zonaria,* Abruptaria, Repandata, Consonaria, Crepuscularia, Biundularia, Aversata, Grossulariata (vars.) Ulnata, Rupicraria, Leucophaeria, Aurantaria, Progemmaria (Melanic), Defoliaria, Aescularia, Brumata, Dilutata, Filigrammaria, Didymata, Multistrigaria (dark), Cæsiata, Olivata, Pectinitaria, Nanata, Subnotata, Vulgata, Absinthiata,* Tenuiata, Elutata, Rubiginata var. Plumbata, Ocellata, Procellata, Montanata, Munitata, Fluviata, Tersata, Miata, Russata (Forres), Immanata (Forres), Testata, Pyraliata, Cervinaria,* Palumbaria. Larvæ: Bractea, Orbona var. Curtissii, Fuliginosa, Rubi, Pisi. Ova: Tiliaria (dark forms, Forres). *Desiderata*.—Numerous.—*W. Yates; Summerfield, St. Anne's-on-Sea, Lancs.*

Duplicates.—Galatea (3), Minima (females), Linea, Octæon (4 males), Lineata, Quercinaria, Testata, Cultraria, Suffusa, Oxyacanthæ, Pyramidea, Corticea, Quadrupunctata, Lunosa. *Desiderata*.—Sinapis, Cinxia, Rubi, Betule, Lunaria, Fasciaria, Lichenaria, Hamula, Duplaris, Flavicornis, Ligustri, Turca, Littoralis, Comma, Leucophaea and numerous others.—*Ernest C. Harding; 16, Cowley Road, Ilford.*

Duplicates.—Ocellatus, Tiliæ, Globulariæ (3), Trifolii, Dominula, Mendica, Chrysorrhæa, Lanestris, Prunaria, Fuscantaria, Hirtaria, Consonaria, Ulnata, Minutata, Subnotata, Puta, Corticea, Myrtilli, Parthenias. *Desiderata*.—Numerous.—*C. Levett; 12, Borneo Street, Putney, London, S.W.*

Duplicates.—Fine, well-set Scopula, Decrepitalis, and Alpinalis. *Desiderata*.—Well-set local Macros, larvæ, pupæ, &c.—*Thos. Salvage; The Plaquet, Arlington, Sussex.*

Duplicates.—W. Album,* Hyperanthus, Thaumias, Ocellatus,* Z. Trifolii,* Or,* Impura, Augur, Gemina, Popularis (3), Chenopodii, Fimbria, Litura, Pistacina, Munda, Palæca, Sambucata,* E. Autumnaria,* Syringaria,* Illunaria,* Smargadaria,* Papilionaria,* Punctularia (3), Certata,* Rubidata,* Badiata, Silæata,* Corylata, Petraria, Prunata.* *Desiderata*.—Very numerous, fine well-set insects only, also early stages.—*A. Simmons; 42, Loughborough Road, West Bridgford, Nottingham.*

Duplicates.—Euphrosyne, Cardamines, Aegon, Caniola, Hispidus, Putrescens, Carpophaga,* Anomala, Lichenea,* Nigra,* Gracilis,* Dominula,* Mundana,* E. Debilitata, Fumata, Fasciaria, Variata, Litorata, Piniaria, Repandata,* &c. *Desiderata*.—Promissa, Notha, Flexula, Lychnitis, Bractea, Palæca, Suspecta, Fagi, Fluctuosa, Cænosa, Muscerda, Lutarella, Iris, or Exotic Butterflies.—*J. Walker; 7, Mount Hermon Road, Torquay.*

Duplicates.—Carpini (gilt pins), Versicolor (2 fair), Potatoria, Asteris, Ocellatus, Gemina, Rumicis, Literosa, Baja,* Fimbria,* Pisi,* Brunnea,* Thalassina, Rufina, Nebulosa* var. Robsoni,* Lupulinus, Augur,* Pudibunda* (6), Phragmitidis (gilt pins), Alniaria (large thorn), Subtristata, Myrtilli, Unidentata, Biundularia* var. Delamerensis, Cerago, Didymata, Perla, Repandata,* Leucophaeria, Strigillaria, Hawthorii, Orion (fair), Aprilina,* Suspecta, Ziezac, Festiva, Caja* (2), Arion (fair), Plecta, Porphyria, Falcula (2), B. Quercus (2 fair). *Desiderata*.—Numerous. Accepted offers answered.—*John Robinson; 24, Greenall Street, Warrington, Lancs.*

Duplicates.—Jasioneata,* Sphinx, Campanulata,* Muralis (Cornwall). *Desiderata*.—Muscerda, Sericea, Urticae, Depuncta, Palæcaea, Sobrina, Furva, Ashworthii, Caliginosa, Nana, Cæsia, Irregularis, Occulta, Lychnitis, Interrogationis, N. Reticulata, Brevilinea, Tridens, Albovenosa, Maritima, Cuculla, Dodonea, Plumigera, B. Rubi, B. Trifolii, Ligniperda, Gonostigma, Bicolorana, Miopiformis, Ichneumoniformis, Philanthiformis, N. Strigula, Glabraria, Minorata, Ericetaria, Firmata, Ruberata, Berberata, Coronata, Togata, Sexualisata, Sagittata, Literata, Paludata, &c.—*H. A. McNaught; Hazeldene, Penbury Street, Worcester.*

Duplicates.—P. Napi, V. Urticae,* Ashworthii,* Carpini* (rich Denbighshire form), Mendica,* Iota, Potatoria,* Lunigera, Nigra, Micacea, Umbra* (Marginatus), Triplasia, Pulveraria,* Repandata (forms). *Desiderata*.—N. Reticulata (Saponariæ),

Lychnitis, and offers (including Ova, Larvæ and varieties). Accepted offers replied to within a week.—*J. Arkle*; 2, *George Street, Chester*.

Duplicates.—*C. Or*,* *Chi*,* *Basilinea*, *Pallens*,* *Baja*, *Augur*, *Persicariæ*,* *C. Nigrum* (6), *Pisi*,* *Gemini*, *Oculea*, *Lithargyria*, *Leucophaeria*, *Marginata*. *Desiderata*.—Pugs or Ova of local insects.—*G. Henderson*; 57, *Arnold Road, Old Basford, Nottingham*.

Duplicates.—*Io*,* *Blandina*, *Sylvanus*, *Caja*,* *Dispar*,* *Atomaria*, *Umata*, *Rupicapraria*,* *Leucophaeria* (males), *Æscularia*,* *Multistrigaria*, *Albulata*, *Suffumata*, *Badiata*, *Faleula*, *Flavicornis*, *Rumicis*, *Fulva*, *Rurea* and var. *Combusta*, *Graminis*, *Gemina*, *Brunnea*, *Festiva*. *Baja*, *Gothica*,* *Rubricosa*, *Instabilis*, *Stabilis*,* *Cruda*, *Rufina*, *Litura*, *Cerago*,* *Silago*,* *Chi*, *Lucipara*, *Nebulosa*, *Typica*,* and a few of many other species. *Desiderata*.—*Hyale*, *Athalia*, *Pruni*, *Paniscus*, *Petasites*, *Cinerea*, *Ravida*, &c.—*G. Fleming*; 9, *Fairview Terrace, Merthyr Tydfil*.

Duplicates.—*Guenci* (2), *Exulis*, *Auricoma* (2), *Gnaphalii*, *Newmanni* (2), *Bicuspis* (2), *Burethii*, *Conspicillaris*, *Cænosa* (2), *Centonalis*, *Favicolor*, *Connexa*, *Galii* (1), *Exigua*, *T. Pruni*, *Alexis* (*Hermaphrodite*, fair 1), *Alpina*,* *Strigillata* (white pins), *Sparganii*,* *Ashworthii*. *Desiderata*.—*Reticulata*, and fine varieties.—*Percy M. Bright*; *Fairfield, Wimborne Road, Bournemouth*.

Duplicates.—*A. Cratægi*, *Iris*,* *Athalia*, *Valezina*, *Arion*, *Blandina*, *Cassiope*, *Sibylla*, *Betulæ*, (3), *Rubi*, *W. Album*, *Lucina*, *Minima*, *Lineola*, *Asiliformis*, *Exulans*, *Meliloti* (3), *Trifolii*, *Nudulanus*, *Quadra*, *Cribrum*, *Caniola*, *Miniata*, *Albulalis*, *Chrysorrhœa*, *Fascelina*,* *Gonostigma*, *Faleula*, *Hamula*, *Palpina*, *Dromedarius*, *Anachoreta*, *Ziezac*; fine *Shetland* vars. of *Humuli*, *Conspersa*, *Albulata*, *Venosata*, *Fluctuata*, *Montanata* and *Trumanata*, *Batis*,* *Rubiginea*,* *Cracæ*,* *Subsequa*, *Templi*, *Capsophila*, *Moneta*,* *Nigrocincta*, *Orion*, *Pudorina*, *Fimbria*, *Absinthii*,* *Petrificata*, *Ravida*, *Xerampelina*, *Gilvago*, *Haworthii*, *Venusula*, *Cesia*, *Pandularia* var. *Subroseta*,* *Roboraria*, *Abietaria*,* *Consortaria*, *Cinctaria*, *Belgaria*, *Trepidaria*, *Advenaria*, *Illustraria*, *Alniaria*, *Prunaria*, *Orbicularia*, *Emutaria*, *Alternata*,* *Fluviata*,* *Albicillata*, *Sinuata*, *Campanulata*,* *Absinthiata*, *Chrysorrhœuellus*, *Carpodactyla*,* *Graphodactyla*,* *Cristana*, *Literana*, *Thuleana*, *Dalella*. *Desiderata*.—Pupæ: *Ocellatus*, *Tiliæ*, *Carpini*, *Populi*. *Imagines*: Extreme forms black and white *Conversaria*, and scarce and local *Pyrales*, *Tortrices* and *Tineina*.—*Percy M. Bright*; *Fairfield, Wimborne Road, Bournemouth*.

Duplicates.—*Corydon*, *H. Comma*, *Porcellus*, *Z. Trifolii*, *Bicolorana*,* *Hera*,* *Sylvinus* (very large females), *Derasa*, *Batis*, *Duplaris*, *Diluta*, *Flavicornis*, *Ochracea*,* *Putris*, *Rurea*, and var. *Combusta*, *Hepatica*, *Persicaria*,* *Gemina*, *Vestigialis*, *Triticici*, *Glarcosa*, *Augur*,* *Ditrapezium*,* *Triangulum*,* *Brunnea*,* *Dahlia*,* *Baja*,* *Ianthina*,* *Fimbria*,* *Suspecta*, *Parthenias*, *Urica*, *Protea*, *Hispidaria*, *Abietaria** (*Melanie*), *Albicillata*, *Umata*, *Blomeri*, *Repandata*,* *Consortaria*. *Desiderata*.—Very numerous.—*W. H. C. Bolton*; 48, *Philbeach Gardens, Earl's Court, S.W.*

Duplicates.—Larvæ: *C. Cytherea*. Pupæ: *Carpophaga* (pale *Sussex*). *Imagines*: *Straminea** (few). *Desiderata*.—*Carpophaga** (dark forms) or Pupæ, also *Imagines* of *Betulæ* (males), *Pruni*, *Paniscus*, *Salmacis*, *Valesina*, *Littoralis*, *Pudorina*, *Maritima*, *Ophiogramma*, and many others, especially northern *Noctua* and varieties.—*Guy E. H. Peskett*; *Simla, Preston, Brighton*.

Duplicates.—*Blandina*, *Mundana*, *Salicis*, *Flavicornis*, *Cambria*, *Filigrammaria* and *Ova*, *Impluviata* (dark), *Atrata*, *Rurea*,* *Præcox*, *Nietitans*, *Chi*, *Capsincola*,* *Carpophaga*, *Augur*, *Festiva*,* *Brunnea*,* *Baja*, *Captivocula* (fair), *Triticici*. *Desiderata*.—Numerous.—*W. G. Clutton*; 132, *Coal Clough Lane, Burnley, Lancs.*

Duplicates.—*C. Reticulata** (a few). *Desiderata*.—*Iris*, *Galii*, and the rarer local species—*Lieut. Colonel Nurse*; *Timworth Hall, Bury St. Edmunds*.

Duplicates.—*A. Pygmæana*. *Desiderata*.—Local *Tortrices*, &c.—*Lieut. Colonel Nurse*; *Timworth Hall, Bury St. Edmunds*.

Duplicates.—*Valezina*, *Polychloros*,* *Selene*, *Galatea*, *Russula* (male), *Monacha*, *Nebulosa*, *Herbida*, *Pudorina*, *Contigua*, *Scelopocina*, *Viminalis*, *Suffusa*. Few each of *Ocellatus*, *S. Populi*, *Quadra*, *Mesomella*, *Miniata*, *Helveola*, *Geryon*, *Lacertula*, *Orion* (2), *Batis*, *Derasa*, *Vestigialis*, *Rumicis*, *Saucia*, *Hepatica*, *Plumaria*, *Consortaria*, *Albicillata*, and types of many. Larvæ: few each of *Hera*, *Herbida*. Pupæ: few each of *Chaonia*, *Contigua*, *Absinthii*. *Desiderata*.—*Iris*, *Sesiidæ*, *Oo*, *Leucophaea*, *Nigrocincta*, *Ochroleuca*, *Asteris*, *Timcta*, *Rubiginea*, *Carmelita*, *Pyrina* and many other local species. Black pins. Good setting indispensable.—(*Dr.*) *Beckwith Whitehouse*; 52, *Newhall Street, Birmingham*.

Duplicates.—Plantaginis,* Lubricipeda var. Fasciata,* H. Sylvinis, Hectus, Fulva, Cordigera, Craceæ (4), Carbonaria, Sobrinata,* Vespertaria, Elymi, Captiuncula, Comes var. Curtisii,* &c., Graminis, Lunaria* (northern form), Bicolorata var. Plumbeata, Subfulvata* vars., Isogrammata,* Succenturiata,* Fluviata,* Cambrica (dark vars.), Trifasciata (dark), Olivata, many others. *Desiderata*.—Iris, Pruni, Muscerda, Fagi, Asellus, Apiformis, Alni, Connexa, Dipsacea, Sagittata, Fluctuosa, Albipuncta, Alpina, Sobrina, Nubeculosa, Irregularis, Albimacula, Barrettii, Semibrunnea, Bractea, Lapponaria, Conspicuata, Ruficinctata, Teniata, Consignata, Virgaureata, Curzoni, Expallidata, Stevensata, Reticulata, and good varieties.—*T. Ashton Lofthouse; The Croft, Linthorpe, Middlesbrough.*

Duplicates.—Autumnaria* (pilosaria, dark types), Illunaria* (3 repandata, melanic, fair), Incanaria, Leucophæaria, Grossulariata, Defoliaria, Æsularia, Boreata, Progenmarraria, Dilutata, Salicis,* Neustria,* Psi, Lithoxylea, Brunnea,* Pronuba,* Fimbria,* Trapezina, Rufina, Vacinii, Chi, Polyodon, Gamma, Lubricipeda. *Desiderata*.—Numerous; also preserved Larvæ.—*S. Hainsworth; 60, George Street, Saltaire, Yorkshire.*

Duplicates.—Littoralis, Umbra, Conspersa, Succenturiata, Porcellus (1), Moneta (1), Tersata (1), Irrorella (2), Tritici, Scabiosa; mostly black pins; data given. *Desiderata*.—Captiuncula, Diffinis, Dysodea, Consonaria, Rubidata, Urticeæ, Æsculi and Eupithecia.—*B. Tulloch (Major); St. Stephen's, Godwyne Road, Dover.*

Duplicates.—Blethisa Multipunctata, Broscus Cephalotes, Gyrinus Opacus, Pæderus Fuscipes, P. Riparius, Bruchus Pisi, Aphodius Stricticus, Donacia Typhae, Adimonia Tanacetii, Salpingus Æratus. *Desiderata*.—Numerous.—*A. Ford; 36, Irving Road, Bournemouth.*

Duplicates.—Prunaria,* Papilionaria.* *Desiderata*.—O. Autumnata,* Filigrammaria* and many others. Only good specimens well-set on black pins required.—(*Miss*) *A. D. Edwards; The Homestead, Coombe Hill, East Grinstead.*

Duplicates.—A very large number of duplicates of many species. *Desiderata*.—Numerous. Lists exchanged. good specimens, well-set only sent and required.—(*Miss*) *A. D. Edwards; The Homestead, Coombe Hill, East Grinstead.*

Duplicates.—A few extra fine Paniscus and Butulæ (1910). *Desiderata*.—Rare and local insects, bred, or in bred condition, also Ova or Pupæ.—*Clem Jolly, 12, Cheltenham Street, Old Basford, Nottingham.*

Duplicates.—Imagines: Rhamni, Psi,* Plecta, Meticulosa, C. Nigrum, Filipendula,* Impura, Strigilis, Moneta,* Flavago, Dispar (female), Gothica.* Pupæ: S. Populi (4), Salicis.* *Desiderata*.—Imagines: Numerous Noctuids and Geometers. Pupæ: S. Ligustri, Ocellatus, Lanestris, Quercifolia, Quercus. Larvæ: B. Rubi and many others.—*E. Everett; Ashleigh, Broughton Hill, Letchworth.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
October 13th.—Paper, with Lantern: "The Lepidoptera of Sicily," by J. P. Barrett.
Fungus Foray: (Date and locality arranged according to season). *October 27th.*—
Exhibits and Discussion.

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NOTICES OF EXCHANGE should be received by the 25TH OF EACH MONTH to insure insertion. Not more than SIX LINES can be allowed for each.

Duplicates.—Dissimilis,* Velleda, Sylvinus, Captiuncula, Fibrosa, Ambigua,* Lutosa, Rufa, Lubricipeda var. Fasciata,* Plantaginis,* Cambrica and dark vars., Curtisii var. * Coracina, Blandiata, Pumilata, Bicolorata var. Plumbata, &c., Elymi (6), Phragmitidis, Nigra, Mundana, Autumnaria,* Satyrata, Isogrammata,* Subfulvata,* Corylata, Badiata,* Cæsiata, Lunaria,* Decolorata, Cervinata,* Tristata, Luteata, Impluviata, Designata, Olivata, Ciliatis, Margaritellus, Pascuellus, Inquinateus, Cribrella, Schulziana (3), Pinivorana (6), P. Mercuriana, Angustiorana, A. Osseana, E. Cernsella, A. Atmoriella, P. Occultana, &c. *Desiderata.*—Flexula, Salicalis, Turfosalis, Ericellus, and many Pyrales, Tortrices, Andreniformis, Albimacula, Glabraria, Ridens, Alni, Leporina, &c.—*T. Ashton Lofthouse; The Croft, Linthorpe, Middlesbrough.*

Duplicates.—Pupæ of black Impluviata and Inturgo: full-grown larvæ of Formiceformis. *Desiderata.*—Pupæ of Chaonia, Dodonea, Fluctuata, &c.—*Edward Harrison; The Avenue, Birtley S.O.*

Duplicates.—Imagines: Pronubana, Chi var. Olivacea, Præcox, Salmacis, Cæsia, Athalia. Pupæ: Fraxinata, Hastata, Minutata, Bidentata, Glaucata, Centaureata, Linariata. Ova: Dispar, Chi var. Olivacea, Apiciaria (Irish). *Desiderata.*—Imagines of Lunosa and Agrotids. Pupæ of Punctaria, Porata, Trilinearia, Pendularia, Myricæ, Oleracea, and offers in pupæ; also old vols. of the 'Boys' Own Paper.'—*J. Baxter; 13, Birtley Lane, Birtley S.O.*

Duplicates.—Aporia Cratægi, East Kent bred or captured; Pygmæola (Lutarella), Helveola (Deplana), Orion, Albovenosa, Aceris, Bondii, Sparganii, Straminea, Pudorina, and many other species. *Desiderata.*—Numerous for renewals. Lists of Duplicates and *Desiderata* exchanged.—*J. Platt Barrett; 30, Endwell Road, Brockley, S.E.* (till January 25th, 1912), afterwards: "Westcroft," South Road, Forest Hill, London, S.E.

Duplicates.—Many British Lepidoptera, in fine condition. *Desiderata.*—British Hymenoptera-Aculeata.—*V. E. Shaw; "Betula," Fallow Court Avenue, North Finchley, N.*

Duplicates.—Machaon,* Ariou, Vanessa, Comma,* Elpenor,* Hera, Pota-toria, Sublustris (fine), Lunigera, Saucia, and very many others. *Desiderata.*—Sinapis, Hyale, Helice, Aglaia, Adippe, Paphia var. Valesina, Athalia, Iris, Epiphron, Æthiops, Typhon, Betulæ, Rubi, Argiolus (4, females), Lucina, Malva, Actæon, Palæmon, Fuliginosa, &c.; mostly for renewal.—*R. Benton; Cotswold, Queen's Avenue, Muswell Hill, N.*

Duplicates.—L. Gueneei and its vars. *Desiderata.*—Numerous local moths and butterflies, especially vars.—*T. Baxter; Min-y-don, Bromley Road, St. Anne's-on-Sea, Lancashire.*

Duplicates.—Pudibunda, P. Populi, Flavicineta, Pennaria, "finest obtainable." Pupæ: Mendica. *Desiderata.*—Gonostigma, Castrensis, B. Rubi, B. Trifolii, Davus, Sinapis, T. Betulæ, and Batis.—*Herbert W. Baker; 73, Limetree Place, Stowmarket, Suffolk.*

Duplicates.—Very numerous; lists of desiderata requested. *Desiderata.*—Good vars. of Obscurata; well-set, black pins.—(Miss) A. D. Edwards; *The Homestead, Coombe Hill, East Grinstead.*

Duplicates.—Galatea, Citrago, Dispar* (male), Monacha,* Aprilina,* Oxy-acantha, Petrificata (2), Satellitia, L. Pallens, L. Conigera, Pistacina, Vaccinii, Macilenta, Ziezæc, Gemina, Cubicularis, Autumnaria,* Juliaris, Glyphica, Aflin-tata, Suffumata, Tersata. *Desiderata.*—Very numerous.—*W. Wallace Mac-millan; Castle Cary, Somerset.*

Duplicatas.—Fascelina,* Pudibunda,* Protea,* Aprilina,* Chi, N. Arundinis,* Gracilis,* Subtusa* (2), Silago,* Immutata, Variata,* Dilutata,* Alchemillata, Linariata,* Absinthiata.* *Desiderata*.—Many common species to renew.—*Lt.-Colonel C. G. Nurse; Timworth Hall, Bury St. Edmunds.*

Duplicatas.—N. Arundineta, Chryson.* *Desiderata*.—Tityrus, Fagi, Carmelita, Fluctuosa, Strigula, Albula, Cæsia, Caliginosa, Pyralina, Degeneraria.—*Lt.-Colonel C. G. Nurse; Timworth Hall, Bury St. Edmunds.*

Duplicatas.—Io,* Blandina, Pennaria, Pilosaria, Ulmata, Leucophæaria (males), Aurantiaria,* Defoliaria, Escularia,* Dilutata, Multistrigaria, Albulata, Pyraliata, Flavicornis, Rumici, Fulva, Rurea, Graminis,* Augur, Festiva,* Munda,* Macilenta, Rufina, Litura, Chi, Pisi, Typica,* and many others. *Desiderata*.—Very numerous.—*G. Fleming; 9, Fairview Terrace, Merthyr Tydfil.*

Duplicatas.—Gothica, Pistacina, Impura, Suffusa, Plecta (1), Chrysis (1), Gilvago (3), Trapezium, Linea, Nictitans (2), Oculea, Fasciuncula, Strigilis, Filipendula, S. Populi,* Quercus,* Caia* (dark), Typica, Falcula, Napi, Nupta (1). *Desiderata*.—Sybilla, Duplaris, Ocularis, Hispidus, Glyphica, Luctuosa, Sulphuralis, Villica, Proteus, Herbida, Cassinea, Roboraria. Ova: Dispar, numerous larvae, specially pupæ of Carpini, Piniperda, Quercifolia. Any beginner, or wishing to renew, can have any of the above, if box and postage are sent, or exchange. Only a few of the same left.—(*Rev.*) *E. Everett; Ashleigh, Broughton Hall, Letchworth.*

Duplicatas.—British Zinckenii, Lathonia (2), Exulis, Leucophæa, C. Reticulata, Atriplices, Alpina. Exotic Diurnals. *Desiderata*.—Sicula, Bicolor, Erythrocephala, and others. Exotic Diurnals.—*W. Dannatt; 75, Vanbrugh Park, Blackheath, S.E.*

CHANGE OF ADDRESS.—*J. Platt Barrett, from 30, Endwell Road, Brockley, London, S.E., after January 25th, 1912, to "Westeroft," South Road, Forest Hill, London, S.E.*

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