





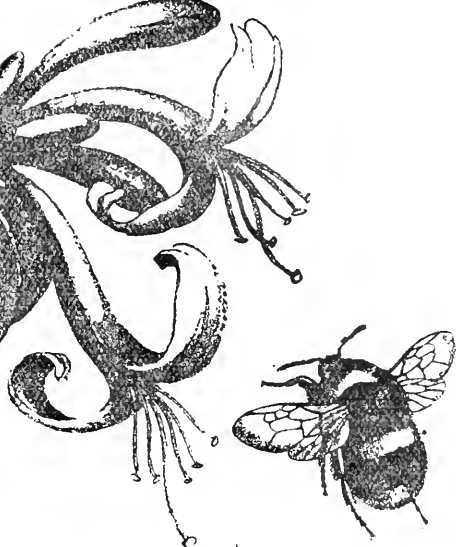








234217



THE  
ENTOMOLOGIST'S RECORD  
AND  
JOURNAL OF VARIATION

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VOL. XXVI.

JANUARY TO DECEMBER, 1914.

PRICE 10s. 6d.

Special Index (with every reference), 1s. 6d

LONDON:

ELLIOT STOCK, 7, Paternoster Row. E.C.

BERLIN:

R. FRIEDLÄNDER & SOHN,  
11, Carlstrasse, N.W.

## PREFACE TO VOL. XXVI.

On April 15th our Magazine will have reached the close of its 25th year, its first quarter of a century. Established by its revered late Editor, Mr. J. W. Tutt, as a Journal of Variation, it has more or less kept its object in view during the whole of that period, but at the same time its pages have been open for articles and discussions on every subject in which entomologists have been interested. Of the names of those who were contributors to the first two volumes we still have nearly a score who continue to give us notes, articles, or information, on the other hand we note with sorrow that nearly two score of our then helpers have passed away.

May we ask our subscribers one and all to help us with notes during the coming year. The great world struggle will take the thought and energy of many of us, and like everything else our study must suffer to a degree, but by mutual aid, even if it be but individually small, we shall do well.

Again we have issued 24 plates during the year. For these we are indebted to the continued kindness of Dr. Chapman (10), Mr. G. T. Bethune-Baker (9), Mr. P. A. Buxton (1), Mr. B. C. S. Warren (1), and Dr. Burr (1). For the General Index we have to thank Mr. J. R. le B. Tomlin, and Professor Hudson Beare, Dr. Burr, and Mr. Collin have kindly undertaken sections of the Special Index. The active aid and ready, useful criticism of the Rev. Geo. Wheeler has been at all times a reliable advantage.

Kind wishes to all contributors and subscribers for the coming season.

HY. J. TURNER.



SPECIAL INDEX.

By T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S. (Coleoptera); M. BURR, D.Sc., F.Z.S., F.E.S. (Orthoptera); J. E. COLLIN, F.E.S. (Diptera); and H. J. TURNER, F.E.S. (Hemiptera, Hymenoptera, Lepidoptera, etc).

*Coleoptera arranged in order of Genera. The other orders arranged by Species. Species, Genera, etc., new to Britain are marked with an Asterisk\*, those new to Science with two Asterisks\*\*.*

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## CORRIGENDA, &amp;c.

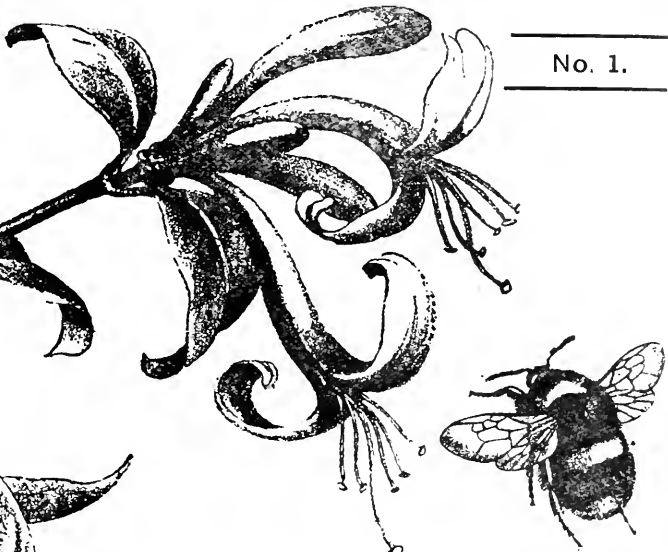
- p. 64, l. 13, for "same" read "semi-."
- p. 68, l. 12, for "*schmidtii*" read "*schmidi*."
- p. 69, l. 45, for "*Eueara*" read "*Elis*."
- p. 72, l. 27, for "doubless" read "doubtless."
- p. 81, l. 8, for "*Epiphron pyrenaica*" read "*Erebia epiphron* var. *pyrenaica*."
- p. 85, l. 9, for "Palaeartic deserts of the region" read "deserts of the Palaeartic Region."
- p. 87, l. 6, for "*Nemastrinus aegyptiacus*" read "*Nemestrina aegyptiaca*."
- p. 88, l. 18, for "Machiliids" read "Machilids."
- p. 124, l. 20, for "*Laglasia*" read "*Laglaizia*."
- p. 127, l. 25, for "May" read "Meyr."
- p. 144, l. 33, insert "*virgata*" after "*Mesotype*."
- p. 160, l. 26, for "*panaeoides*" read "*panagaoides*."
- p. 189, l. 30, for "*Tachinus*" read "*Tachina*."
- p. 193, l. 44, insert "cases" after "both."
- p. 212, l. 33, for "Mr. C. S. Pickett" read "Mr. C. P. Pickett."
- p. 212, l. 34, for "two" read "three."
- p. 221, l. 25, for "*Ruralis*" read "*Ruralis*."
- p. 230, l. 44, for "Mackull" read "Mackrell."
- p. 231, l. 19, for "*siterata*" read "*siderata*."
- p. 232, l. 21, for "*helveola*" read "*helvola*."
- p. 233, l. 45, for "GALII" read "GALLII."
- p. 242, l. 22, for "Miss M. F. Fison" read "Miss L. M. Fison."
- p. 258, l. 9, for "*Callimyyia*" read "*Callimyyia*."
- p. 258, l. 17, for "*Anthomyia*" read "*Anthomyza*."
- p. 269, l. 31, for "*coerulea*" read "*caerulea*."



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No. 1.



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JOURNAL OF VARIATION

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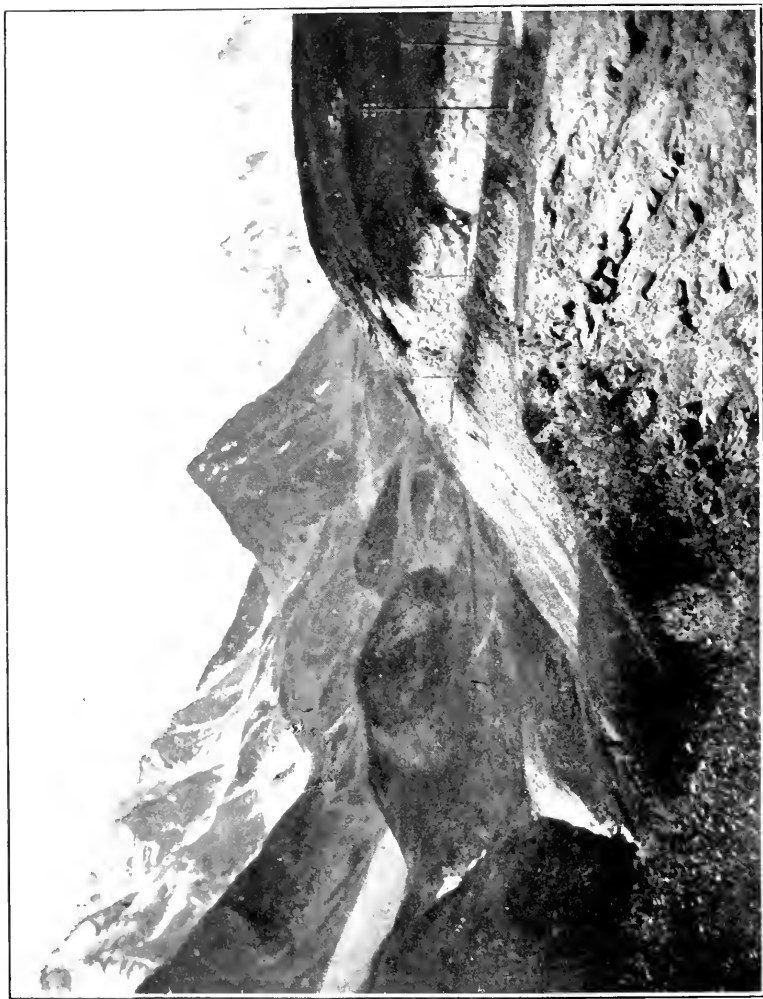




LE LAUTARET AND THE MELLE, LOOKING WEST.

Photo. T. A. Chapman.





LE LAUTARET, PYRAMIDE DU LAURICHARD FROM THE EAST. Photo, T. A. Chapman.  
*The Entomologist's Record.*

The Entomologist's Record  
AND  
JOURNAL OF VARIATION.

VOL. XXVI. No. 1.

JANUARY 15TH, 1914.

A Visit to Le Lautaret. (With two plates).

By Dr. T. A. CHAPMAN, F.Z.S.

It is many years since I paid my first short visit to Le Lautaret, and was then much impressed with the remarkable character, both as to flora and fauna, for which it is celebrated. My memory serves me, however, but badly as to details, and all I clearly recollect is finding cocoons and imagines of *Heterogynis penella*, which I had previously supposed to be near its limit as to combined North Latitude and elevation at Digne. It occurs, however, in the Vosges, at, I believe, comparatively low levels.

I visited Le Lautaret again in 1905, along with Mr. Champion, we stayed there a week and got about a good deal, yet had a couple of days' experience of what Le Lautaret could be like in the height of its summer, the thermometer fell to 41° as a day temperature with rain and wind, and for this couple of days the only way to keep warm was to get under the bed-clothes. On my visit this year I was favoured by fine summer weather for nearly the whole fortnight of my stay.

There are many references to Le Lautaret in our Magazine, but the only account in any detail is that by Tutt, in vol. xiii., p. 253., and in vol. ix., p. 13. There is a passing reference to it by Mr. Pearson, in vol. xxiv., p. 97, but he seems to have been scared by the hotel accommodation there, though one judges from his tale that he went further and fared worse. As a matter of fact, Le Lautaret Hospice gives fair entertainment, and though not perhaps affording all the heart can desire, it compares not unfavourably with the Swiss hotel of 30 or 40 years ago, which one always found so satisfactory when on a walking tour.

The remarkably abundant and luxuriant vegetation here took Mr. Tutt's attention, as it must do that of all who take even a mere ramble near the Col. One is inclined to say that one finds here all the alpine plants of Switzerland, especially of Western Switzerland, with many others, and such a statement would not be so far from the truth as might be at first sight supposed, and one is struck to find growing side by side many plants that one has only seen before far away from each other.

Whether the agricultural (or pastoral?) arrangements of the district have been arranged to suit the remarkable plant growth, or whether the latter has been conditioned by the farming arrangements, they

certainly seem to combine to favour the floral plethora with which one never ceases to be astonished and gratified.

The North side (facing South) of the Valley from Villar d'Arène to Lautaret, from some 6,000ft. upwards to 8,000ft. or 8,500ft., is not grazed, but all is cut for hay, and this cutting is not begun till quite the end of July, nor finished till well into September, when the seven or eight months' winter commences. Any grazing is done on only a few awkward places after the cutting is over and this late cutting seems to enable the plants to thrive about as well as if they were not cut at all, though how such luxuriance persists with constant cropping and no return, was a puzzle for which I could not find the key. On the opposite (south) side of the valley, with trifling exceptions in places, the whole slope is grazed, and the different aspect of the vegetation is very striking, due more perhaps to the aspect than to this different treatment. From some 8,000ft. or 8,500ft. upwards, grazing obtains on all available areas. Insects seem also able to maintain themselves on the mowing areas, not usually in profusion like the plant life, but vastly in excess of what usually occurs in the mowed meadows of the lower areas in Switzerland.

Mr. Tutt's references to the species he met with is so detailed that it would be superfluous for me to go over the same ground now, and I will only refer to such points as may extend the picture of the butterfly fauna of the district that he gives.

I visited this district largely with a view to studying *Agriades thersites*, and went to Le Lautaret to fill up time till the second brood emerged at lower levels. I was rather astonished to find it at Le Lautaret, but this and other items in reference to that species may be left till I have something to say as to its life-history. I have now got larvæ which appear determined to hibernate, so that whether I shall succeed or not in getting them through the winter is my present problem. Mr. Tutt says he took *Polyommatus icarus* var. *icarinus* here. I do not find these amongst any of his specimens that have come my way; probably these were *Agriades thersites*, but *icarinus* is not very rare at Le Lautaret. *P. icarus* is common and well distributed, but the commonest "blue" at Lautaret is certainly *P. eros*, though it is a little localised. It is abundant wherever *Oxytropis campestris* grows, and also with *Astragalus aristatus*; *Phaca astragalina* is also a foodplant, though not apparently so much favoured, and accounts, I think, for the more scattered occurrence of *P. eros*. It very probably has other less acceptable foodplants.

After *P. eros* the most abundant "blue" was *Plebeius argyrognomon*, *P. icarus* being rather less common. Tutt notices *P. argyrognomon* (under name *P. argus*) as only locally common; it was during my visit generally distributed and common in most places. Really much more abundant than *P. eros*, if allowance be made for the latter being abundant in only a few restricted localities. *Plebeius argus* (*aegeon*) was rare, and only occurred occasionally.

A ♀ of *Cupido sebrus* was met with, and a few odd specimens of *Lycæna arion*, a small dark form. *Polyommatus semiargus* was not uncommon. Tutt says the specimens were small compared with examples from the Tyrol. They seemed to me about average size, one ♀ was 35mm.; Wheeler says 30mm., Rubl 32-34mm. *Agriades coridon* was not uncommon, but rather below the Hospice, becoming frequent

at 500ft. lower. *Cupido minimus* was frequent, but never common as Tutt found it. A few specimens of *Albulina pheretes* and *P. hylas*, which Tutt did not take, occurred, but were nowhere common.

*Polyommatus escheri*.—I took this species a little below Le Lautaret, the highest point about 400ft. below the Hospice, say about 6,400ft. It occurred here perhaps ten days later than at Bourg d'Oisans. My observations lead me to believe that this species is single-brooded at all the levels at which I have taken it, but I do not feel at all certain as to this. At each locality where I have taken it, it appears to have a local race distinguishable from others by size, by amount of darkening of the borders, in darkness of underside, etc., though there is generally sufficient variability in each race to make the characters of the local race not necessarily those of every specimen.

The Lautaret specimens are as small as any I have met with, *viz.*, about 32-34mm. Those from Gavarnie in the Pyrenees are about 34-36mm., those from Binn very little larger. Wheeler (*Butts. of Switz.*) gives 38mm., which is probably a fair average for Swiss forms. Those taken at Bourg d'Oisans range about 38-42mm., and those taken last year at Bourg St. Maurice and elsewhere in the Valley of the Isère were rather larger. They were also notable as having many specimens with much more black shading towards the margin and towards the ends of the veins. The largest and finest specimens also showed most distinctly the white sheen along the veins towards the costa, which give these larger specimens so much brilliancy when alive; the same white gloss is perhaps seen in other species, most often in fine large *P. icarus*. Specimens from Courmayeur range about 36mm. to 38mm.

Mr. Tutt saw, but did not take, *Parnassius delius*. I did not see a specimen, nor did I happen to come across a very hopeful locality for it, though there must be many in the region, the foodplant of *P. delius* was frequently seen but never in the quantity that *P. delius* affects. *P. apollo* occurred in various places, both above and below the Hospice, but only commonly some 500ft. lower. Though *Colias phicomone* was common *C. palaeno* was not seen, though *Vacciniina optilete* which has the same foodplant occurred in odd specimens.

On July 31st I took on ground some 400ft. or 500ft. above Le Lautaret, and towards Villar d'Arène a black *Argynnis aglaia*. It is not in quite perfect condition, and very closely resembles the figure given on pl. viii., vol. xiv., p. 311, of the *Ent. Record*.

A species not referred to by Tutt is *Erebia glacialis*. The species is no doubt common, probably occurring in all suitable localities, of which many are visible (from below) on all sides. On each of my visits I saw this on the Col du Galibier and neighbouring slopes. On my visit there this year on July 27th, it was fairly common, but as usual difficult to catch, and owing to want of sun not on the wing all the time. The form occurring here is an absolutely black one. I have one specimen on the underside of which a little brownish may be detected by a willing observer. This *pluto* form is the only one I have seen here, though probably it affords other forms as rare aberrations.

Tutt notices the close approach in general aspect that occurs at Le Lautaret between *Erebia melampus* and *Erebia pharte*, and goes so far as to assert that, at this locality, whatever they are elsewhere, they are one species. Mr. Elwes was, apparently (*Ent. Soc. Lond.*, November 4th, 1896), in full agreement with him in the matter, nor

do I know of any definite disagreement with this result being recorded except my brief remarks in *Trans. Ent. Soc.*, 1898, p. 204. As regards the close resemblance of these two species at Le Lautaret, *Erebia ceto* ought certainly to be added to the group, if not also *E. epiphron*. These four species fly together, it is almost impossible to distinguish them on the wing, though there is a little difference in the flight of *E. melampus* that enables one often to make a fair guess as to which it is. When caught, *E. epiphron* and *E. ceto* are easily recognised, though the latter is a small form with very small markings, both the brown patches and eyespots, so that it differs little at first view from *E. melampus*, till the wedge-shaped form of the brown spots is noticed. *E. pharte* is, perhaps, best separated by the form of the brown beneath the forewing, which is a more or less regular, continuous band; in *E. melampus* it is irregular, broken up, or defective. I did not bring home many specimens of these, but I captured a very considerable number, and never had any difficulty in saying to what species any specimen belonged.

The close resemblance of these species here is due to what may be called, for convenience, whether it be really so or not, the mimicry of *E. pharte* by *E. melampus*, and by *E. ceto*. In *E. melampus* the black spots dwindle and almost disappear to a degree that is certainly rare in other localities, whilst in *E. ceto* the same change occurs, and the size of the insect is much the same as that of *E. pharte*. I do not know what is the most typical size of *E. ceto*. At Fusio they are very large; nowhere are they, I think, smaller than at Le Lautaret.

If mimicry has anything to do with this grouping, it is curious that *E. pharte* should be the model, as it seems to be, the *E. pharte* being very nearly of the usual form, and the *E. melampus* and *E. ceto* varied to accord with it. In connection with this I may refer to the long series of *E. pharte* and *E. manto*, which I took above Guarda (Lower Engadine), in which the *E. manto* has departed from its usual form, and in appearance is very close indeed to *E. pharte*, so close in some cases that it is certainly more difficult to pronounce as to some specimens than it is in the case of *E. melampus* and *E. pharte* at Le Lautaret. Yet ordinary *E. manto* is really a very different insect from *E. pharte*.

This case of *E. manto* seems to confirm the idea that it is the *E. pharte*, that is the model, and that the other species achieve some advantage by confusing themselves with it.

Amongst the moths the only species not noticed by Tutt about which I need make any remark are *Omia cymbalariae*, which was frequently seen on the wing in the sunshine, possibly stirred up, but I think seen so often that flying in the sunshine must be its natural habit. *Clisiocampa alpicola* larvæ were seen, a fresh ♀ imago was found at rest. The nests of *Eriogaster arbusculæ*, which is certainly specifically distinct from *E. lanestris*, were abundant on the low-growing *Salix arbuscula* in wet places, and also on alders. Larvæ were also found, but no nests, in places where both willows and alders were very distant, so that some other foodplant or foodplants seem to be indicated. Larvæ of this species brought home in previous years always failed to be successfully treated, small ones died, larger ones were stung with hardly an exception, and the few cocoons finally obtained never eventuated, so I made no attempt to do anything with the species on this occasion.



Mr. Tutt notes that *Anthrocera (Zygæna) exulans* was "in the utmost profusion." Mr. Tutt's dates were from July 30th to August 5th. Mine from July 22nd to August 5th, yet I hardly saw a specimen of *A. exulans*, not, I should say, a couple of dozen. *A. minus* was common, and six spotted species (*Jilipendulae*, etc.), occurred. I have seen *A. exulans* "in the utmost profusion" in various places in the Swiss and Graian Alps, and without actually formulating an opinion, I imagine that I supposed that at these localities they were always so. I don't think I ever visited any of these places in another year to test the matter. Here, however, Tutt found them in profusion in 1896. In 1913 they were certainly very rare. I conclude, therefore, that when one finds them swarming, as they sometimes do, the season has more to do with it than the actual locality.

An interesting species met with at about 8000ft. was *Anaitis simpliciatæ*, an inhabitant of the Dauphiny Alps, but not those of Switzerland, and not met with apparently between Dauphiny and Hungary. I also took a specimen of *Crambus pauperellus*. I don't know whether this has been recorded from Dauphiny, but it occurs in the Jura and the Vosges, and like *A. simpliciatæ* is not seen to the east of this till we reach Hungary. *Heterogyis penella* was common in various places, but though I did meet with larvæ and cocoons, I was much struck by their rarity in comparison with the imagines; one would expect to see at least plenty of empty cocoons. The species of this genus, however, differ much in different localities in this matter. At Digne the cocoons of this species are everywhere conspicuous.

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## The Prohibition of the Capture of *Parnassius apollo*.

By PROF. M. GILLMER.

[Prof. Gilmer, of Cöthen, Hesse Darmstadt, has very kindly furnished us with the history and full particulars of the Prohibition, and Mr. Sich has carefully translated his account into English. It may not be uninteresting to have the exact information, as it was originally stated that the Prohibition was over the whole of Germany, whereas it is only in one or two areas, where the species has been excessively harassed by professional collectors for years.—H.J.T.]

July 13th, 1912.

REINTRODUCING PARNASSIUS APOLLO ON THE CALVARIENBERG, NEAR BOZEN.

Oberleutnant Wilhelm von Dragoni-Rabenhorst, of Gries, near Bozen (Tirol), writes, that formerly the Calvarienberg at Bozen, was an excellent locality for *P. apollo*. A collector, who annually visited this fat pasture land, is said to have so far succeeded by assiduous collecting, that now not a single *apollo* flies on the Calvarienberg. W. von Dragoni-Rabenhorst has put down on the Calvarienberg a large number of larvæ of *P. apollo* var. *rubidus*, from the neighbouring Eisack Valley, and asks entomologists to spare *apollo* until it has again become firmly established there.

July 27th, 1912.

PROTECTION OF PARNASSIUS APOLLO, L., VAR. MELLICULUS, STICH, IN THE OBERPFALZ.

By PROF. DR. A. SPULER, Erlangen.

At the suggestion of the Regensburg Protection Society (Verein für Naturschutzpflege), the councils of Stadtambhof, Parsberg and Burglengenfeld (Bavaria) have prohibited for three years the present inconsiderate wholesale capture of the beautiful *apollo*. The by-law of Burglengenfeld runs as follows:—

TO THE LOCAL POLICE AUTHORITIES:—*Re the district police regulation for the protection of the Apollo butterfly.*

Below follows a copy of the district police regulation for the protection of the Apollo butterfly, issued on September 2nd, 1911, with the government resolution of the 6th of the previous month, No. 23848, putting it in force, with the request to publish this regulation immediately in the district in the usual form (see Ministerial-Resolution, May 28th, 1862, Regierungsblatt S. 925). The fulfilment of this order is to be notified here *within 10 days*. The following description of the Apollo butterfly and its caterpillar is to be brought to public notice by affixing copies on the parish notice boards. (Then follows the description).

DISTRICT POLICE REGULATION.—The Council of Burglengenfeld issues the following District Police Regulation according to articles 4 and 22b, Section II., of the Police penalties book for the district of Burglengenfeld.

The capture of the butterfly Apollo (*Parnassius apollo*), and the collection of the caterpillars of this butterfly is prohibited. Excepting the capture or collection of single specimens for scientific purposes by persons provided with and carrying a license issued by the district council. Disregard of this regulation will be punished by a fine up to 150 Marks (£7 10s. 0d.), or imprisonment. Burglengenfeld, August 2nd, 1911.

TO THE LOCAL SCHOOL AUTHORITIES.—*Re District Police Regulation for the protection of the Apollo butterfly.* The local school authorities will see to it that the above printed district police regulation, of the 2nd of the previous month, prohibiting the capture of the Apollo butterfly, and the collection of the caterpillar about April, shall be particularly impressed on the school children. Burglengenfeld, September 19th, 1911.

It would be desirable if *P. apollo* were to be protected also in the southern Black Forest district at Randen, and in the Hübogau where its existence is, in places, already threatened. It has years ago been exterminated on the further Schlossberg, near Freiburg in Breisgau. The remarkable decline in numbers of *apollo* in Fränkisch Switzerland has been proved by Julius Stephan in the *Zeitschrift der Deutschen Naturwissenschaftlichen Gesellschaft*, and at the same time the authorities were appealed to to declare the district in a legal manner as a Reserve against collectors.

September 7th, 1912.

The magistrate at Eichstätt has issued a local police regulation which imposes penalties on the capturing of the native kinds of *apollo* butterflies, the gathering of the pupæ and larvæ, the sale or despatch of these butterflies, their pupæ or larvæ.

The President (Hüther) and the editor (Dr. Meyer) of the *International Entomologische Verein* at Frankfort-on-Main have decided that advertisements, in which those species in danger of extermination are offered for sale, will not be accepted any more for the *Internat. Ent. Zeitschrift*. This prohibition includes *apollo* from every German locality, especially the varieties *vinnigensis*, *bartholomæus*, *melliculus*, from Alsace, also *Mantis religiosa* from Alsace, and *Arctia maculosa* from Vienna.

February 22nd, 1913.

Under the above date, Gg. Kneidl of Regensburg issued an appeal in which he asks entomologists and collectors (expressly those in Bavaria) for their support in coming to an understanding over the following prohibition. The by-law against collecting the larvæ and catching the butterfly of *apollo* has been in force in the Regensburg district since July, 1912. Unfortunately this by-law can in many ways be evaded, since licences to collect for scientific purposes are issued by the authorities, the number of specimens collected cannot be controlled. During night work (which, for instance, is much carried on at Regensburg) this species, especially the butterfly in sleep, may be taken, so that in this way the by-law is really one-sided. I shall endeavour to have a *strict general by-law* carried through in this way, that *from April to the middle of July no collector may enter those spaces where Apollo occurs, and also that during this period night work on the mountain slopes be strictly prohibited*. In this way only might the extermination of this beautiful insect be avoided.

[Prof. Gillmer concludes with the Appeal of the Swiss Ent. Ass. on behalf of several rare species in that country, a copy of which has already appeared, vol. xxv., p. 168.—H.J.T.]

## Notes on Collecting Rhopalocera in Horley (Surrey) district for 1912 and 1913.

By H. BAKER SLY, F.E.S.

As I have not kept any special notes I can only give a list of the more noteworthy specimens which I have taken during the last two seasons. *Gonepteryx rhamni* was one of the first butterflies seen by me in 1912, when I saw it in a wood near Three Bridges on March 26th. I did not net the insect, but left it to lay its brood of eggs and was rewarded by finding quite a number of larvæ during June and July. The insect was again fairly plentiful in the same wood during the following August. On April 27th, 1912, I took the first *Euchloe cardamines*, a fine ♂, and soon after that date they were to be seen in plenty along the lanes, being in fine condition up till the latter part of May. Along with *E. cardamines* there were plenty of the first brood of *Pieris napi*, some being very strongly marked on the undersides.

*Brenthis euphrosyne* was swarming in Worth Forest (Tilgate) on May 12th, 1912. I failed to take any variations of note, but was more fortunate with *B. selene*, which occurs freely in the marshy parts of the forest at the latter end of May and June. I took a very dark aberration on May 26th, 1912, in very fine condition.

*Celastrina argiolus* was also in some numbers around holly in the neighbourhood of Copthorne during May, one being seen as early as May 1st.

*Aphantopus hyperantus*, although local, was plentiful in some of the woods, and a fine series was taken on July 8th.

A perfect *Dryas paphia* was unfortunately missed in Worth Forest on July 20th, 1912, it being the only specimen I have seen since my residence in this locality.

Along every hedgerow *Epinephela tithonus* was hopping from mid-July to mid-August, and *Rumicia phlaeas* was abundant and in good condition by the end of July, there being a good number with the blue spots on the hindwings, especially during last year.

*Bithys quercis* was common in Worth Forest by the first week in August, although as usual they were chipped in a good many cases. Persistent beating of the oaks during the latter half of May in the locality will generally result in a fair supply of larvæ.

Several *Pyramis atalanta* were occasional visitors to the flowers in the garden during August and September, but it seems an uncommon insect in these parts, and one *P. cardui* was seen on August 5th, 1912, also in the garden.

A trip to Cowden, near Lingfield, on August 16th, resulted in three or four *Vanessa io*, which were taken on thistles growing beside the lake.

I have seen no *Colias edusa* in Horley this year at all, although I saw one or two in August, 1912.

A trip to Horsley, on May 24th, resulted in a good bag of *Hammaris lucina*, all in very good condition, also in two or three *Callophrys rubi*. I was fortunate enough not to meet with a game-keeper in this wood, as from what I hear they are very vigilant and turn off anybody as soon as they arrive on the ground.

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### July in the Eastern Pyrenees.

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

Last year's summer holiday was spent in the Pyrénées Orientales the first fortnight being passed at Vernet-des-Bains, and the latter part of the time at the Chalet Hotel on Mount Canigou. The journey to Vernet is an easy one though long, once on the other side of the Channel the only change (if you select the best trains) is at Paris. I arrived there about 4.30 p.m. and had ample time to walk across the river to a comfortable restaurant that I knew of near the Louvre, where I got a good dinner at a reasonable price, after which I walked quietly back having plenty of leisure to catch the 7 o'clock through train, which I suppose is in reality one of the Spanish expresses. I arrived at Vernet on the morning of July 1st, and after lunch took a stroll up the hill at the back of the Hotel des Bains Mercader in the brilliant sun of the Mediterranean. Insects, however, were not plentiful, a few of the commoner "blues" and *Melanargia lachesis* being the only

species I noticed; possibly, however, this was because I had stayed and partially unpacked so that I did not start out till between 3 and 4 p.m. The following day was dull and the sky entirely overcast, nevertheless I went for the day up the St. Martin Valley and spent a pleasant hour going over the ruins and the Church of St. Martin of Canigou, the old church below the present new edifice is very interesting with its three aisles, each of which is arranged with its altar at the east end. The monks in old days certainly knew how to obtain both commanding and beautiful situations. One day I saw the Archbishop of Perpignan in the grounds (the Church of St. Martin is a country living and seat of the Archbishops of Perpignan) directing some of his men how to gather the fruit of his plane trees, he was evidently particular that they should not break the branches of the trees, and very picturesque his tall figure looked in his reddish purple cassock and cape and very broad brimmed, stiff, round hat of the same colour.

My primary object in coming to Vernet was to obtain and watch *Laeosopis roboris* in one of its most abundant localities. My friend Mr. Jones had given me many details, so I had no difficulty in discovering its haunts as also those of many other species. The second day, July 3rd was brilliant though at times there was a cool breeze, and I spent it beyond the dairy and on the hill at the back. *L. roboris* was evidently just coming out, for by persistent effort I obtained about half-a-dozen flying around the ash trees and occasionally settling on some bramble that grew at the foot of the rocks just at the corner leading over the stream to the pastures beyond. They were all quite fresh, so I looked forward to obtaining a fair series before leaving. During my visit I spent several mornings in this locality, and found a narrow path about 150 feet up the hill to be a good hunting ground; here, with the aid of a long handle to my net, I secured quite a fine series of both sexes of this beautiful Ruralid. In the same locality I also took several quite fresh *Epinephele pasiphaë*. *Melanargia lachesis* was flying fairly plentifully, so that I was able to secure them without difficulty; the species appears to remain on the wing for well over a month in successive emergences, I imagine, as I took quite fresh examples when I came down from Canigou over a month later on. *Leptosia (Leucophasia) sinapis* was not uncommon in most localities. Walking one morning through the hotel grounds towards the dairy, I espied a beautiful *Trochilium apiformis* just emerged, or rather just having dried its wings on a very large poplar, its pupa case was quickly discovered sticking out of the roots just above the ground. Scarcely had I got into the field beyond when a new "blue," that I had not seen before in the locality, attracted me, and soon a female *Ereus argiades* succumbed to my attentions, and shortly after a male followed suit. The former is unusually black, as was a second female that I took on my return from the little fortified town of Villefranche. *Polyommatus icarus* was fairly common, the females being as abundant as the males, the former being often suffused with blue, one specimen being very strongly suffused over both wings. *Lycæna arion* was also by no means uncommon, the general form being unusually large, and though the blue was darkish, it was very lustrous, the spots in all cases being decidedly radiated, and the dark termen very broad; it is a very handsome form. Among other species, that I hoped to secure a good series of, was

*Polyommatus amanda*, its delicate and beautiful colouring has always attracted my attention, but I fear it must have been well over, for I only took one or two specimens at Vernet and another in the St. Vincent Valley. A single pair only of *Agriades thetis* fell to my net, whilst a single male *Heodes virgaureae* and *Lowia dorilis* did likewise, as also a single *P. hylas*. *Celastrina argiolus* was rare, but *Plebeius argus* was plentiful, and *Polyommatus semiargus* was not uncommon, its colour, however, was decidedly darker than usual. I only took one specimen of *Rumicia phloea*s, which was quite bright and typical; it was captured on July 7th. *Parnassius apollo* were all large specimens, and were found, though not in any abundance, throughout the district, only one specimen of *Colias edusa*, a poor female, fell to my net in one of the open areas by the road towards St. Martin de Canigon. *Pieris brassicae* and *Pieris (Ganoris) rapae* occurred frequently in the cultivated areas, whilst *Leptosia sinapis* was common. The bright and pretty *Euchloë euphenooides* was not as common in the immediate vicinity of Vernet as it was further afield, I only took three specimens more or less near the little town.

On the hill at the foot of which stands the Hotel des Bains Mercader, several of the Satyrids occurred in abundance, the result being that I omitted to take a sufficiently long series of *Satyrus circe*. It was in beautiful condition for at least a month to five weeks. *S. hermione* was very common, *S. semele* less so, but the females were beautifully bright and large specimens. High up the hill near the top I was glad to take a single *S. briseis*. *Melanargia lachesis* occurred everywhere, as also did *Erebia stygine*, all being fine large heavily ocellated specimens, decidedly larger than my Gavarnie series and more heavily spotted, whilst they are, of course, quite a different looking insect from the general run of the Swiss form.

Quite typical *Dryas paphia* turned up here and there, both sexes of *Issoria lathonia*, and a single male of *Brenthis dia* in perfect condition was taken on July 4th. Of *Melitaeae*, *M. didyma* and *M. athalia* were common, the latter large and darkly marked, whilst *M. phoobe* was much less in evidence, but the specimens were large. *Pararge maera* and its form *adrasta* occurred together, and I took a single specimen of *P. aegeria*. *Aphantopus hyperantus* was quite typical, whilst *Epinephele jurtina* var. *hispulla* likewise occurred, and *E. pasiphæe* has already been mentioned. Of the genus *Coenonympha* the only two species that I took were *C. arcania* and *C. pamphilus*.

Among the Heterocera, *Anthrocera (Zygæna) loniceræ* was fairly common, *A. scabiosæ* being much less abundant. *Adscita (Ino) geryon* was in good condition, and by no means rare, whilst *Heterogynis penella* was of frequent occurrence. *Sesia (Macroglossa) stellatarum* could be seen every day poised in the hot sun over the flowers whose nectar it delighted in. I did not find any of the Lithosiids common except *Coscinia striata*: this was plentiful, but I found no dark or light varieties whatever. A single specimen of both *Lithosia griseola* and *L. caniola* fell to my lot, and I took also one specimen each of *Euproctis chrysorrhoea* and of *Cochlidion limacodes*. Flying in the hot sun I likewise took one specimen of *Aegeria (Sesia) empififormis* and of *E. acrifrons*. So far as the immediate neighbourhood of Vernet itself is concerned this concludes my list of captures.

After I had passed a week's pleasant stay I returned to the hotel

to dinner one evening having had a long and hard day's work—and a very hot one too—in the St. Vincent Valley, and had scarcely sat down in my accustomed place at table, when an evident Englishman and his wife were placed next to me; the meal proceeded with the usual enquiries as to the weather and the scenery of the neighbourhood, and then a chance remark at desert revealed the fact that the newcomers were bent on some branch of natural history, and on a more minute enquiry I found that I was talking to Mr. and Mrs. C. F. Johnson, of Stockport, both of whom were bent on an entomological holiday. Notes were soon being compared and explanations as to hunting grounds given. I believe their first day was spent in the St. Vincent Valley, while I had before arranged for a longish day up the St. Martin Valley with an extension to the Col du Cheval-Mort and up to the Randais Hut. A most lovely day I had, a description of which will serve for several other shorter excursions in the same direction.

The route lies *via* the little village of Casteil, but there is plenty of work to be done before even that short distance is accomplished. The right side of the valley as we ascend is almost entirely under cultivation, but the left side, though cultivated, has a good deal of rocky bare land and some poor pasture on the hill sides, where insects fly freely. *Leptosia sinapis* was common, whilst the bright and pretty *Euchloë euphenoides* was at this time rather rare, I only picked up about half-a-dozen examples on this side of Vernet, and they were not confined to definite spots but occurred singly in different localities, some in the Valley, some well above Casteil. A whitish specimen of the same genus attracted my attention and gave me a sharp race in the hope of securing a female *euphenoides*, but alas it turned out to be only *Euchloë cardamines* after all. The "blues" and "coppers" up in this direction were conspicuous by their absence, the only specimens I took being a single *Polyommatus semiargus* and two *Rumiccia phlaeas*, neither of which can be called var. *eleus*, though they must have been of the summer brood. *Melanargia lachesis* was abundant everywhere as also was *Melitaea athalia*. *M. phoebe*, however, was much less common, while *M. didyma* was typical but not as common as usual. On a bare hillside I took a single female *Aporia crataegi*, but perhaps I let them pass as Mr. and Mrs. Johnson took more, they also took *Papilio podalirius* and *Parnassius apollo*, which I fear I allowed to pass by unmolested. Of the Pierids, *Pieris brassicae*, *P. rapae* and *P. napi* were all observed, whilst I took, close by the Church of St. Martin, a beautiful, quite fresh specimen of *Papilio machaon*. *Argynnis aglaia* was not uncommon, though I only netted a couple, both of which are quite typical, and I also took *Brenthis dia*, *Issoria lathonia* and *Dryas paphia*. As the wooded hill-sides were reached *Satyrus circe* put in an occasional appearance, and *S. hermione* was very frequent. I only observed a single *Coenonympha dorus*, a male which I captured, as also a single female *C. arcania*, the specimen having marked obsolescence of spots on the underside. *Ercbia stygus* was the only species of the genus I saw in this locality, but Mr. Johnson also took *E. epiphron*. The genus *Pararge* was represented by three species, a single female *P. megera*, with *P. aegeria* and *P. maera* var. *adrasta*. *Epinephle jurtina* var. *hispulla* was not uncommon, whilst *E. pasiphaë*, in both sexes, was in beautiful condition. Of the *Hesperiidæ* I took a quite fresh *Powellia sao*, a single *Thymelicus acteon*

and a pair of *Adopaea flava* (*thauomas*), but I fear I paid little attention to this group. In addition to those I have here recorded, Mr. and Mrs. Johnson took *Laeosopsis roboris*, *Polyommatus icarus*, *P. amanda* and *Polyommatus semiargus*, *Lycaena arion* and *Ererres argiades*.

Having turned out of the St. Martin Valley and begun the ascent towards the Col du Cheval-Mort, whilst however still more or less in the branch valley, a vast bush of clematis was the rendezvous of many species. *Limenitis camilla* with its graceful flight settled on the flowers and hovered over them, darting rapidly away only to return, and finally (after being admired greatly, I having had much pleasure in watching its movements) it made a home in my net and has come to live with me. Most of the specimens had, however, passed their best. Then *Brenthis* (*Argynnis*) *daphne* put in an appearance, and I took several at this spot, it being the only place I took it during this trip. *Parnassius apollo* was here also, and fell a victim to my avidity, the specimens were by no means the large fine form one is accustomed to associate with this district. As I ascended, *Erebia stygus* became very common, all being a large fine form having broad rufous bands and large spots with prominent white centres; this is quite the finest form that I have taken, being much larger and finer than that obtained in the Hautes Pyrénées. Single specimens of both *Colias edusa* and *Gionepteryx rhamni* were obtained, the former not being uncommon though not in good condition. *Leptosia duponcheli* turned up twice, and one beautiful specimen of *L. sinapis* var. *diniensis*, with the wings entirely white above, was also taken. *Argynnis aylaia* was the only one of its genus that I saw in the higher regions, it and *Melitaea athalia* were abundant, and *M. phoebe* also flew sparingly. The form of *Hipparchia semele* was quite ordinary, not at all comparable with the fine bright tawny female specimens frequenting the hill at the back of the Hotel Mercader.

More than one pleasant day was spent in this district, but in no case were insects abundant, the St. Vincent Valley was on the whole the better collecting ground. On July 11th we (Mr. and Mrs. Johnson and I) took an excursion together to Ille sur Tet, a little town down in the valley of the river from which it takes its name. The town itself did not appear to have very much of interest about it, and after supplying ourselves with peaches and fruit from the market-place, we hastened on. Our way led us over the long bridge crossing the Tet, which must have been at one time a broad fine river, but is now confined to a very narrow channel, though doubtless when the snow is melting on the hills the bed may have a fair volume of water in it; it was a very hot day and we were glad of some shade on the other side of the river. Immediately on arrival there, however, a chase became necessary, for *Gionepteryx cleopatra* sped on his way in front, but was overtaken and captured after a sharp run, as also were several others of the same species. As we wandered along we noticed a little *Epinephle* that flew differently among the undergrowth of the hedges, and we soon discovered that it was *E. ida*, a nice little series of both sexes fell to each of us, and *Pararge aegeria* seemed more or less to accompany it. Most of the hills we were among appeared to consist of a sort of calcareous limestone of a yellowish colour, that was honey-combed through and through with caves and water channels; an



immense amount of detrition is evidently taking place here. As we ascended—for the heat of the valley made our ascent imperative—up the sides of a little water course a fine dark Satyrid, new to me, settled a yard or two out of reach. A few steps among the rocks brought me within its compass, but the balancing necessary on a steeply slanting boulder just gave it a chance and off it flew only to settle in a more inaccessible place. In its flight, however, it showed its underside for a moment, and that sight inspired the resolution to obtain the specimen if possible. Up I clambered again, and in the end perseverance was rewarded, for I returned with a lovely fresh specimen of the beautiful *Satyrus jidia*, and before the day was out a second also fell to my net; both are unusually black specimens above, whilst the underside is in sharp contrast. As we wended our way upwards several nice *Lampides boeticus* were taken, and a single *Epinephele pasiphaë*, very much worn, was also captured by me, showing that here it was practically over though at Vernet it was in first rate condition. *Melitaea didyma* was not uncommon and *Melanargia lachesis* was still quite fresh. Much of the hill-side was given up to vineyards and but little occurred among them; an occasional *C. edusa* flew rapidly across, and as we neared the limits of cultivation and were arriving up to the heath-covered summit, *M. athalia* would come occasionally within striking distance. Once on the top, however, we were more busily engaged, for *Papilio feisthameli* was by no means rare, but they took some catching, fortunately all of us were more or less successful with it. During a brief respite with this species I saw a large insect come up the hill-side madly hurtling itself through the air, of course I made for it, but alas without avail, for its pace was quite beyond me, and to my great regret I saw my first *Charaxes jasius* in its native haunts disappear into the blue ether in front of me. *Papilio machaon* was taken by Mr. Johnson, and *M. phoebe* was not uncommon, whilst on our way down *Dryas paphia*, *Satyrus circe*, and *S. alcyone* were taken, the first and the last by my companions, *S. circe* by myself. To quite complete the list, by no means a long one, *Pararge maera* var. *adrasta*, *E. tithonus* and *E. jurtina* were also captured. A quiet walk to the railway station finished the day at this interesting little place, and so ended a most enjoyable trip.

The following day we (the same trio) spent in the Gorges de Carença. To get there it is necessary to take the Mont Louis electric railway up the Valley of the Tet and detrain at Thuès, at the entrance to the gorge, we, however, being at the very rear of the train did not realise, amid the lovely scenery, that we had arrived there, and so we passed our destination and went on to Fontpédrouse, further up the valley. It being only three miles further on the little detour made no difference to us, nay, as a matter of fact, it added several species to our day's sport. It was a fine walk, down hill all the way. *Euchloe euphenoides* soon put in an appearance and several nice fresh specimens fell to each of us, then Mr. Johnson caught a single female "blue" we had not seen before, and *Glaucopsyche cyllarus* was added to the list. *Brenthis (Argynnis) daphne* next fell to my lot, and as we wended our way down *Rumiccia phlaeas*, *Plebeius aegon*, *Polyommatus icarus*, *P. hylas*, *P. escheri*, *Polyommatus semiargus* as also *Lycæna arion* were taken. Ere long we came to a steep rocky declivity, up and down which several Satyrids disported themselves and by dint of patience and careful stalking S.

*alcyone* fell to my lot and a couple of specimens of *S. actaea*. The female of the last is typical, the male, however, is *cordula* above, but *actaea* below. Ere long we arrived at the gorge itself, a very narrow defile with the rocky sides rising quite precipitously 100 to 150 feet high, the little rushing stream adding light and vivacity to the darkness of the gorge, in this very narrow section few insects were seen, except a *Boarmia* or two at rest on the rocky sides, here and there, however, the stream widened out in curves and the sunshine made itself felt on both vegetation and insect life. In one of these spots I took *P. amanda* and a single *Agriades thetis* as also *A. coridon*, whilst *P. escheri* was not uncommon. It was not very long, however, before we left behind us the narrow defile and emerged into a lovely wooded valley, still narrow, but slowly widening out, and the ascent rapidly became perceptible. *P. apollo* was not uncommon and was larger than the St. Martin specimens, whilst Mr. Johnson took a single *P. mnemosyne*. *A. crataegi*, *P. brassicae*, *P. napi*, and *P. rapae* also occurred with *L. sinapis* added to them. Of the *Melitaeae*, *M. phoebe* and *M. athalia* contested which was the commoner. Mr. and Mrs. Johnson took also *Pontia daphidice* and *Euchlœ cardamines* in addition to those just referred to, they also took *G. rhamni*, and *G. cleopatra*, neither of which fell to my lot. Of *Vanessidae*, *V. io*, *Pyrameis atalanta*, *P. cardui*, *Aglais urticae* and *Euranesia antiopa* (one only) were captured, whilst my companions took *Satyrus alcyone* which I did not see. *Colias edusa* occurred and I took a nice palish yellow female. *Pararge maera* var. *adrasta* was common. Of the *Erebiae* I took *E. stygne*, decidedly less fine than the Vernet form, and one very heavily spotted form of *Melampias epiphron*: several species of *Argynnidae* occurred to one or other of us, such as *Brenthis dia*, *Issoria lathonia*, *A. aglaia*, *A. niobe* ab. *eris*, the only *eris* taken on this holiday. *Melanargia lachesis* was rare, for we only took one each. *Aphantopus hyperantus* and *E. jurtina* var. *hispulla* both occurred, typical *Heodes virgaureae* and *Rumicia phlacas* were captured, whilst Mr. Johnson took one *Loweia alciphron* var. *gordius*. Of "blues" *Plebeius argus* was not rare, almost exactly like our South of England specimens, and *P. icarus* was not infrequent. I took also a small series of *Polygonmatus semiargus*, all of which were unusually dark blue. *L. arion* and *Celastrina argiolus* were both rare. Among the *Heterocera* several specimens of *Callimorpha dominula* were taken by me. Whilst *Anthrocera (Zygæna) brizae* was very common, *A. loniceræ* was of much less frequent occurrence and I only took one *A. filipendulae*. What with much time spent in collecting, coupled with a short shower, we did not reach the boundary line of Spain or even the Lake of Careña, but we enjoyed a lovely day's excursion and were quite content with our "bag," even though it was not quite as large either in number of species or specimens as we had expected.

The St. Vincent Valley was perhaps the best ground for collecting in this district at all events during my visit. On the hill at the back of the Mercader *Satyrus circe* was in strong evidence and in beautiful condition, whilst the females of *Hipparchia semele* were large and very rich in the tawny colour of their bands. *Melanargia lachesis* was here, as it was everywhere else. Further on round the other side of the hill before coming into the St. Vincent Valley *Euchlœ euphenoides* turned up singly, and I took a nice little series of both sexes. *Epinephela jurtina* var. *hispulla* was very fine and *Coenonympha pasiphaë* also

occurred, whilst *Melitaea athalia* in all degrees of more or less suffusion was abundant and some very pretty specimens of *M. didyma* var. *meridionalis* likewise occurred both here and in the St. Vincent Valley. In the valley itself *Satyrus circe* was replaced by *S. alcyone*, which was common, *Polyommatus icarus*, very bright and clear in its blue, occurred, and *Laeosopis roboris* was always to be taken as also *Lycaena arion*, the radiated and heavily spotted forms. Of Vanessaids two *Polygonia c-album* fell to the net, both the pale form with small markings, but much the worse for wear, and I saw but did not take *A. urticae* and *V. io*: *Brenthis dia* was long past its prime, but *Issoria lathonia* and *A. aglaia* were in excellent condition. *Melitaea phoebe* was very common, very fine and very fresh. *A. hyperantus* was of fairly frequent occurrence, but all quite typical; of *Pararge megera* I took but one specimen. *Coenonympha arcania* was not uncommon, perhaps a little darker and more strongly marked below than the type form. Among the *Hesperiidæ* I took *Thymelicus acteon* rarely and *Adopaea sylvanus*. The race of *Erebia stygæ* is a very fine one here as elsewhere in this district, the fulvous bands are very broad and bright and the ocellated spots large and prominent, in size also it is fine, being much larger than any Swiss specimens I have ever seen and also larger than those I have taken in the Hautes Pyrénées. *Limenitis camilla* was rare but the one or two I took were beautiful specimens. *Colias edusa* was by no means uncommon but the Pierid group were conspicuous rather by their absence, *A. crataegi* being the commonest after *C. edusa*. *L. sinapis* occurred and *Pieris (Ganoris) rapae*, whilst of *Gonepteryx rhamni* and *G. cleopatra* I only took one or two specimens. In addition to these Mr. and Mrs. Johnson captured *Papilio podalirius* var. *feisthameli*, *P. brassicae*, *E. cardamines*, *Pararge maera* var. *adriasta*, *Rumicia phlaeas* (I also took one var. *eleus*) and *Everes argyales*.

I cannot say that, taking all things into consideration, insects were abundant. A walk to Villefranche—a most interesting little frontier fortress though now disused—and home, the back way produced *P. podalirius* var. *feisthameli*, *E. euphenoides*, *Colias edusa* and *G. cleopatra*, the usual *Melitææ*, and in addition to the ordinary run of species, *Epinephele ida*.

The most interesting part of the excursion was certainly that spent at the Chalet Hotel of Canigou, where I stayed for nearly three weeks, but this I will reserve for a later paper.

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### Life-history of *Lycaena sephyrus* var. *uhrarki*.\*

By F. W. FROHAWK, M.B.O.U., F.E.S.

On May 28th I received from Fraulein Sarolta von Wertheimstein four living females of *Lycaena sephyrus*, which had been captured at Flamunda, Deliblat, South Hungary. These were at once placed on a growing plant of *Astragalus dasycanthus*, and during the following two days over six dozen eggs were deposited on both surfaces of the leaves of the plant. The butterflies continued depositing for several days and lived until the middle of June.

Immediately the egg is extruded it is entirely of a pale green colour, which rapidly fades within a few minutes to bluish-white. The egg is proportionately small for the size of the butterfly, measuring only .53mm. across its greatest

\* Cf. *Ent. Record*, vol. xxiv., p. 190, 1912.

diameter, and only .27mm. high. In shape it is a compressed spheroid. The ground colour is a pale greenish-blue-grey; the micropyle appearing as a dark grey spot. The whole surface is covered with raised white reticulations, which produce an irregular cellular pattern; these are extremely fine over the micropyle, but increase in size until reaching the side where they become largest and form a rough serrated structure which gives the whole egg a bluish-white appearance. The reticulations are much smaller in structure than in any egg of the British *Lycaenidae*.

Before hatching the egg assumes almost a pure white hue. They commenced hatching on June 17th, remaining about eighteen days in the egg state.

Directly after the emergence the larva is very small, being only .79mm. long. It so closely resembles the young larva of *Aricia (Lycaena) medon* that the two are almost identical, the only noticeable difference is that *sephryus* has longer dorsal hairs the spiracles are larger, and the colouring of the body whiter, than in *A. medon*. The head is deep olive, partly concealed by the overlapping frontal segment which has a large central dorsal disc. It is of the usual *Lycaena* form, with very long dorsal hairs placed in pairs on either side of the medio-dorsal furrow. The hair on each segment is much the longest and has a white basal tubercle, below are two minute subdorsal hairs; midway between these two pairs of hairs are two lenticles, the first one the larger; the sub-spiracular row of hairs consists of three long ones side by side, which project laterally. All the hairs are finely serrated and have dark bases, except the longest dorsal one; on the claspers are simple straight hairs also with dark bases. The spiracles are large and dark brown, resembling the largest lenticles. The colour of the body is pale yellowish-green-white.

The larvæ feed on both surfaces of the *Astragalus* leaves but seem to prefer the undersurface. They eat small holes in the cuticle making numerous transparent spots over the surface. The first larva moulted first time on June 28th, remaining eleven days in the first stage.

After the first moult (shortly before second) it measures 3mm. long. The ground colour is a light green, longitudinally striped with greenish-white along the edges of the medio-dorsal furrow and lateral ridge. There are also short oblique stripes along the side. The 2nd to 9th segments, inclusive, are humped dorsally and the sides flattened. On the 1st segment is a dorsal disc, and a rudimentary scent or honey-gland obtains on the tenth segment. The body is rather thickly clothed with white serrated hairs of various lengths, each having a dull green base. There are also scattered over the body numerous raised black-rimmed lenticles; a row of these border the posterior edge of the transverse scent gland. The surface is roughly granular. The head is shining black; the legs whitish, and the claspers greenish.

In the second stage they rest and feed chiefly on the undersurface of the leaves. They feed on the cuticle of the surface upon which they live and leave the upper epidermis intact, little semitransparent blotches on the leaves being produced.

The second moult occurred on July 8th.

The second stage occupied ten days.

Shortly after the second moult the larva enters into hibernation about the middle of July, it is then only about 3.50mm. long. The head is shining black. The ground colour of the body is green; it is longitudinally striped with brown, the stripes are composed of markings on each segment, placed in longitudinal rows. The surface is covered with white serrated hairs of various lengths, each having a dusky olive-green base, the longest hairs being those along the dorsal and lateral areas, those on the sub-dorsal surface are considerably shorter. The spiracles are black and prominent and numerous dusky lenticles are sprinkled over the whole of the body. The legs are ochreous, and the claspers green. The scent or honey-gland is similar to that in the previous stage.

Most of the larvæ, which were kept on cut sprigs of *Astragalus* (stuck into small bottles with wool stopping up the necks), crawled down the stems and buried themselves within the wool for hibernation.

While a few which remained on the growing plant, crawled to the base and spun themselves up among the folds of dead leaves, each resting on a little carpet of silk spun on the leaf. It is, therefore, obvious that in a wild state the larvæ descend the stems of the plant and hibernate among moss, dead leaves, or other shelters, suitable for the purpose of hibernation.

Upon microscopical examination the honey-gland does not appear more developed than in the previous stage, when it appears as a scar on the epidermis, no real incision being visible.

(To be continued.)

## Collecting in Turkey, mainly near Constantinople, in 1913.

By P. P. GRAVES, F.E.S.

The autumn of 1912 died away in storm and incessant rain, a fit prelude to the disasters which at the end of October and in early November shook the Turkish Empire to its foundations. The winter round Constantinople was unusually severe. Snow fell often and heavily, and the "Tipi" or N.E. blizzard, raged for days at a time. 1913, however, proved a very fair year for collecting, and although I had but little time to spare, I was yet able to snatch occasional half holidays in the open all through the summer till August 6th, when I left for England. Spring began unusually early owing to the prevalence of southerly winds. The last half of March was extremely warm and dry. April was on the whole rather cold, North winds having set in again, but May, June, and above all July, were exceptionally hot.

The fact that the whole Tchataldja district was, as it still is, a great fortress, that camps of Kurds and other truculent irregulars were pitched in parts of the Belgrade forest, where there were also not a few armed deserters, and after the Grand Vizier's murder a party of fugitive conspirators and a large number of search parties of gendarmes, who were rather inclined to arrest suspicious "shapkalis" (persons wearing hats), greatly circumscribed collecting on the European side of the Bosphorus. The ground, which I had previously worked at Kütchük-Tchekmedjé, and where I had taken *Agriades thersites*, had been converted first into a cholera camp and secondly into a burying ground for some 2,000 victims of the epidemic. I was therefore compelled to restrict my operations mainly to the Asiatic side of the water. In the following notes I propose to deal separately with the European and with the Asiatic localities which I visited, adding a brief account of my observations at Smyrna, which I visited in mid-October after my return to the East.

I. BOSPHORUS.—EUROPEAN SIDE.—I did not do any collecting on the European side of the water till June 4th, when I paid a visit of a few hours to the more accessible part of the Belgrade Forest district. I found most of the species one expected to find, out in some numbers, though I only got one *Limenitis camilla*, a fine ♀, and found the Lycænids and Urbicohids which emerge in May over or worn out. *Coccyonympha arcania*, *Nordmannia ilicis*, and *Brenthis daphne* were freshly emerged and ♂s of *Argynnis aglaia* were already on the wing with *Melitaea didyma*. A nice specimen of *Pterogon proserpina*, taken buzzing over some low plants, was my best capture.

On June 24th I again visited the woods in search of *Pararge roxelana*, *Lycaena arion*, and *Heteropterus morpheus*. *Pararge roxelana* was pretty rare everywhere this year, and I only got two specimens, one of which was not perfect. *H. morpheus* occurred in great abundance on some new ground I visited, a track from the Büyük-deré, Belgrade Forest road to Therapia, through woods at first and then through a series of valleys very slightly cultivated and bordered by productive patches of brushwood and heathy or grassy wastes. *H. morpheus* was very common indeed here, but most of the specimens I took were already rather worn. I only took one *Lycaena arion*, a large rather worn ♀. Count Bukuwky, who accompanied me on this outing, had taken about a dozen *L. arion* in the preceding fortnight, both here and rather nearer Therapia. A species which was very common this year on both sides of the Bosphorus was *Dryas paphia* many of which were flying to bramble blossom on June 24th. Even more common was *Dryas pandora*, which was extraordinarily abundant, everywhere in 1913. I saw *Lowcia alciphron* of the *meliboens* form but it was worn to rags. The Satyrids were well out, *Satyrus circe*, *Hipparchia semele* and what one should call, if M. Jullien's conclusions (*Bull. Soc. Lep. Gen.*, vol. i., p. 365) are correct, *S. syriaca* instead of *S. hermione*. I shall be very glad to send material to any lepidopterist who wishes to examine the male genitalia of these Constantinople "*hermione*."

In July I had little chance of paying more than very brief visits, and these on business to Therapia. None of the species I took there were remarkable but I noticed (1) a comparative abundance of *Issoria lathonia*, a species which I had found rare near Constantinople in previous years, (2) a great increase in the numbers of *Raywardia telicanus*, which seems to have been common everywhere this year on the Bosphorus. Count Bukuwky took several *P. icarus* ab. *icarinus* at one locality near Therapia, where I have not yet taken *thersites*. He also got a decent specimen of *Anthrocera (Zygæna) lacta*, a rare species, near Constantinople. His specimen came near ab. *mannerheimi*, Chard. *Anthrocera punctum*, another species, which was fairly common this year, occurred not infrequently on the downs behind Büyük-deré.

II. BOSPHORUS.—ASIATIC SIDE.—My first collecting on the Asiatic side in 1913 was on March 13th, when I paid a visit to Prinkipo Island, a pine-clad island, the fourth of a chain known generally as the "Princes Islands" and in Turkish as "Kizil Adalar" (the Red Islands) on account of the sandstone of which they are largely composed. Prinkipo, I may add, contains some limestone outcrops and shows signs of former volcanic activity. In March I took *Callophrys rubi* here with *Rumicia phlaeas* and hibernated *Gonepteryx rhamni*, *Vanessa io*, *Polygonia egea*, and *Eugonia poly-chloros* (hibernated) were also seen with *Pieris brassicae* and a single *Pieris rapae*. My next visit to Prinkipo was on May 20th when I found a few *Epinephela jurtina* just out, noted worn *Aricia medon* (*astrarche*) and *A. anteros*, single specimens of *Iphiclides podalirius*, *Limenitis camilla* and *C. rubi*, all of them in bad order, one very large ♂ *Euchloë cardamines*, also worn, and nothing else. Everything was already somewhat burnt, the island containing no springs worth mentioning and being out of the "Bosphorus draught," with the result that it misses not a few spring and summer showers. I was unable to visit the island in late June

when I might have taken *Polyommatus meleager*, which Mr. Muschamp has received from the island. I paid my last visit to Prinkipo on August 4th, when I found *Rapivardia telicannus* not uncommon on bramble blossom. The only Satyrids seen were many worn *S. syriaca* (*hermione*) and one fresh ♂ *S. statilius*, unhappily torn. *L. camilla*, worn *E. jurtina* and the common Pierids were the only other things noted, with *Pyrameis cardui*.

Most of my collecting on the Asiatic side was done at Gyök-su. I first visited this good spot this year, on March 28th, when I added *Thais polyxena* var. *cassandra* to my Constantinople list. The specimens from this locality were inclined to be small and dark. They show from one to three crimson spots on the anterior margin and between the apex and discoidal cell of the forewings. The usual spring insects were coming out, and *Callophrys rubi* was abundant. I took one *Pieris napi*, never very common at Constantinople in the spring brood, with *Pontia daplidice* g.v. *bellidice*, some common things and a fresh *Taeniocampa miniosa*. I saw my first *Euchloë cardamines* of the year. On subsequent visits to Gyök-su in April I noted the following dates of emergence of spring butterflies: April 7th, *Papilio machaon*, *Leptostia sinapis*, *Colias edusa*, *Celastrina argiolus*: April 15th, *Glaucopsyche cyllarus*, one ♂; when my collecting was cut short by a heavy shower. April 18th, *Iphioides podalirius*, *Lowia dorilis* ♀s, *Nisoniades tages*, *Erynnis alceae* and *Pararge aegeria*. I saw a very worn *Scolitantides baton* on that date. *A. anteros* first appeared on April 25th with *M. cinxia* and *Euclidia glyphica*. On April 29th I took a good specimen of *Hesperia malvae*, which seems rare near Constantinople, and a male of *H. armoricanus*. *E. cardamines* was not at all uncommon in April and I took some very fine specimens, one ♀, which was by way of exception worn, having traces of ♂ colour on the forewings. *Thais polyxena* var. *cassandra* occurred in most localities, but usually singly.

During the first fortnight in May I paid two visits to Erenkeui and did some collecting on the bare downs there. I took worn *Anthocharis belia* and fresh g.a. *ausonia* there on May 7th, and my first *Chrysophanus thersamon* of the year with very fresh *Aricia medon* (*astrarche*), *P. icarus* and *M. cinxia*, the last small in this locality. I found *C. pamphilus* out on that date. On May 11th I took *Pararge maera* already the worse for wear, and saw the first *Limenitis camilla* of the season. On May 16th and 24th I collected at Gyök-su finding a locality for *Hesperia sidae*, and also taking a fair number of *Polyommatus amanda* on the latter date, *Polyommatus semiargus* of the *intermedia* form was rare and *H. armoricanus* occurred sparingly here.

On May 16th I found *Melitaea trivialis* out in fair numbers and perfect condition in one of its haunts at Gyök-su, and on that day took the first *M. didyma* of the year. This species was not as common as usual in 1913. On May 30th I got in a couple of hours at Gyök-su and took two *Lowia alciphron* var. *meliboeus* ♂s and a ♂ *Hesperia malvae* with the clubs of the antennæ Indian red beneath. Dr. Chapman, who kindly examined the genitalia of this specimen, informs me that it is certainly *H. malvae*. *N. ilicis* was just out with *A. crataegi*, but the recent rains had damaged many butterflies. On this day most of the *V. io* larvæ which I had taken during my preceding visits to Gyök-su, pupated. They emerged between June 10th and 20th, as

good-sized imagines. *Eugonia polychloros* was not so common this year, and I saw few *Euranessa antiopa* and *P. c-album*; *V. io*, on the other hand was commoner than usual. On June 13th I spent an afternoon at Tokat, near Beikos. There I found plenty of *Brenthis daphne* with numerous *Dryas pandora* and *D. paphia*. One very fresh *Pararge roselana* was taken. I did not work the woods to the south, which are an extension of the Alem-Dagh forest. Here Count Bukowky, in the first week of June, took one or two *Argynnis adippe*—a species I have not yet seen myself here—and a number of fine *M. athalia* of a form which the Rev. G. Wheeler says is var. *mehadiensis*. On June 18th, a hot but cloudy day, I spent two hours at Gyök-su and found a locality for the ab. *leucomelas* of *M. galatea* var. *procida*, which turned up not uncommonly. Odd specimens of *Erynnis althææ* and *Powellia orbifer* occurred with numbers of *Thymelicus acteon*, *Adopaea flava*, and *A. sylvanus*. Many *Nordmannia ilicis* and *N. acaciæ* were about, but nearly all were in bad order. Of the big Satyrids *S. circe* was taken some ten days in advance of its usual date, and *Hipparchia semele* and *S. syriaca (hermione)* seen. I took a good second brood specimen of *Scolitantides baton*. On June 29th I walked from Alemdagh to Riva and Anadol Fener on the Black Sea. There I had little time to collect, but noted great abundance of *A. crataegi*, *I. latonia*, *A. aqlaia*, *B. daphne*, *E. jurtina*, and other common things in the Alem-Dagh woods. *C. arcania* and *N. ilicis* were common but worn. Near the ford over the Riva-Su I took *Brenthis dia* mostly worn, and fresh *G. rhamni*. I also got a couple of very worn *M. athalia* var. *mehadiensis* in the clearings. On the sandy coast near Riva *Plbeius argus (ægon)*, *Aricia medon (astrarche)*, of the second brood, and *Anthrocera punctum*, and *A. filipendulæ* occurred in some numbers with *M. procida* ab. *leucomelas*. Count Bukowky took *A. carniolica* here. On Sunday, July 6th, I spent two hours collecting in a dry oak wood near Yakadjik, a pretty spot on the Asiatic side of the Sea of Marmora, between Erenkeui and Ismid. Here *Satyrus syriaca (hermione)* was very common, and four or five specimens were often to be brushed off one tree-trunk. *Pararge roselana* was rare and worn. A good *C. edusa* ab. ♀ *helice* and several *A. thersites*, which was only just appearing, while *P. icarus* was well out, were, with *A. carniolica* and a single ♀ *Tarucus balcanicus*, my best captures. On July 10th I visited Gyök-su, but only had a bare hour there and got little, *Anthrocera carniolica* and *A. punctum* being my best captures.

My last visit to Gyök-su was on October 28th. On that date not much was flying beyond the Pierids, *Pyramis cardui* and some common Lycænids, but I made some interesting observations. I saw one or two "blue" ♀s of *P. icarus*, which are not common here. They were, however, much less heavily suffused with blue than specimens of the British race var. *tutti*, Obthr., which I took in the Isle of Wight in September. *Aricia medon (astrarche)* was unmistakably of the third brood. The specimens were very small, the underside ground colour resembling that usual in spring specimens and never approaching the rich yellow-brown or even orange-brown hue of summer specimens. I took a very large but worn *C. edusa* ab. ♀ *helice* and saw what I took to be *C. erate* but could not take it. *I. telicanus* was extremely abundant but mostly in bad order.

III. SMYRNA.—I had about half an hour's collecting in the warm



and sunny garden of the British Consulate at Smyrna on October 18th. Large and well marked *Pieris brassicae* occurred there with a few *P. rapae*, *Erynnis alcaeae*, one passable ♀ *Hesperia armoricanus*, one fine and beautifully fresh *P. egea*, *Aricia medon* (*astrarche*) (third brood), *Pyrameis cardui*, *P. atalanta* and *Raywardia telicannus*. The bad weather and lack of time preventing me from collecting on other days outside the town. Several *Sesia stellatarum* and *P. brassicae* came on board our steamer as we lay off Mitylene on October 15th.

IV. CORRECTIONS.—To the additions and corrections to my Constantinople list (*Ent. Rec.*, xxiv., no. 1, p. 12), which were published in the *Ent. Rec.*, xxv., no. 5, p. 139, I must add the following species of Rhopalocera previously unrecorded. *T. polyxena* var. *cassandra*, *A. adippe* and *M. athalia* var. *mehadiensis*. *L. arion* has been recorded already (*Ent. Rec.*, xxv., no. 4, p. 118), and I should add *P. melaeager*, were it not that there has been so much building on Prinkipo island that it may have disappeared. Further may I correct a bad mistake of mine which appears on p. 317 of vol. xxiii. of the *Ent. Rec.* I there speak of *Pontia* (*Synchloë*) *callidice*. This is a slip. *P. chloridice* was what I had intended to write.

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### Erebia gavarniensis, Warren, and caecilia, Hb.

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

Mr. Rowland-Brown's valuable note on Mr. Warren's interesting paper (*antea*, vol. xxv., p. 294 and 273 respectively), has made me look up my specimens from Gavarnie, all of which were taken in the Val d'Ossue, and my series is, I think, of sufficient interest in confirmation of Mr. Rowland-Brown's remarks to warrant a few further words on the matter.

Of the type form *gavarniensis* I have eight males. These are entirely black above and below. Of my dozen females I may have two that would answer Mr. Warren's description, one without eye-spots above (by this I take it he means the usual sub-apical small black spots with no white) and one with. The others differ in some respects, and it may be well to show how the species varies. Seven of these females are entirely black above, five of them having two black dots between veins 4 and 7 (one between 4 and 5 and one between 5 and 6). On the underside one specimen is entirely umber-brown and has the rust-coloured sub-apical patch, referred to by Mr. Warren, without spots in the primaries; the secondaries have a lemon dash between veins 4 and 5, and a trace of a small lemon spot between 6 and 7. Three others are similar to the foregoing, but with the dash in the secondaries enlarged into an ill-defined spot.

Another specimen is on the underside obscurely rusty in the radial area of the primaries, with the dashes between 4 and 5 and 6 and 7 enlarged into spots, dirty ochreous in colour, and with a trace of similar coloured interneural dashes between veins 2 and 3 and 3 and 4.

The sixth and seventh specimens have a sub-apical tawny patch on the primaries above, whilst below there is a largish sub-apical dirty ochreous spot in the primaries, the markings of the secondaries being very similar to those of the fifth specimen just described.

One of the spotted females, at first referred to, has in the tawny sub-apical area two black dots on the underside of the primaries, there being only the least trace of a tawny spot between veins 4 and 5.

Two others have the whole of the radial area below more or less tawny, with two black sub-apical dots in the primaries, with two large sub-apical spots in the secondaries, the one specimen having them tawny in colour, and the other almost lemon-coloured.

The remaining female form is blackish all over above, with the two sub-apical black dots fairly distinct, and below them two other black dots, but less distinct, one on vein 4 and one on vein 3. On the underside the tawny patch on the primaries is reduced, though distinct, and in it are two distinct small black spots, the secondaries have a series of four ochreous interneural small spots. Of this form I have two specimens very closely similar.

There yet remain five males which are unicolorous blackish above, and very dark below, but each of which have a small tawny patch in the upper radial area of the primaries on the under-surface. Most of my specimens were taken on July 26th, 1911, and all about that date, this being, I suppose, a week to a fortnight later than Mr. Warren's captures, and possibly about a similar period later than Mr. Rowland-Brown's series, for he had the pleasure of meeting the latter at Gavarnie, and so he may have taken a few more on a later date than Mr. Warren.

My series, however, shows that *E. gavarniensis* also varies after the manner of *E. manto*, both in the manner and coloration of the markings on the underside. In July, 1897, I found *E. manto* fairly commonly in the Sefinen Thal, near Mürren, and I have also taken it elsewhere, and the undersurfaces of both sexes varied very considerably in that one valley, just as *E. gavarniensis* does in the Val d'Ossone. Perhaps I ought to apologise for occupying so much space in the magazine, but I thought my experience with both species might be worth recording. I should add, however, that I do not know a small form of the Pyrenean insect equivalent to *E. manto* ab. *pyrrhula*, Frey.

## NOTES ON COLLECTING, Etc.

CAMPTOGRAMMA FLUVIATA AT RAMSGATE.—I took a ♀ *C. fluvata* in fair condition on a fence between Broadstairs and Ramsgate on November 16th.—L. W. NEWMAN, Bexley.

SELENIA BILUNARIA (ILLUNARIA) IN DECEMBER.—A freshly emerged ♀ specimen of *S. bilunaria* (*illunaria*) was found in the wild in our Bexley Woods to-day December 9th.—ID.

## CURRENT NOTES AND SHORT NOTICES.

Our daily "scrap gatherers" are at times forced to make up their complement of pages with short stories whose character may be literary or may not. A few days ago the *Westminster Gazette* had one such tale, in which the hero was a Member of Parliament who, having arrived in sight of the local station on foot some considerable time

before the train was due, "sat down for a few moments on a convenient hillock by the roadside. Half an hour later as he was being whirled along in a first-class compartment . . . he became subtly conscious of a tickling sensation in the region of his spine. He shifted uneasily in his seat, but still the tickling continued, and on looking down to ascertain the cause of this phenomenon, Sir Theodore was amazed to observe that his ankles were covered with black ants, several of which were busy exploring other parts of his body. He realised at once that the roadside mound upon which he had recently sat must have been an ant-heap, and the knowledge that hundreds of industrious *lepidoptera* were gradually making their way up his legs was naturally disconcerting." We will not follow the adventures of our hero after inadvertently dropping his nether garments out of the carriage window while shaking them, but we must ask ourselves whether *any* of the "stuff" done up for us in our current news-sheets can be relied upon; even encyclopedias apparently have now fallen out of use, and the "unbiased internal consciousness of an open mind" alone relied on for accuracy.

Professor Hudson Beare, in the *Proc. Roy. Phys. Soc. of Edin.*, has described and given the life-history of a beetle, *Thanasimus rufipes*, Brahm., new to the British Fauna. It was taken with a swarm of other species and insects among débris of pine needles, when beating the tops of felled Scotch firs, at Nethy Bridge, Inverness-shire, in July, 1912.

In the *Bull. Soc. Ent. France*, p. 435, M. Mabille reports that on September 9th, 1912, he captured a specimen of *Pieris ergane* in his garden at Perreux (Seine) among a large number of *Pieris rapae* which he was systematically capturing and examining, with the hope of finding *Pieris manni*, of which, however, he did not meet with a single example. The specimen was a female and belonged to the ab. *magnimaculata* form. No others were taken or seen. Among the *P. rapae* M. Mabille examined, he found a gynandromorph, the right side ♂ and the left side ♀.

*Parnassius apollo* is still increasing the names for its forms. A short time ago M. Oberthür devoted vol. vii. of the *Études de Lépidoptérologie comparée* to the study of the European races of this species and especially those of France. He pointed out, at the same time, that between the department of Lozère and the Pyrenees, no localities for its occurrence were known. M. le Cerf, in the *Bull. Soc. Ent. France*, p. 460, etc., reports specimens of *P. apollo* from Aveyron, and after comparison with the figures published by M. Oberthür, points out their special characters and names the race as var. *cebennica*. The series was taken at Hospitalet (Aveyron), and one at Gesse (Aude). *P. apollo* is also reported to have been seen in the gorge of the Tarn near Caze, by M. C. Allaud, and in extreme abundance upon the Cause de Mende, between Mende and Molines.

The *International Entomologische Zeitschrift* during the last few months has contained some very interesting articles. In No. 12 Professor Linstow has a notice of the various occurrences of masses of European species of Lepidoptera, flying together in one direction, and apparently migrating. The chief species which so act are *Pyrausta cardui* and *Pieris brassicae*, while one or two cases are given of *Aglais urticae*, *Pieris rapae*, *Leucoma salicis*, *Plusia gamma*, *Psilura* (*Lyman-*

*tria*) *monacha*, *Parasemia plantaginis* and *Cucullia umbratica*. Attention is also called to the *Sphingidae*, of which several species in hot summers wander singly in large numbers from the Mediterranean area over all the countries of middle Europe. These latter are chiefly *Manduca atropos*, *Daphnis nerii*, *Hippotion celerio*, *Phryxus livornica* var. *lineata* and *Sesia stellatarum*. The writer attempts to deduce some origin and object of this movement, but he fails to show that there is any definite direction of flight. A short Bibliography is appended but this does not include the very full and important contribution some years ago of our late Editor. Herr Felix Bryk in No. 14 discusses several cases of the formation of a second pouch in the females of *Parnassius romanovi*. He considers that either a second coitus takes place or that a change of position of the abdomens of both individuals during the coitus has caused the duplication of the pouch. In No. 17 Herr Fritz. Wagner describes and names a new form of *Melanargia ines* from Tunis as var. *fathme*. From the figures given and the description the form is midway between *M. ines* and *M. arge* in amount and disposition of the dark markings. It was obtained in some numbers. Prof. Dr. Courvoisier in the same number discusses the Linnean types of the *Lycæniidae* referred to in Dr. Verity's proposals as to the nomenclature of the Linnean species of Rhopalocera. His remarks serve to show how difficult the various questions are of definite solution, and to further emphasise the view that in most cases of doubt and ambiguity it is better to leave the nomenclature of the species as it is. In No. 19 Herr Arnost Grund names a new aberration of *Plebeius argus* (*ægon*) in which the metallic spots on the underside of the hindwings is absent, as ab. *inornata*. The corresponding form of *P. argyrognomon*, he also distinguished by the same aberrational name. In No. 35 Prof. Dr. Courvoisier began a series of critical notes on the Nomenclature and Diagnosis of the European *Ruralidae* (*Theclidae*) similar to those previously contributed on various sections of the *Lycæniidae*.

The following is a List of the Officers and Council of the South London Entomological and Natural History Society for the coming year:—*President*, B. H. Smith, B.A., F.E.S.; *Vice-Presidents*, A. E. Gibbs, F.L.S., F.E.S. and A. E. Tonge, F.E.S.; *Treasurer*, T. W. Hall, F.E.S.; *Hon. Librarian*, A. W. Dods; *Hon. Curator*, W. West (Greenwich); *Editor of Proceedings*, Edward Step, F.L.S.; *Hon. Secretaries*, Stanley Edwards, F.L.S., F.E.S. and Hy. J. Turner, F.E.S.; *Council*, R. Adkin, F.E.S., J. Platt Barrett, F.E.S., F. Noad Clark, C. W. Colthrup, B. H. Curwen, W. J. Kaye, F.E.S., N. D. Riley, F.E.S., W. G. Sheldon, F.E.S. and A. Sieh, F.E.S.

The following is a List of the Officers and Council of the Entomological Society of London for the ensuing year:—*President*, G. T. Bethune-Baker, F.L.S., F.Z.S.; *Treasurer*, A. H. Jones; *Librarian*, G. C. Champion, A.L.S., F.Z.S.; *Hon. Secretaries*, Rev. G. Wheeler, M.A., F.Z.S. and Com. J. J. Walker, M.A., R.N., F.L.S.; *Council*, E. A. Butler, B.A., B.Sc., J. E. Collin, S. Edwards, F.Z.S., F.L.S., Dr. H. Eltringham, M.A., F.L.S., C. J. Gahan, M.A., A. E. Gibbs, F.L.S., F.Z.S., E. E. Green, G. Meade-Waldo, M.A., Dr. G. W. Nicholson, M.A., Hon. N. C. Rothschild, M.A., F.L.S., H. Rowland-Brown, M.A. and C. J. Wainwright.

In the *Rev. Mens. Soc. Ent. Namuroise* for September, Mr. L. J.

Lambillion writes an article on the Apaturids of Virton. The author refers to the unprecedentedly cold and wet season, and its general effect upon the dates of appearance of various species, retarding their emergence. He states that the Apaturids were so abundant at Virton at the end of July, that on one occasion M. l'Abbé Cabeau captured no less than eleven specimens at one stroke of the net. The following new forms are described in the paper:—(1) ab. *leucothea* of the *clytie* form of *Apatura ilia*, diagnosed as Form *clytie*, but as in *ilia*, with the fasciæ and spots of all the wings white, not luteous; (2) ab. *semialba* of the *clytie* form of *A. ilia*, diagnosed as Form *clytie*, but in part as *ilia*, with the fasciæ and spots of the fore-wings only white, not luteous; (3) ab. *subalbata* of the *clytie* form of *A. ilia*, diagnosed as Form *clytie*, but with the fasciæ and spots of all the wings whitish (*subalbatis*); (4) ab. *alceste* of the *silvia* form of *A. ilia*, diagnosed as Form *silvia*, but with all the fasciæ and spots, especially the apical ones, ochraceous not luteous; (5) ab. *leucodes* of *Hamearis (Nemeobius) lucina*, diagnosed as with the spots on the upper side of all four wings not fulvous, but whitish (*subalbis*); and (6) ab. *constellata* of *H. lucina*, diagnosed as with the median spots on the hind-wings above not fulvous but whitish (*subalbis*). They were all communicated to him by M. l'Abbé.

The *Annual Report on the Progress and Condition of the United States National Museum*, for the year ending June, 1912, has come to hand. Over 80 pages are taken up with a detailed list of additions to the collections and to the Library. Large collections of insects have been obtained by field-work during the various surveys in the Panama Canal area, and considerable progress has been made in the transfer of the material to the new standard cases in the recently erected Museum Buildings.

The pages of *Societas Entomologica* for the past few months have contained, amongst other articles, a "List of newly described or bred Parasites and their Hosts," "Notes on the Biology of *Cynips scutellaris*," with many figures by Walter Reum, "Notes on the plants attacked by Gall-forming Insects," by Hugo Schmidt-(Grünberg), "Parnassiana," a record of the newly recognised forms of the various species of the genus *Parnassius*, by Felix Bryk, etc.

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## SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.  
—September 25th.—EXHIBITION of lantern-slides by members as follows: Mr. C. B. Williams, an adult ♂ Embiid, bred from a larva from Algeria. Mr. Dennis, flower groups in nature and the fuller's teazle growing and drying for use. Mr. Main, details of the life-history of the larch-sawfly, and gave an account of its habits at the different stages. Mr. Colthrup, eggs and nests of sea-birds, from photographs. A LOCAL ORTHOPTERON.—Mr. Lucas, specimens of the local grasshopper, *Gomphocerus rufus*, from Bookham Common, and a bred female. AN EMBIID TUNNEL.—Mr. C. B. Williams, a piece of bark showing the silky tunnels made by the Embiid larva from Algeria. VARIATION IN AGRIADES CORIDON.—Mr. Newman, *Agriades coridon* from Herts including ab. *semisyngrapha*, a ♀ specimen with asymmetrical wings, the smaller pair dusted with blue. SIZE OF BRENTHIS EUPHROSYSNE.—

Mr. Curwen, *Brenthis ephrosyne* from several localities, those from the higher Alps being mostly large and light in colour, instead of dark and small as usually met with. ABERRATION OF *R. PHLAEAS*.—Mr. Moore, the aberration of *Punica phlaeas* captured during the recent Field Meeting at Worms Heath. The upper and underside of the forewings had much enlarged spots = ab. *magnipunctata*. A FUNGIVOROUS COLEOPTERON.—Mr. West (Greenwich), a series of the Coleopteron, *Dacne rufifrons*, taken from the fungus recently exhibited by Mr. Edwards, and a short series of the beautiful *Cassida vittata*. REPORTS OF *C. EDUSA*, ETC.—Several members reported that *Colias edusa* had been seen in numbers at various places, Box Hill, Margate, Folkestone, etc., and that *C. hyale* had been taken.

October 9th.—REFERENCE COLLECTIONS.—Some large additions to the Society's reference collection of British Lepidoptera from Mr. W. G. Dawson were announced. PAPER.—Mr. Lucas read a Paper:—"The Short-horned Acridians of the British Isles," and illustrated his remarks with lantern slides of all the species. SWISS LEPIDOPTERA.—Mr. Ashdown exhibited Lepidoptera taken by him in Switzerland in June and July last. DIPTEROUS PARASITE OF A SNAIL.—Mr. Colthrup, a snail shell from which he had bred a Dipteron presumably parasitic in the snail. A SCARCE DIPTERON.—Mr. Andrews, a scarce Dipteron, the Syrphid, *S. guttatus* taken at Bexley in August. PLATYARTHUS HOFFMANNSEGGII.—Mr. Step, living examples of the ant-nest Isopod, *Platyarthus hoffmannseggii* found in a nest of *Formica fusca*. Mr. West (Ashted), enlarged photographs of the same woodlouse.\* SWISS LEPIDOPTERA AND VARIETIES.—Mr. Curwen, specimens of *Syntomis phegea*, and its var. *plueneri* in which the white spots were reduced in size and number, from Pallanza and Iselle, together with specimens of the rare *Nacilia ancilla*.† LOCAL SERIES OF *M. AURINIA*.—Mr. Newman, picked series from a large number of bred *Melitaea aurinia*, from County Clare and Oban. The variation was extremely small although the larvæ were samples of many broods. C. QUADRIFASCIARIA BRED.—Mr. Tonge, a series of *Coremia quadrifasciaria* bred from a ♀ taken at Albury, Surrey, showing but little variation.

October 23rd.—LECTURE.—Prof. E. B. Poulton, F.R.S., gave an account of the mimicry exhibited by the Nymphalines of North America illustrating his remarks by specimens and lantern slides. SPHINGIDÆ OF TRINIDAD.—Mr. W. J. Kaye exhibited a collection of the *Sphingidæ* found in the Island of Trinidad. There were about 40 species in all. SPANISH LEPIDOPTERA.—Mr. Sheldon, series of species taken by him near Albarracin, Central Spain, including *Plebeius sephyrus* var. *hesperica*, *Agriades thetis* ab. *rufo-lunulata*, *A. thersites* and *Glaucopsyche cyllarus*. Dr. Chapman was of opinion that *A. thersites* only occurred where sainfoin was indigenous. IRISH LEPIDOPTERA.—Mr. L. W. Newman, Lepidoptera from C. Clare, C. Cork and Killarney, including very light *Aplecta nebulosa*, very dark *Luperina cespitis*, *Aphantopus hyperantus* with greenish shade on the underside, *Aegeria scoliaeformis*, bred *Dianthoecia capsophila*, *D. luteago* var. *barrettii*, etc. The weather was very bad from April to the end of

\* Any ant's nest around London will provide quite enough specimens for all ordinary purposes, say 40 or 50 per nest.—C. NICHOLSON.

† *N. ancilla* is common enough in the Rhone Valley and many other places but difficult to see, and frequently passed over.—G.W.

September. **ABERRATION OF A. AGLAIA.**—Mr. A. E. Tonge, a specimen of *Argynnis aglaia* with a strongly marked blotch formed by the coalescence of several spots on the forewings.

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### Alfred Russell Wallace, 1823-1913.

Daily papers, weekly periodicals and magazines of all kinds have repeated the ordinary human details of the life of the great scientist who, for more than half a century, held the world at audience, so that it seems superfluous to repeat them here. But perhaps an attempt to look at his entomological work may be not quite uninteresting to our readers. It has been said that an entomologist should have two lives, one to collect and know his material, the other to bring out the scientific bearing of what has been so assiduously collected. In his long life of 90 years Alfred Russell Wallace enjoyed these two lives, so to speak, and made use of them both to the full, as well as using a large proportion of his energies in his later years in applying his observations and scientific methods of thinking to the solution of the many difficult social problems of the day.

His early efforts in natural history began about 1840, when we find him devoting his spare time to collecting and preserving plants and eagerly reading books of travel. About 1844, when living at Leicester, he met with H. W. Bates, an ardent entomologist, and no doubt, under his guidance, extended his love of nature to insects. The mutual love of natural history and travel at last became so dominant in the desires of both that a joint expedition to the Amazons was commenced in 1848, for the purpose of collecting natural history specimens and to gather facts, as Wallace tells us, "towards solving the problem of the origin of species."

After four adventurous years on the Amazons and the Rio Negro, he returned home in 1852, and the following year published his "Travels on the Amazon," a work which contains a vast assemblage of facts, forming a broad basis for suggestion as to the causes and modes of the transformation of species. Scarcely a chapter of this charming work but contains many observations on the magnificent butterflies and beetles of this prolific region. One of his first observations was to note the large number of species of butterflies, while the number of individuals of each species were by no means numerous. In two months 553 species of Lepidoptera were taken, of which more than 400 were Rhopalocera. Of insects of all orders, he met with 1,300 species in the same period.

Of the papers written by him at this period perhaps the following were the most interesting:—

Remarks on the Habits of the *Hesperiidae*. 1853. "Zoologist."

On the Insects used for Food by the Indians of the Amazons. 1854. "Trans. Ent. Soc. Lond."

On the Habits of the Butterflies of the Amazon Valley. 1854. "Trans. Ent. Soc. Lond."

In 1854 Wallace was again on his travels, this time eastward, and the next eight years were spent in visiting and collecting over the larger islands of the Malay Archipelago, not even excepting New Guinea. Although he returned in 1862 it was not until 1869 that his delightful book of travel, the "Malay Archipelago" was published.

But in the meantime no fewer than eighteen important papers were brought out in the Journals of the Linnean, the Zoological and Entomological Societies, and twelve articles to other scientific periodicals, all dealing with some of the special results of his collecting and observation. Among those papers contributed to the last named Society were the following:—

On the *Pieridae* of the Indian and Australian Regions, 1857.

A Catalogue of the *Cetoniidae* of the Malayan Archipelago with descriptions of New Species, 1868.

Notes on Eastern Butterflies, 3 Parts. 1869.

Description of a New Species of Ornithoptera (*O. brookeana*). 1855.

Letters from the Aru Islands and from Batchian. 1858-9.

To the pages of the *Zoologist* he contributed:—

Letters from Singapore; Borneo. 1854-5.

Entomology of Malacca. 1855.

Observations on the Zoology of Borneo. 1856.

In the year 1855 Wallace contributed an important paper to the pages of the *Annals and Magazine of Natural History*, "On the Laws which regulate the Introduction of New Species." This was followed by the brilliant and since famous essay published conjointly with Darwin's essay on the subject of Variation and entitled "On the Tendency of Varieties to depart indefinitely from the Original Type." This was published in the *Journal of the Linnean Society*, in 1858.

In 1864 he published a very long and important memoir in the same periodical entitled "The Phenomena of Variation and Geographical Distribution as illustrated by the *Papilionidae* of the Malayan Region," which, perhaps is one of the finest pieces of special pleading ever written in support of a theory.

The year 1871 saw a collection of some ten essays published previously in various reviews, re-issued under the title of *Natural Selection*, including "Mimicry and other Protective Resemblances among Animals," and the paper on the *Papilionidae* of the Malayan Region under another title. The two volumes "The Geographical Distribution of Animals" appeared in 1876, "Tropical Nature" in 1878, "Island Life" in 1880. All contain much observation on Insect Life. From that time onwards, Wallace continued to write book after book dealing more and more as he advanced in life with the social problems of the day and the incidence of natural laws on the human race, for whom he had conceived an intense sympathy during his early wanderings as a surveyor.

The Entomological Society he joined as far back as 1863, and became a Life Member, he was twice a member of the Council, in 1866 and 1872, he was a Vice-president in 1864 and again 1869, and in the two following years he was President. He was a Fellow of the Zoological, the Linnean, and the Royal Societies. Our great Universities honored him, Oxford made him a D.C.L., and Dublin an L.L.D. He was the possessor of a Royal Society Medal, awarded in 1868, and in 1876 he was President of the Biological Section of the British Association at their meeting at Glasgow. His signal worth was recognised by the nation in a Pension from the Civil List.

Full of honors and at a ripe old age, he passed away without the suffering which is the lot of so many when they go "beyond the bar."—  
H. J. T.



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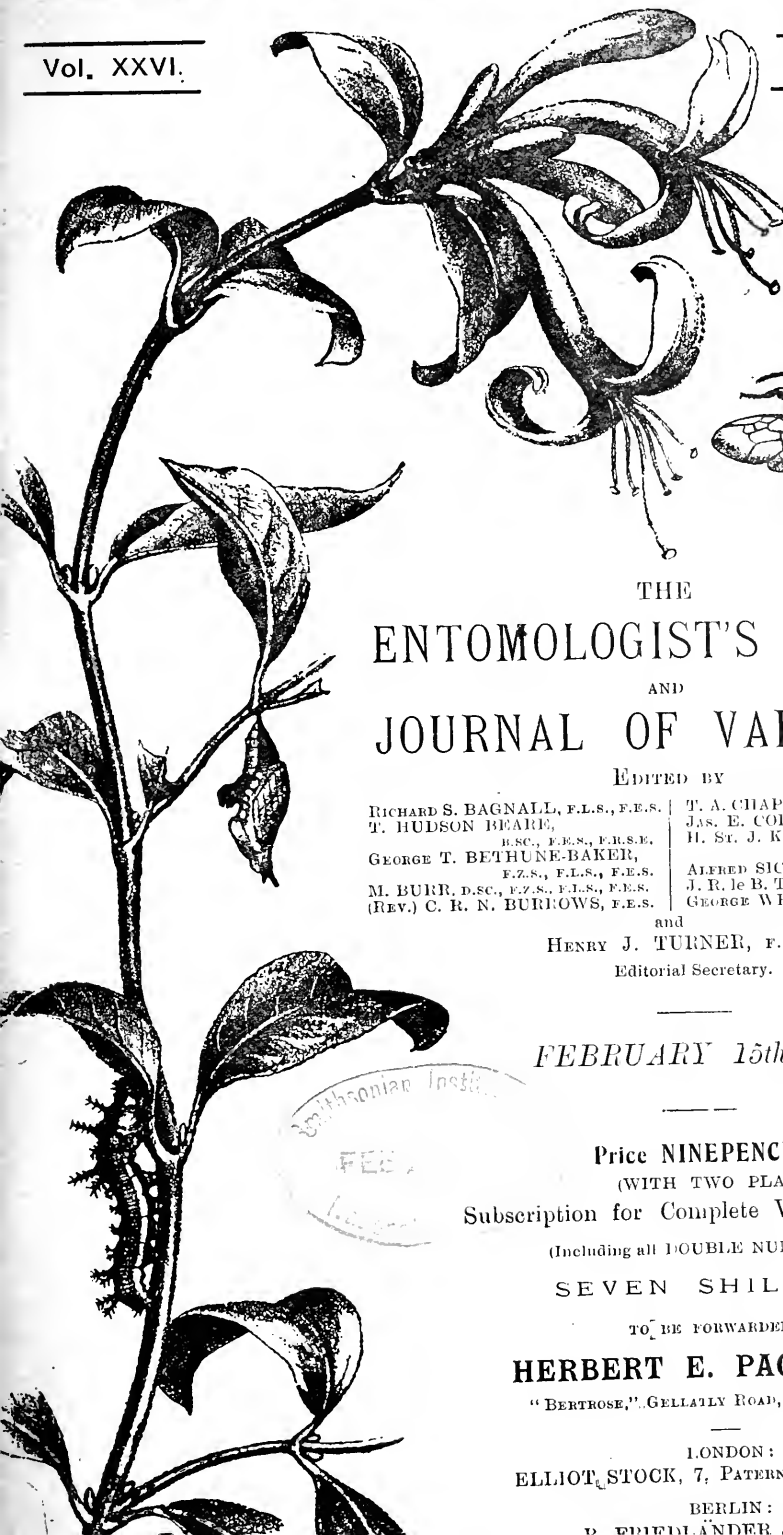
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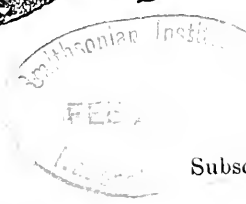
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## A Critical Examination of Dr. Verity's Paper on the "Types" of Palaearctic Rhopalocera in the Linnean Collection.

By REV. GEORGE WHEELER, M.A., F.Z.S., F.E.S.

Owing to the continuous and constantly increasing pressure of other work, I have been unable hitherto to find time for the critical examination of Dr. Verity's paper on the Linnean "types" of Palaearctic Rhopalocera which I undertook some time ago (vol. xxv., p. 233) to make, and meanwhile the ground has been somewhat cleared, not only by Dr. Jordan's note appended to Dr. Verity's paper, to which I then referred, but also by Mr. Bethune-Baker's criticisms published in this magazine (vol. xxv., pp. 251, 272), which made clear the very important point that no such thing as a "type," in the scientific sense of the word, exists at all in the Linnean collection. For, since the idea of a type specimen had never been propounded in Linneus' time, it is obvious that he could never have designated any particular specimen or specimens as such, and in order that any of his extant specimens should now be accepted as "types" it would be necessary to prove the following points:—

- (1) That the original description was drawn up by Linneus from his own specimens.
- (2) That the Linnean specimens now extant were in his possession at the time when the original descriptions were made.
- (3) That they were the only specimens in his possession at the time.

Now, though these points are in some instances capable of being disproved, there is no instance in which it is possible to prove them, and therefore any of the changes proposed by Dr. Verity in the usually received nomenclature which depend on the assumption that any "types," in the sense in which the word is used in matters affecting nomenclature, exist in the Linnean collection, can simply be brushed aside, on the ground that the foundation on which the arguments are built is unsound, and the conclusions consequently impossible of acceptance. Another fact of which Dr. Verity has apparently lost sight is, that, from the point of view of nomenclature, the only thing which is of the slightest importance is what Linneus actually published, and that neither his MS. notes, nor the suppositions of any subsequent writer (whether in 1813 or 1913 is immaterial) as to what he may or may not have meant, can be regarded as anything more than an interesting contribution to a purely academic discussion.

It would be almost impossible to exaggerate the interest and importance of Dr. Verity's paper, regarded as a painstaking, and probably very accurate, catalogue of the actual Linnean specimens now in the "Linnean" collection, but it has little practical bearing on the subject of nomenclature, since the possibility, or even the probability, that some of his ingenious surmises are correct (though others can be proved to be erroneous) cannot possibly be accepted as *proof*, and nothing short of this could justify (even to the most rigorous devotee of priority) the drastic changes which he proposes.

Speaking only for myself, I should, of course, decline to recognise any changes in names so long established, even if the proof were overwhelming, unless, or until, the suggestions I put before the last Inter-

FEBRUARY 15TH, 1914.

national Congress of Entomology had been definitely rejected by the International Committee; but happily there is only one case, that of *belia*, to which this position will apply; in all other cases the proposed changes in specific (though not always in varietal) names must be rejected on grounds universally admitted.

With regard to the "nimotypical" races, the specimens in the collection again afford no proof on the matter, though, had they been labelled with their localities, they would have been of the utmost importance in this respect, but they do in certain cases supply indications which cannot be altogether neglected. Whenever in the original description a single habitat is given, it follows necessarily that the race inhabiting that locality is the "nimotypical" one (though why the simple word typical is not sufficient for every purpose passes my comprehension), and an indication may in some cases be given by the Linnean specimens as to the probable form of this race, but even so they cannot, in the absence of locality labels, be taken as *proving* anything. In all species originally described in the *Fauna Suecica*, whether in the first or second edition, the Swedish form, whatever it may be, might be regarded as certainly the typical, were it not that reference is frequently made in the descriptions to figures not representing this form, which leaves the question somewhat open. It might be superficially argued that the "types" of those species which were first described in the *Museum Ludovicae Ulricaë* are to be found in the Queen's collection in the Upsala University, but a moment's thought will show that there is no possible proof of this, since we have no proof that the specimens now extant there are the same from which the original descriptions were made.

As Dr. Verity has pointed out, Linneus noted in MS. in his own copy of the xiith ed. of the *Systema Naturæ* the species he then possessed, but, as Mr. Bethune-Baker has pertinently observed, this could not possibly have any bearing on species described before 1767; and even in the case of those described in that year we cannot *know* that they were described from the specimens now extant; indeed a comparison of the insects and the descriptions would lead to the presumption that in some cases they were not.

I will now take the species in which Dr. Verity proposes changes (and a few others) in detail.

*Podalirius*.—This has been remarked on by Dr. Jordan, and has also been so completely dealt with by Mr. Bethune-Baker (vol. xxv., pp. 251, 272), that it is only necessary to refer to his observations to show that there is no ground whatever for the changes proposed from *podalirius* to *siwon* and from *lotteri* to *podalirius*. Consequently the Africo-Spanish species (if it really is a separate species, which I cannot regard as being yet fully established) must still be called *feisthamelii*, Dup., this name having a precedence of no less than 57 years over the varietal name *lotteri*, Aust.

*Mnemosyne*.—Since in his original description Linneus only gives Finland as the habitat, it is not only "plausible," but essential, to regard the Scandinavian as the "nimotypical" race.

*Napi*.—This species has also been dealt with by Mr. Bethune-Baker (*loc. cit.*), but he has apparently overlooked the fact that the original description is not that in *Sys. Nat.*, xth ed., but that in the 1st ed. of the *Fn. Suec.*: and though the descriptions in that work are

of no value for *names*, since they were not then given, they are sometimes of value in determining the "nimotypical" race. In this case, however, the description in *F'n. Succ.* would again serve for any *napi*, and reference is also made to figures not of the Scandinavian form, so that the question is again left open so far as Linneus is concerned, but was settled by Ochsenheimer when he separated off *bryoniae* in 1828. With regard to the specific identity of these forms, the question has surely been settled by the breeding experiments of Messrs. Harrison and Main, with which Dr. Verity is apparently unacquainted.

*Rapae* and *Brassicae*.—the same line of argument applies exactly to these cases. It may however be observed that Dr. Verity is not quite correct in identifying *metra*, Stphns., with *immaculata*, Fol., the latter being an extreme case of the former.

*Belia*.—In this case Dr. Verity's conclusion is undoubtedly correct, simply on the ground of the original description. I cannot however follow him in thinking that this might *equally* well apply to *euphenoides*, "lituris aliquot transversis griseis" seeming to me to stamp it as referring to *eupheno*. "Habitat in Barbaria," especially with the addition "Brander," quite settles the matter, but were further confirmation wanting, the two Linnean specimens might in such a case, taken in conjunction with the absence of any *euphenoides* or *omphale*, be regarded as *corroborative* evidence, since the original description dates from 1767. Dr. Verity's argument against the latter species seems to me incontrovertible.

I cannot, as I observed above, accept the change at present, but should of necessity do so if my suggestions are rejected by the International Committee on Nomenclature, as well as the consequent change from *belia*, L., to *crameri*, Butl.

*Sinapis*.—Dr. Verity seems (perhaps *only* seems) to imply that *lathyri*, Hb., is the usual spring form of this species. It may be so in Tuscany, but is certainly not so in most localities. During the eleven seasons I resided in Switzerland there were two in which this form was dominant, indeed almost universal, in the spring brood, but during the other nine I do not think that a single specimen of the *lathyri* form was to be obtained.

*Rhamni*.—This species was defined in 1758 with reference to various figures not of the specially Scandinavian form, and there is, I think, no room for the name *transiens*, Ver.

*Cleopatra*.—Dr. Verity is undoubtedly correct in making the African form "nimotypical." "Habitat in Barbaria" decides the matter.

*Jasius*.—This species is remarkable as being the only one, with the exception of *maera*, in which I have detected Dr. Verity in being incorrect as to his facts. He has taken it for granted that the species we know as *jasius*, L., and which is described as *jason* in *Sys. Nat.*, xiith ed., p. 749, no. 26, is the same species as that previously described in the xth ed., p. 485, no. 171, and in *Mus. Lud. Utr.*, p. 210, no. 29, and consequently says that "Habitat in Indiis" is "obviously erroneous," whereas in point of fact there is no connection between them. The species described as *jason* in the xth ed. and in the *Mus. Lud. Utr.* is described, also as *jason*, in the xiith ed., p. 752, no. 38, so that Linneus has inadvertently (unless it were a printer's error which he had overlooked) described two quite unconnected insects as *jason*, a mistake which he rectified among the errata on the last page of the

xiith ed., in the words "pro *jason* lege *jasius*," the former name being of course preoccupied, since the Indian species was first described in 1758 and our *jasius* in 1767. Even a superficial reading of the description of the Indian *jason* should have shown it to be quite unconnected with *jasius*. Dr. Verity is however perfectly right in taking the African form as "nimitypical," the question being decided by the "habitat in Barbaria."

*Iris*.—This has been completely dealt with by Dr. Jordan, who points out that the original description included both *iris* and *ilia*, and that Schiffermüller settled the matter in 1776 by giving the name *ilia* to the species ever since called by that name, and thus by exclusion confining *iris* to the species universally so called. Dr. Verity's proposed alteration, far from "establishing nomenclature on grounds not open to criticism," is, in the face of the International Code, simply indefensible. As Dr. Jordan points out, Linneus' MS. note is not only perfectly valueless for purposes of nomenclature, but if it proved anything would indicate that he did not possess (or know) any specimen of *ilia* when he published his original description of *iris*.

*Niobe*.—Apart from the indisputable fact that the two Linnean specimens now in the collection are both of the *eris* form, I cannot in the least follow Dr. Verity's argument on this species, for the original description of *niobe* distinctly states that the spots are silver—"maculis argenteis" (*Sys. Nat.*, xth ed., p. 481, No. 143). No change is therefore permissible.

*Adippe*.—In this case again Linneus has described two quite unconnected species by the name of *cydippe*, and must assuredly come in as his own "first reviser" when he says (*Sys. Nat.*, xiith ed., p. 786) that the species he calls *adippe* (p. 786, no. 212) had previously been called *cydippe* in the *Fn. Suec.* (no. 1066) in error. The other *cydippe* (*Sys. Nat.*, xiith ed., no. 163) is an Indian species, and not a Fritillary at all. The time-honoured name *adippe* must therefore stand.

*Hermione* and *alcyone*.—This is another case exactly parallel with that of *iris*. Two closely related species (if they are two) are joined by Linneus under one name, and Schiffermüller again comes in as "first reviser," and settles the question which species is to retain the name *hermione* by calling the other *alcyone*. I am still however not satisfied that the shape of the "organe Jullien" (*Bull. Soc. Lép. Genève*, i., pp. 361 etc., pl. xii), whose functions, if it has any, are quite unknown, is of sufficient importance to constitute a specific difference.

*Jurtina*.—Dr. Verity has overlooked the fact that the description under this name in *Sys. Nat.*, xth ed., refers back to the original description in the 1st ed. of the *Fn. Suec.*, and that the description was therefore presumably taken from Swedish specimens, and certainly from northern European ones; so that this name must hold good for the species, and the varietal nomenclature as generally accepted must consequently follow suit.

*Maera*.—Dr. Verity says that of the three Linnean specimens of this species "the ♂ has no trace of the tawny bands," and that they are "very rudimentary, if present at all, in the ♀ s. They are certainly present in all three, more distinct in the ♂ than in some Swiss specimens, and none of them really represent var. *monotonia*, Schilde; the original description is in the 1st ed. of *Fn. Suec.*, where reference is made to figures not of the Scandinavian form; we are therefore driven



to later authors to decide which is the "nimotypical" race, and consequently the received varietal nomenclature should hold good, to the exclusion of *vulgaris*, Ver.

*Virgaureae* and *hippotoë*.—These two species were dealt with by Mr. Bethune-Baker (*loc. cit.*, p. 252), but the case is so much the most complicated with which we are confronted that it seems important to examine it in detail. The facts are these. Linneus first gave the name *virgaureae* in the xth ed. of the *Sys. Nat.*, p. 484, no. 161, where he referred back to the 1st ed. of the *Fn. Suec.*, [pp. 247, 248], nos. 807, 808. On turning to this we find the following descriptions:

"807. P. alis rotundatis fulvis: utrinque punctis nigris."

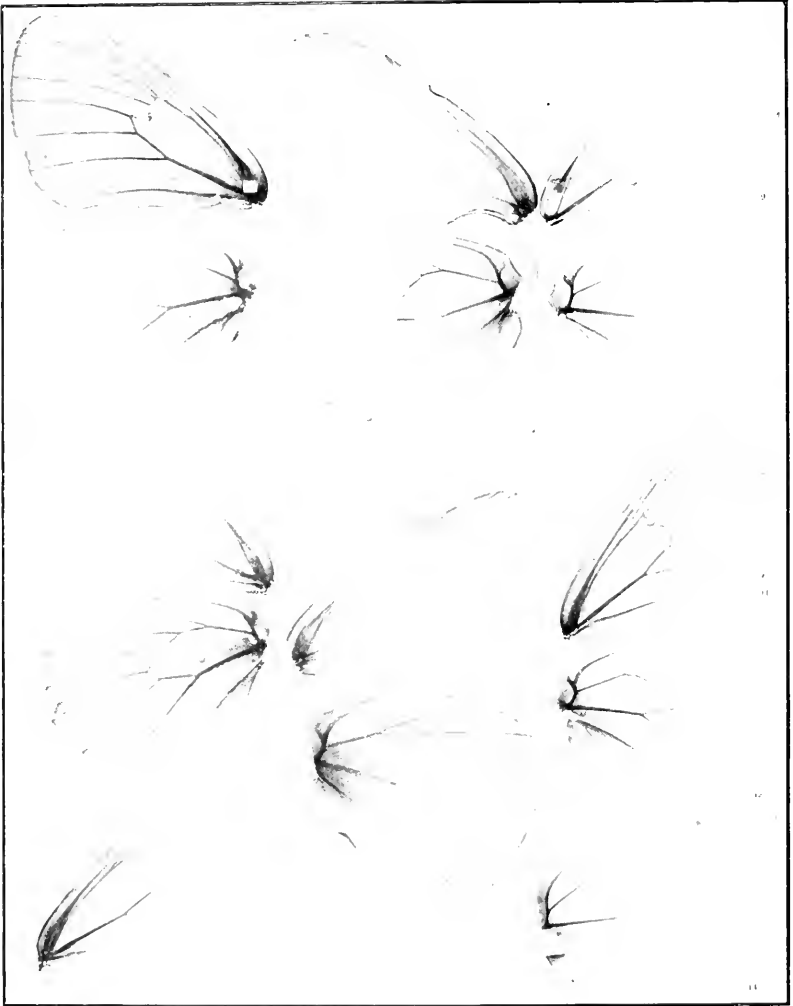
"808. P. alis rotundatis fulvis; infra albo punctatis."

The latter must necessarily refer to the ♂ of the species we still know as *virgaureae*, since it is the only Swedish "copper" with white spots on the underside; the former might quite well be the ♀ of the same, were it not for the further references given under the description in the xth ed. of the *Sys. Nat.*, viz., Roesel, *Ins. Belust.*, pl. xxxvii., figs. 5, 6, pl. xlv., figs. 5, 6; Merian, *Ins. Eur.*, pl. clxiv.; Ray, *Hist. Ins.*, p. 125, no. 20. On looking up these references we find that Roesel's figures on pl. xxxvii. are an excellent upper- and underside of *hippotoë*, whilst those on pl. xlv. are an equally good upper- and underside of *phlaeas*, to which species Ray's description also refers, whilst Maria Sibylla Merian's figure is also of *phlaeas*, but of the ab. *schmidtii*, unless indeed the colour has faded out, which, in view of the condition of the other plates, is not very probable, though there are one or two instances, notably the "tortoise-shells," in which it seems to have done so. (His further reference, with a ? to Petiver's *Gazoph.*, pl. xiv., fig. 3, in the 2nd ed. of the *Fn. Suec.*, p. 285, no 1079, under *virgaureae*, is unaccountable, except on the supposition that he had never seen the plate in question, for it represents an obvious Geometrid moth; the description "fulva, alis limbo nigro insignatis," must have misled him.) It is, I think, obvious that when Linnæus wrote his 1st ed. of the *Fn. Suec.*, and also when he wrote his xth ed. of the *Sys. Nat.*, he was under the impression that *virgaureae*, *hippotoë* and *phlaeas* were all one species, those with an unspotted upperside being the ♂s and those with the spotted upperside the ♀s of the same insect. This is certainly supported by his second, fuller, description in "*Sys. Nat.*, xth ed., where he describes the ♂ as "alis supra fulvis immaculatis," though he had above spoken of the species as being "punctis sparsis atris." Since he also says of the ♀ "subtus primores maculis sparsis atris margine albo-ocellatis posticae cinerascens punctis nigris obsoletis," I feel confident that Mr. Bethune-Baker is taking too much for granted when he supposes that this description was taken from any ♀ of *virgaureae* whatever. He appears also to take "margine" to refer to the edge of the *wing*, whereas it should, in my opinion, be taken to refer to that of the black spots, in which case the description is an unmistakable one of many ♀s of *hippotoë*. The black spots on the underside of the forewings of this species are ringed with white, thus forming *eye*-spots, whereas those of *virgaureae* are not; the obsolescence of the spots on the underside of the hindwing is also very common in *hippotoë*. It was not until he wrote the 2nd ed. of the *Fn. Suec.* that Linneus separated these three species, giving descriptions of *phlaeas* and *hippotoë* for the

first time, and even when he wrote the xiith ed. of the *Sys. Nat.*, the confusion in his mind was not entirely cleared up, since he again refers Roesel's figures of *phlaeas* to *virgaureae*, for the ♀ of which he evidently takes them, though he correctly places his previous references to Ray and Merian under *phlaeas*. In this ed. of the *Sys. Nat.* he only refers back to No. 808 in the 1st ed. of the *Fn. Suec.* under *virgaureae*, and omits the reference to Roesel's figures of *hippotohø* (pl. xxxvii., figs. 5, 6) altogether. His continued reference to this description (*Fn. Suec.*, 1st ed., no. 808), in which the white spots of the underside are specially noted, and his further mention of them (subtus . . . . posticis serie punctorum albidorum) in *Sys. Nat.*, xth ed., can leave no doubt as to what species he intended by *virgaureae*, however much he may have confused the ♀s; and this is just a case where the corroborative evidence of his specimens appears to me far too strong to be disregarded. For though these specimens cannot be accepted as "types," the fact that we still possess specimens labelled by him as *virgaureae* and *hippotohø* respectively can leave us in no doubt as to what species he described under these names, since there is no mixture of species in the specimens under either title. It is significant also that the specimens are all ♂s, and it is at least possible that he may never have seen a genuine specimen of the ♀ *virgaureae*, since he never described any ♀ as having white spots on the underside. I only wish that I could agree with Mr. Bethune-Baker that Dr. Verity's name *inalpinus* (a truly terrible word—is it by any chance intended to mean "not alpine"?) cannot stand, but I do not see any pretext for disregarding it. Since the species was originally described in the *Fn. Suec.*, without reference to figures of another form, the Swedish race must be the "nimotypical" one; it is true that there is no noticeable difference between this and many of the higher alpine specimens, Dr. Verity's statement to the contrary notwithstanding, but it differs very considerably in size and colour from the form which he describes as *inalpinus*, which occurs in several localities in Switzerland, both at comparatively low levels, such as the Rhone Valley, where it is scarce, and in more elevated situations, such as the southern slope of the Simplon, including the Laquinthal (about 4,500ft.), where it is common. With Mr. Bethune-Baker's observations on the varietal names of *hippotohø* I am in complete agreement.

*Argus*.—I do not feel the slightest doubt that Dr. Verity is right in assigning the blue Linnean ♀ to the species now called *argyrognomon*, Bergs. If this be the case, my supposition (*Butts. Switz.*, etc., pp. iv., 42) that Linneus had included the two species under one name is proved to be correct, quite independently of whether this is the specimen from which any of his descriptions were made or not; and in that case I see no excuse for not reverting to the designations "*argus*" and "*aegon*" to which the entomological world was so long accustomed, since the case is exactly parallel with those of *iris* and *hermione*, where Linneus described two species under one name, and in point of fact included specimens of both species under the one name in his collection, Schiffermüller again coming in as "first reviser," and confining the name *argus* to one species by naming the other *aegon*. The specimen in question is not even labelled "*idas*," and in any case Mr. Bethune-Baker's argument on the inadmissibility of this name for either species (*loc. cit.*, p. 253) is irresistible. *Idas* is a homonym which cannot be employed for any species.





*Photo. A. E. Tonge.*

NEURATION OF *EREBIA MANTO*, *E. MANTO* VAR. *CECILIA* AND *E. EURYALE*.



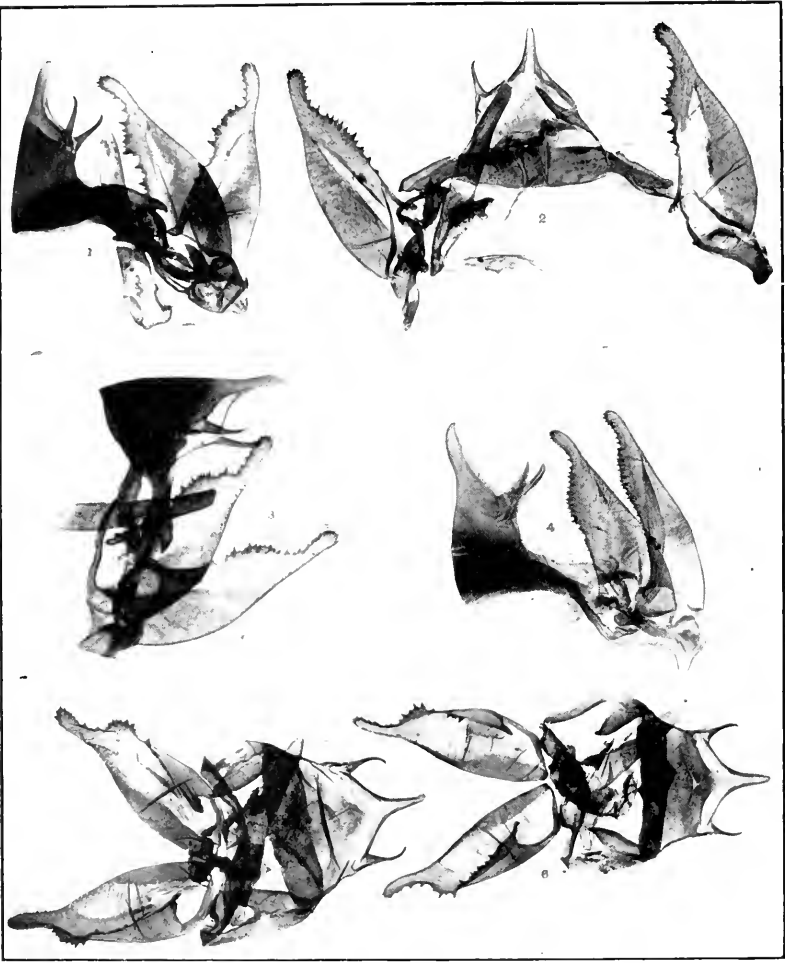


Photo. F. Nood Clark.

APPENDAGES OF *EREBIA MANTO*, VAR. *CECILIA* AND *E. EURYALE*.

*Ramburi*.—I have already (Vol. xxv., p. 233) expressed my acceptance of this alteration in the place of *idas*, Ramb.

There is one further point to which I must refer in terms of most energetic protest, though Dr. Verity is in this matter only carrying out to its logical conclusion the hopeless confusion that was initiated when it was decreed that the sub-specific or racial name should follow the specific name without any explanatory connecting word. Probably the authors of this unpardonable blunder failed to see where it must logically lead. Such an expression as "*brassicæ brassicæ brassicæ*" (and there is no obvious reason, in view of some of the strings of names already in use, why it should not be repeated twice, if not three times, more) is pure, unmitigated nonsense; it would be better, as Dr. Dixey suggested to me in conversation, to say "*brassicæ* recurring" and have done with it; when anything beyond the generic and specific names are required, it should always be stated whether it is "sub-species" (or better, local race), or an aberration of the same, or an aberration of the typical form, or whatever is intended; and when the typical form is meant it is amply sufficient to use the generic and specific names alone or followed by 'type' or 'f.t.' ('forma typica'). Any publications using these unintelligible (and unintelligent) strings of names should be subjected to a rigorous boycott until they desist. Painful as are the unexplained series of names employed by Dr. Verity, his worst sins in this matter are, it is due to him to say, quite venial in comparison with some other cases that we have met with.

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### ***Erebia manto*, Esp., var. *caecilia*. (With two plates.)**

By T. A., CHAPMAN, M.D.

I owe a considerable debt to Mr. Warren for his paper in *Ent. Rec.*, vol. xxv., p. 273, in that he rescues for me a good intention from the well-known limbo to which it has for a long time been sliding. In my reference to the *E. caecilia* of the Pyrenees in the *Trans. Ent. Soc. Lond.*, some fifteen years ago. I stated that the dorsal armature differed in *manto* and *caecilia* (Pyrenees). In this, I not long after suspected I was wrong, and that the supposed difference was a matter of the specimens being somewhat differently mounted. My intention to clear up this point has up to the present been in abeyance.

In the result, I find that the dorsal spines in *manto* can be mounted to look just as those of *caecilia* did, and *vice versa*, and that as regards the appendages there is nothing to distinguish the two forms. In both there is variation in the details of the teeth on the clasps, as there is in all the *Erebias*, where the body or shaft of the clasp carries teeth.

Mr. Warren finds a difference in the neuriation of the two forms, but on careful examination of the neuriation I cannot find any constant difference between the two forms; in both there is considerable variation. (See Plate III.)

To take Mr. Warren's points seriatim:—Forewing. (1) All the veins more curved in *caecilia*. If there is any difference there is more curvature in *manto*, e.g., view 4 of the hindwing. (2) Length of cell greater in *caecilia*. As a result of measurement of the wings shown in plate, the cell is 52·8 % of the wing in *manto*, 52·4 % in *caecilia*. (3) Form of discoidal nervure between 4 and 6 less sharply angled in *manto*. The angle is much the same in both, the actual angle is

rounded and is a little costad to vein 5. (4) Proximity of veins 6 and 8, joined in origin in *manto*. This is not the case. (5) Cell broader in *manto*. My figures show cell narrower in *manto*.

Hindwing. (6) Cell much less sharply angled than in *manto*. I can see no difference. (7) 6 and 7 rising closer together and ending further apart than in *manto*. In my photograph they are closer together than in *manto* in figs. 6 and 8, but further apart than in figs. 10 and 12, their endings seem much the same. (3) 5 much further from 6 in *caccilia*. I see no difference.

I have added to the plate figs. 13 and 14, showing the neuration in *curyale*, the species that is so close to *manto* in the appendages, as to be perhaps useful to compare with *manto*.

The figures of the male appendages show, that though there is considerable variation, it affects both forms and in no way differentiates between them.

In Plate IV. are three specimens of the male appendages of *E. manto* (figs. 1, 2 and 6), two of *E. manto* var. *caccilia* (figs. 3 and 5), and one of *E. curyale*. To show the variations in the prominence of the shoulder of the clasp, and the size and number of the teeth, would require perhaps several dozen specimens, but all the variations could, I think, be shown in any one of the three forms. Figs. 2 and 6 show two forms of *manto*, in one of which the shoulder is low, in the other prominent. Fig. 1 is intermediate. The *curyale* is a specimen with low shoulder and small teeth. Of the *caccilia*, fig. 3 has moderate or low shoulder, fig. 5 specially round prominent shoulders, very like *manto* fig. 6, except that the teeth are rather finer.

The specimens photographed show the head in *caccilia* slightly wider than in *manto*, the examples, however, that are figured in *Trans. Ent. Soc.*, 1898, show a reverse condition; as a matter of fact there seems to be no variety of clasp in one form of the species that cannot be matched in the other, and curiously enough, if *ligea* and *curyale* were added, the only result would be that the range of variation would be extended, a conclusion at which I perhaps arrive from having examined longer series in those species (that species?) than of *manto*. A principal object, however, I have in view in presenting these photographs is to show that I was in error in 1898 in describing the lateral arms of the tegumen as different in *manto* and in *caccilia*. Comparing figs. 1 and 3, or 5 and 6, there is no difference to be seen in the two species, but in fig. 2 one of these arms is pressed out of position, so as afford a different view, and here (in *manto*) exhibits the form that I described in 1898 as belonging to *caccilia*, and as figured in *Trans. Ent. Soc.*, Plate V., fig. 3a, clearly a result of method of mounting. These arms are sharp in one aspect, flattened in another in this species, it is difficult, except by accident, to display the flat aspect. In *ligea* and *curyale*, and still more in *aethiops*, the flat aspect is easily shown. In some other species these arms appear to be really sharp pointed and not in any way flattened.

In Mr. Warren's series of *manto* he finds the underside of the males of the ab. *caccilia* (Alps) are always of the rich mahogany colour of the type form. Taking my specimens of *caccilia* from the Lower Engadine, it would be more correct to say they agreed with var. *caccilia* (Pyrenees) than with *manto* type. Neither statement would be correct, but the approach is nearer to the Pyrenean form than to *manto*



type. The forms of *manto* in this series are distinctly darker altogether than in the usual type, and the more they lose their markings, so much the more slaty (and Pyrenean like) the ground colour becomes.

As regards markings, Swiss *caecilia* occur, I have specimens, absolutely without rusty markings or black eyespots. On the other hand, rusty marks and eyespots on the upper surface of the males occur in var. *caecilia* (*constans*, Eiff.?). I have a specimen, a ♂, with a rusty blotch and two black spots. On the under surface some rusty coloration is more frequent.

I conclude, therefore, that var. *caecilia* is a geographical race of *manto* rather than a distinct species, as such it requires, no doubt, a varietal name, which Staudinger supplied by calling *caecilia* "*ab. et v.*" This is certainly open to objection, but so far as I know may stand good. Herr G. Eiffinger in Seitz, by the curious misreading of Elwes' note on the form, which Mr. Warren quotes, gives it the name *constans*. This name appears to stand good if Staudinger's action is insufficient; *constans*, Eiffinger, of course, not *constans*, Elwes, a non-existent quantity. Eiffinger calls it *constans*, Elwes, in the text, p. 99, and figures it on plate 36, g 6 and 7, with the word *constans* under each figure. Now we have also *gararniensis*, Warren. Whichever of these names be accepted, it is not a specific but a varietal name. The two forms are closer together perhaps than are, for example, the several forms of *glacialis*, and have no claim to specific rank such as *gorgone*, the Pyrenean representative of *muestra* has. The chief difference between *manto* and *gararniensis* is that the latter is larger, or rather that many Swiss forms of *manto* are very much smaller (some being as large). Large size is, however, a characteristic of various species as we approach and enter the Spanish region.

#### EXPLANATION OF PLATES.

Plate III.—Neuration of *E. manto*, *E. manto* var. *caecilia* and *E. euryale*.

Figs. 1, 2, 3, 4, *E. manto* var. *caecilia*.  
Figs. 5, 6, 7, 8, 9, 10, 11, 12, *E. manto*.  
Figs. 13, 14, *E. euryale*.

Plate IV.—Appendages of *E. manto* and var. *caecilia*.

Figs. 1, 2, 6, *Erebria manto*.  
Figs. 3, 5, *Erebria manto* var. *caecilia*.  
Fig. 4, *Erebria euryale*.

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### Myrmecophilous Notes for 1913.

By H. St. J. K. DONISTHORPE, F.Z.S., F.E.S.

In consequence of the fact that I am now engaged in writing a book on the British Ants, which takes up all my spare time, and which I propose to follow with a second volume on the British Myrmecophilous Fauna, my notes for 1913 must be considerably curtailed, and in fact be confined to the bare records of captures, new localities, etc., without drawing any conclusions from the results obtained, or referring to similar observations by others, or myself, in the past. I have already published my observation on the myrmecophilous fauna of Lundy, and the important captures of *Claviger longicornis*, Müll., and *Aenigmatias blattoides*, Mein., which somewhat simplifies matters.

I take this opportunity to ask all entomologists who have unpublished records of ants, or myrmecophiles, from any part of

Britain, to kindly communicate with me. I shall also be pleased to name ants for anyone who may possess a British Collection, or unnamed specimens.

## FORMICIDÆ.

### Subfamily MYRMICINÆ.

*Myrmecina graminicola*, Latr.—2 dealated ♀♀, and 3 ♂♂ were taken in company with *Lasius flavus* at Bletchington, Oxon., on May 17th; 6 ♂♂ carrying their larvæ, in a nest of *L. mirtus* at Box Hill on May 25th; and a dealated ♀, in a nest of *L. mirtus* at Box Hill on September 25th.

*Solenopsis fugax*, Latr.—A few ♂♂ were taken by Crawley and myself in company with *Formica fusca* var. *fusco-rufibarbis* at Sandown, I. of W., on August 10th.

I discovered a large colony at Blackgang Chine, on August 26th, situated in a large block of green-sand, two feet long by a foot broad. Vast quantities of ♂♂, great numbers of ♂♂ and a few winged ♀♀ occurred. Eggs, larvæ, ♂ and ♀ pupæ and one ♀ pupa (subsequently reared) were present. No other ants, or ants' nests were near, and no *Aphidae*, nor myrmecophiles were found.

*Myrmica laevinodis*, Nyl.—Colonies were found at Tenby, and abundant under stones on the marshy ground in front of Manorbier Castle, in Pembrokeshire, in April. Four partly winged ♀♀ occurred in a nest at Bletchington, May 12th.

*Myrmica ruginodis*, Nyl.—Tenby and Manorbier in April.

*Myrmica scabrinodis*, Nyl.—Colonies at Tenby in April, one under the same stone as *L. flavus*, April 25th. An isolated dealated ♀, under a stone on April 27th. Three colonies under the same stones as *L. flavus* at Bletchington, on May 17th.

In July I found a form of *scabrinodis* at Rannoch, in two nests of *F. rufa* var. *alpina*, inhabiting part of the latter's hillocks, only ♂♂ and larvæ being found. The shape of the antennæ exhibits a slight transverse ridge (more developed in some specimens), reaching across from the lateral tooth and forming a small point, or angle, opposite to the same. These specimens may represent the var. *scabrinodo-lobicornis*, Forel.

*Myrmica scabrinodis*, Nyl., var. *sabuleti*, Meinert.—Tenby, Pembrokeshire, and the Landslip, I. of W. One of the latter in the same mound as *L. flavus*.

*Myrmica lobicornis*, Nyl.—Two dealated ♀♀, July 29th and September 22nd, crawling on paths at Weybridge.

*Stenamma westwoodi*, West.—A ♂ occurred in a nest of *Lasius mirtus* at Box Hill, on May 28th.

*Leptothorax acerrorum*, F.—A dealated ♀, ♂♂, larvæ and pupæ,

in a nest of *Formica sanguinea* at Weybridge, on July 12th. A ♂ in a nest of *F. exsecta* at Parkhurst Forest, I. of W., on August 23rd.

*Leptothorax nylanderi*, Först.—A deälated ♀ in a nest of *L. miatus* at Box Hill on September 7th.

*Tetramorium caespitum*, L.—Colonies not uncommon at Tenby, one under the same stone as *L. flavus*, on April 23rd. A small colony at roots of *Arenaria maritima* at Blackgang Chine, I. of W., August 26th, all the ♂ ♀ being very small.

#### Subfamily DOLICHODERINÆ.

*Tapinoma erraticum*, Latr.—a fine colony was found in the New Forest, on June 23rd, situated in a small, low, round mound made of bits of cut grass, burnt heather, etc. The nest was traced by carefully watching the ♂ ♀ in the neighbourhood, only a few being out as the day was cold and cloudy. It contained a few ♂ ♂, very many winged ♀ ♀, two deälated ♀ ♀, a large number of ♂ ♀, ♂, ♀, and ♀ pupæ, and some larvæ.

Another large colony was observed at Weybridge, on July 29th, in a sandbank. Two deälated ♀ ♀ were present, and the ♂ ♀ were the largest specimens I have ever seen.

#### Subfamily CAMPONOTINÆ.

*Lasius fuliginosus*, Latr.—On August 16th at Apse Heath, I. of W., ♂ ♀ were traced from a copse to an oak tree on a hill at a considerable distance from the copse. A number of ♂ ♂ were out on the tree trunk, and the nest was situated just below the turf at the roots. A deälated ♀ with the gaster enormously distended with eggs, and surrounded by a mass of ♂ ♀, was found in the carton cells at the top of the nest.

*Lasius niger*, L.—Common at Tenby, a ♂ was found under a tin on the sand-hills, on April 26th. A very distended deälated ♀ was found in a nest at Box Hill, on July 30th. Naked pupæ were abundant in a mound-nest at Sandown on August 7th.

*Lasius niger*, L., var. *alieno-niger*, Forel.—A colony was found at Bletchington in May.

*Lasius alienus*, Först.—Colonies were noticed at Tenby and Bletchington.

*Lasius flavus*, F.—Common at Tenby and Manorbier. Two deälated ♀ ♀ were observed in one nest at Bletchington, on May 14th, and in another in which no ♀ could be found, some very large dark ♂ ♀, many times larger than ordinary ♂ ♀, occurred.

Isolated deälated ♀ ♀, some with egg-packets, were seen at Blackgang Chine, on August 26th, under stones and lumps of soft green-sand.

*Lasius umbratus*, Nyl.—A marriage flight had evidently taken place at Weybridge on July 29th, since many deälated ♀ ♀ were running

about on paths on the heath on each side of the railway, several had been captured by *F. rufa* and *F. sanguinea* ♂ ♂, and were being dragged as prey to the nests of the latter. A dead winged ♀ was also found in a *sanguinea* nest.

A marriage flight occurred at Sandown, I. of W., on August 27th, ♂ ♂ being observed in the garden of our house and on the pavements near by, and a ♀ was captured, which had already removed some of her wings. A deilated ♀ was found fighting with some *L. niger* ♂ ♂ near a nest of the latter, a fact of considerable interest.

A large form was found in some numbers on the sand-hills at Tenby (near to the continental *L. affinis*, Schenck, which might almost be called *affino-umbratus*, though most nearly related to *umbratus*), much digging in the sand unfortunately only produced ♂ ♂. Specimens taken there alive and introduced into my *L. minto-umbratus* observation nest, were all killed, whereas *umbratus* ♂ ♂, from Wellington College this year (and from Weybridge and other places last year), were accepted by the inhabitants of my nest. The Wellington College nest (kindly pointed out by Dr. Joy) was situated in the ground, at a spot where formerly a tree root or stump had been present, this being nearly entirely decayed. Cells of a hard earthy carton were found attached to the roots of plants. These, through the kindness of Prof. Poulton, were submitted for me to Prof. Newstead for analysis, and he reported as follows:—

“The nodular concretions attached to the roots of the plant are composed of:—

1. Numerous hyphæ of a fungus, with spores, apparently.
2. A few fine root-fibres (?) of the plant supporting the nodules.
3. The bark of the root (rhizome) (?) of the plant supporting the nodules. These are much more numerous in the dark coloured nodules than in the paler ones.
4. Quartzite grains. These predominate.

My impression is that the presence of the fungus is due to the ‘cement’ used by the ants for fastening the quartz grains, etc., together.”

Some of the root fibres and bark were, no doubt, taken from the remains of the tree root or stump before mentioned. This seems to prove that *umbratus* can, and does, make “carton.” Similar cells of a darker nature found at the roots of heather in an *umbratus* nest at Weybridge also contain fungus.

*Formica rufa*, L.—Many nests were very late this year; at Weybridge only small larvæ were present on May 4th.

*Formica rufa*, L. var. *alpina*, Santschi.—Some seven colonies of this variety were observed at Rannoch in July, deilated ♀ ♀ were present (three in one nest and two in others), but no winged forms could be found. Some pseudogynes occurred in one colony.

*Formica rufa*, L. var. *rufo-pratensis*, Forel.—Several nests, superficially like *F. cæsecta* nests, were found at Parkhurst Forest in clumps of grass (*Aira caespitosa*) on June 29th, one deilated ♀ was taken, but only ♂ cocoons were present.

*Formica pratensis*, De G.—A number of colonies were found at

Rannoch, when in company with my friend Mr. Morice, in July; ♂ ♂ and winged ♀ ♀ were abundant in one nest on July 17th, and four dealated ♀ ♀ were taken in this nest. A few Pseudogynes were present.

*Formica sanguinea*, Latr.—In 1912 it appeared almost impossible to find a dealated ♀ in the nests, at Woking; in 1913, on the other hand they were plentiful. On May 21st, dealated ♀ ♀ were found in every nest, in one no less than 37 specimens being counted. For the first time, at Woking, I found pseudogynes of this ant, they being present in several nests and in one quite 10% of the ♂ ♂ in the nest were pseudogynes.

*Formica fusca*, L.—Common at Tenby, in April, under stones on the cliffs and in fields, and on banks on the east of the town. Dealated ♀ ♀ were abundant in most nests, many of them being microgynes.

At Rannoch, in July, two colonies were found inhabiting deserted nests of *F. rufa* and *ersecta* respectively.

Naked pupæ were found in some numbers in a nest at Box Hill, on July 30th, and in Parkhurst Forest on August 23rd.

*Formica fusca*, L., var. *rubescens*, Forel.—A colony situated in the side of the cliff at the Landslip, I. of W., was found on August 21st, it contained many ♂ ♂, one winged ♀, many large ♂ ♂, and ♀ cocoons.

*Formica fusca*, L., var. *fusco-rufibarbis*, Forel.—Naked pupæ were found in a nest of this variety at Sandown, I. of W., on August 13th.

*Formica rufibarbis*, F.—Some seven colonies were again found at Weybridge, five dealated ♀ ♀ occurred in one nest but no winged forms could be found, although the nests were visited in May, June, July, and September.

#### COLEOPTERA.

*Homoeusa acuminata*, Märk.—In a nest of *L. mixtus*, Box Hill, May 23rd.

*Thiasophila angulata*, Er.—With *F. rufa*, L., var. *rufo-pratensis*, in Parkhurst Forest, August 23rd.

*Thiasophila inquilina*, Märk.—With *L. fuliginosus*, Oxshott, May 25th and June 2nd; Apse Heath, I. of W., July 16th.

*Dinarda märkeli*, Kies.—Larvæ in nest of *F. rufa*, Weybridge, July 12th.

*Dinarda hayensi*, Wasm.—In some numbers with *F. ersecta*, Parkhurst Forest, August 22nd.

*Atemeles emarginatus*, Pk.—In two nests of *F. fusca*, at Tenby, April 25th.

*Myrmedonia limbata*, Pk.—With *L. niger*, Tenby, April 25th, with *L. flavus*, Bletchington, May 14th.

*Drusilla canaliculata*, F.—In nest of *F. fusca*, Tenby, April 25th; with *L. niger* and with a half dead *M. scabrinodis* ♂ in its jaws, Bletchington, May 18th; with *Ponera coarctata*, Box Hill, May 16th; larva in nest of *M. ruginodis* at Nethy Bridge, July 20th; and with *F. fusca*, L., var. *fusco-rufibarbis* at Sandown, August 10th.

*Nototherta flavipes*, Gr.—In nest of *F. rufa*, L., var. *alpina*, Rannoeh, July 16th; and *F. rufa*, L., var. *rufo-pratensis*, Parkhurst Forest, August 23rd.

*Claviger testaceus*, Preys.—With *L. flavus* at Tenby, common in one nest in a field, April 23rd; a pair *in cop.* in a nest on April 25th. With *L. niger*, Bletchington, May 14th.

*Coccinella distincta*, Fald.—On *F. rufa* nest at Woking, May 21st, June 4th.

*Clythra 4-punctata*, L.—Larva in nest of *F. rufa*, L., var. *rufo-pratensis* at Parkhurst Forest, August 11th.

*Opatrum sabulosum*, L.—A pupa taken in a nest of *F. fusca*, L., var. *fusco-rufibarbis*, at Blackgang Chine on August 26th, taken home and subsequently hatched about September 3rd, in my *mirto-umbratus* nest (the ants never attacked either the pupa or the perfect insect) where it lived for some time.

#### BRACONIDÆ.

*Euphorus bistigmaticus*, Morley.—Hovering over ♂ ♀ on *F. rufa* nest at Weybridge, July 12th. This species is not uncommon at Weybridge.

*Pachylomma buccata*, Bréb.—Very large specimens (of this species according to Morley) were taken hovering over ♂ ♀ on a nest of *F. rufa*, L., var. *rufo-pratensis* in Parkhurst Forest, on June 29th.

Typical specimens were observed at Weybridge, hovering over ♂ ♀ of *F. rufibarbis*, *F. sanguinea*, *L. flavus* and *Tapinoma erraticum*, on July 29th.

#### CHALCIDIDÆ.

*Spalangia erythromera*, Först.—In nest of *L. fuliginosus*, Oxshott, September 9th.

#### DIPTERA.

*Phora formicarum*, Verrall.—Hovering over ♂ ♀ of *F. sanguinea* at Woking, May 21st; *F. sanguinea*, *L. flavus* and *Tapinoma erraticum* at Weybridge, July 29th; and *L. niger* at Shanklin, August 21st; and *L. niger* at Blackgang Chine, August 26th.

*Phyllomyza lasiar*, Collin.—With *L. fuliginosus*, Wellington College, September 30th.

*Ceratopogon myrmecophilus*, Egger.—♂♂ hovering over *F. rufa* nest at Weybridge, September 22nd.

## COCCIDÆ.

*Ripersia subterranea*, Newst.—In nest of *L. alienus*, April 23rd; *L. niger*, April 29th at Tenby; *F. fusca*, L., var. *fusco-rufibarbis* at Sandown, August 22nd.

*Ripersia toulini*, Newst.—In nest of *L. niger* at Bletchington, May 14th.

*Newsteadia floccosa*, De G.—In *F. rufa* nest, Weybridge, July 12th.

*Ortheziola vejtdorskyi*, Sulc.—In nest of *L. niger* at Tenby, April 25th; *L. flavus* at Manorbier, April 28th.

## COLLEMBOLA.

*Cyphodeirus (Beckia) albinus*, Nic.—With *Tetramorium caespitum* at Tenby, April 23rd; *Tapinoma erraticum* at Weybridge, June 29th; *Lasius niger*, Bletchington, May 14th; Sandown, August 10th; *L. alienus*, Box Hill, May 16th; *L. flavus*, Bletchington, May 14th; *L. mixtus*, Box Hill, May 16th; *F. ersecta*, Parkhurst Forest, August 11th and 23rd; *F. rufa*, Weybridge, May 4th; *F. fusca*, Tenby, April 23rd; *F. fusca* var. *fusco-rufibarbis*, Sandown, August 10th, and Blackgang, August 26th; *F. fusca* var. *rubescens*, Landslip, I. of W., August 21st; and *F. rufibarbis*, Weybridge, July 29th.

## MYRIAPODA.

*Blanjulus guttulatus*, Gerv.—With *L. fuliginosus*, Wellington College, September 30th.

*Polyxenus lajurus*, L.—In nest of *F. fusca*, Box Hill, September 7th; and abundant in two nests of *F. rufa*, pointed out to me by W. E. Sharp at Wellington College, on September 30th.

## ARANEINA.

*Thyreosthenius bicratus*, Camb.—In nest of *F. pratensis* at Rannoch, July 17th.

*Evansia merens*, Camb.—In nest of *F. fusca* at Aviemore, July 18th.

*Tetrilus recisus*, Camb.—Young with *L. fuliginosus* at Oxshott, June 2nd, and a number of egg-sacs (of this species according to Randell Jackson) situated on the carton cells of this nest on September 9th.

*Cicurina cinerea*, Panz.—In *L. mixtus* nest at Box Hill, on July 30th.

*Micaria pulicaria*, Sund.—With *L. niger*, August 7th, and *F. fusca* var. *fusco-rufibarbis*, August 10th, at Sandown.

*Harpactes hombergi*, Scp.—With *F. fusca* var. *fusco-rufibarbis*, Blackgang, August 26th, and the Landslip, August 28th.

## ACARINA.

*Cilibano comata*, Leon.—On larvæ in a nest of *L. niger*, at Tenby, April 24th.

*Trachyuropoda bostocki*, Mich.—In some numbers in a nest of *L. fuliginosus*, at Apse Heath, I. of W., on August 16th.

*Laelaps cuneifer*, Mich.—In nest of *L. mixtus* at Box Hill, May 22nd; and *L. fuliginosus*, at Apse Heath, August 16th.

*Antennophorus pubescens*, Wasm.—On ♂ ♀ in a nest of *L. flavus*, Box Hill, July 30th.

*Antennophorus grandis*, Berl.—On ♂ ♀ in a nest of *L. fuliginosus* at Apse Heath, August 16th.

## CRUSTACEA.

*Platyarthus hoffmanseggi*, Brandt.—In nests of *Myrmica ruginodis* and *M. scabrinodis*, at Tenby, in April; *L. niger*, Tenby and Manorbier, in April, Bletchington, in May; *L. alienus*, Tenby, in April, Box Hill, in May; *L. flavus*, Tenby and Manorbier, in April, Bletchington, in May; *L. mixtus*, Box Hill, in May; *L. fuliginosus*, Apse Heath in August; *P. cæsecta*, Parkhurst Forest, in August; *P. fusca*, Tenby in April; *P. fusca* var. *rubescens*, and var. *fusco-rufibarbis*, Landslip, in August.

Father Schmitz and others, having asked me to publish a further list of my publications, since my last list, which appeared in the *Entomologist's Record*, vol. xxiii., p. 238 (1911), and brought the total up to 50. I therefore here append the following list which brings it up to date:—

No. 51.—“*Lasius mixtus*, Nyl., in Britain,” *Ent. Record*, xxiii., 236-238 (1911).

No. 52.—“Ants at Kew,” *Royal Botanic Gardens, Kew Bull.*, No. xii., li., 367-369 (1911).

No. 53.—“A Messmate of Ants” (*Lomechusa strumosa*, F.), *Marvels of the Universe*, V., 220-222 (1911) (with photographs).

No. 54.—“A Revised List of the British Ants,” *Entomologist*, xliv., 389-391 (1911).

No. 55.—“Experiments on the Formation of Colonies by *Lasius fuliginosus* ♀ ♀,” *Trans. Ent. Soc. Lond.*, 1912, 664-672. (Joint paper with C. Crawley).

No. 56.—“Myrmecophilous Notes for 1911,” *Ent. Record*, xxiv., 4-10, 34-40 (1912).

No. 57.—“A Fly that is Born in Ants' Nests” (*Microdon mutabilis*, L.). *Marvels of the Universe*, xix., 764-767 (1912) (with photographs).

No. 58.—“Mites that live in Ants' Nests,” *Marvels of the Universe*, xix., 778-780 (1912) (with photographs).

No. 59.—“*Dairyng Ants*” (Ants and *Aphidæ*), *Marvels of the Universe*, xx., 804-806 (1912) (with photographs).

No. 60.—“The Founding of Colonies by Queen Ants,” *Int. Ent. Cong. Oxford*, 1912, II., 11-77 (1913). (Joint paper with C. Crawley.)



No. 61.—“Ants as Honey Pots” (*Myrmecocystus horti-deorum*, McCook), *Marvels of the Universe*, xxiii., 940-943 (1912) (with photographs).

No. 62.—“The Wood Ant” (*Formica rufa*, L.), *Marvels of the Universe*, xxvii., 1099-1103 (1912) (with photographs).

No. 63.—“The Agricultural Ant of Texas” (*Pogonomyrma molefaciens*, Buck.), *Marvels of the Universe*, xxviii., 1159-1162 (1912) (with photographs).

No. 64.—“On Some Remarkable Associations between Ants of Different Species,” *Report Lancs. Chesh. Ent. Soc.*, xxxvi., 38-56., 1912 (1913).

No. 65.—“Some Races of Ants New to Britain,” *Ent. Record*, xxiv., 306 (1912).

No. 66.—“Some Notes on the Genus *Myrmica*, Latr.,” *Ent. Record*, xxv., 1-8., 42-48 (1913) (with plate and wood-cuts).

No. 67.—“Myrmecophilous Notes 1912,” *Ent. Record*, xxv., 61-68., 89-97 (1913) (with wood-cuts).

No. 68.—“Ants and Myrmecophiles on Lundy,” *Ent. Record*, xxv., 267-269 (1913) (with plates).

No. 69.—“*Aenigmatias blattoides*, Meinert, captured in Scotland,” *Ent. Record*, xxv., 277-278 (1913).

No. 70.—“Notes on the capture of *Claviger longicornis*, Müll., and a Description of the supposed Larva,” *Ent. Record*, xxv., 290-294 (1913) (with plate).

### Collecting in the Horley District, 1911 and 1912.

By H. BAKER-SLY, F.E.S.

The following notes, I am afraid, will give but a very imperfect list of the Lepidoptera to be found in our district, firstly as I had no intention of writing any retrospect, and secondly because I have done very little collecting in our immediate neighbourhood this year.

The usual early insects, such as *Hybernina rupicaprariva*, *H. marginaria* (*progemmaria*), *H. leucophaearia* (one var. *marmorinaria* taken on February 16th on a fence), and *Phigalia pedaria* (*pilosaria*) were common everywhere during February and March, and *Polyploca flavicornis* was fairly common and in good form in Worth Forest. An excursion for “Sallowing” on March 26th yielded but few insects, but *Eupithecia abbreviata* was flying amongst the bushes, and I secured some fine specimens. By early April the sawfly bloom was attracting freely, and *Taeniocampa pulverulenta* (*cruda*), *T. gothica*, *T. gracilis*, *T. instabilis*, *T. stabilis*, *T. munda*, *Xylocampa areola* (*lithorhiza*), and *Pachnobia rubricosa* all fell more or less commonly into the beating tray, as well as the hibernating *Cerastis vaccinii* and *Scopelosoma satellitia*, and *Anticlea badiata* was taken commonly on the wing. *Brephos parthenias*, as usual, was common in Worth Forest on sunny days, and a trip by night, on April 15th, found *Lobophora carpinata* (*lobulata*) in considerable numbers. On April 13th I went to Worth Forest for *Aplecta tineta* larvæ, but only found three after much searching. In the breeding cages there emerged, towards the end of April, several fine *Pygaera curtula* (larvæ from Holmwood Common, August 15th, 1912), one *Notodonta ziczac* (Horley larva, June 30th, 1912) and *Pachys strataria* (*prodromaria*) (Horley larvæ, June, 1912).

On May 1st and two or three other days during the first half of the month, I went in search of *Aegeria respiformis* (*egyptiformis*), which are to be found in considerable numbers in oak stumps all over our district. A day's hard work in Worth Forest, cutting off the tops of birch stumps, yielded about 50 *A. culiciformis*, two of which were varieties, being orange-banded instead of red. I was also fortunate in securing seven larvæ of *A. spheciformis*, breeding five imagines from June 10th to 17th, one unfortunately being a cripple.

During May, I took, amongst other things in Horley, *Hemerophila abruptaria*, *Coremia unidentaria*, *Helecia tenebrata* (*arbuti*) (common on some of the roadsides), *Ephyra porata*, *Coremia designata* (*propugnata*), *Anticlea nigrofasciaria* (*derivata*), *Arctia rillica* (at light), and larvæ of *Cirrhia citrigo*, *Tetha subtusa*, *Miselia oxyacanthæ* and *Plusia moneta*. In Worth Forest I took *Tephrosia consonaria*, *T. crepuscularia*, *T. punctularia* (commonly), *Acidalia remutaria*, *Eupithecia exigua*, *Pachyrenemia hippocastanaria*, *Hydriomena impluviata*, one *Hemaris fuciformis*, and one *Ellopiopsis prosapiaria* (*fasciaria*) pupa. In the breeding cages several *Macaria notata* (Worth larvæ, 1912), one *Pasychira pudibunda* (Horley larva, August, 1912), and one *Hylophila bicolorana* (Worth Forest larva, September, 1912).

During June in Horley, two or three *Aegeria tipuliformis*, *Emmelesia affinitata*, one *Euchloris pustulata* (*bajularia*) ♂, *Odontopera bidentata*, two *Emmelesia decolorata*, and *Xanthorhoë rivata* were taken, and six fine *Dicranura bifida* (Horley larvæ, July 6th, 1912) were bred. In Worth Forest I met with *Lithosia mesomella*, *Ligdia adustata*, two *Boarmia consortaria*, *Cidaria corylata*, two *Eurymene dolabraria* ♂s, *Tephrosia extersaria*, *Euchoeca obliterated* (*heparata*), *Macaria liturata*, *Lomaspilis marginata*, *Eupithecia nanata*, *Bupalus piniaria* (in Tilgate), *Aspilates strigilaria*, *Noctua festiva*, *Eupleria lucipara*, and *Leucania impudens* (*pudorina*). I might mention here that "Sugaring," as far as I have found, has been absolutely useless this year (1913), except in places where there were no trees, such as the coasts and downs. I had almost forgotten to mention that I took *Erastria venustula* in Worth Forest in June, but in far lesser numbers than in previous years.

A trip to Box Hill on June 1st produced one ♂ *Agrotis cinerea*, and one ♀ *Pachetra leucophaca*; also on sugar, *Mamestra dentina* in very fine condition, and three or four *Mamestra contigua*. Another trip on June 27th produced *Anticlea rubidata*, *Agrotis corticea* (some being very fine forms), and *Xylophasia sublustris*.

During the greater part of July I was in Cornwall after *Lycæna arion*, which, I am pleased to say, I found in splendid condition, and in sufficient numbers to complete my series. I also found time for a little home collecting in July, and took, amongst other things, *Nola cucullatella* (very common), *Emmelesia alchemillata* (rather local), *Timandra amata*, *Eupithecia coronata*, *Pseudoterpnæ pruinata* (*eytisaria*) (local), *Cidaria pyraliata*, *Eustroma silacea*, *Hemithea strigata* (*thymiaris*), *Xanthorhoë unangulata*, *Miana arenosa*, *Triphaena interjecta*, *Rivula sericealis* and *Hyphenodes taenialis* (*albistrigalis*). *Hyria muricata* (*auroraria*) was very local, being found, as far as I know, in only one spot, about 50 yards square. In Worth Forest I took *Nudaria senex*, *Epione apiciaria*, *Acidalia bisetata*, *Lygria populata* (*dotata*), *Cidaria fulvata*, *Acidalia imitaria*, *A. inornata*, *Asthena luteata* (scarce), *Acronieta*

*leporina*, *Coenobia rufa* and *Hyphenodes costaestrigalis*, the last species at sugar. A trip to Box Hill on July 13th, 1911, was most successful, resulting in four *Lithosia deplana* (*helvcola*), *Boarmia abietaria*, *Melanthia procellata*, *Geometra vernaria*, *Phibalapteryx tersata*, *P. ritalbata*, and one *Arentia flexula*. I also took *H. taenialis* at sugar in Ifield Woods in some numbers.

In August I found *Lithosia complana* (common, but local), one *Charaxes graminis*, *Noctua umbrosa*, *Triphaena janthina*, and pupæ of *Nonagria arundinis* (*typhae*) in old bullrush stems. In Worth Forest I met with *Lygria testata*, *Eupithecia expallidata*, *Anarta myrtilli* and *Noctua dahlia*.

In September there occurred, at the gas lamps, *Ortholitha cervinata*, *Coremia ferrugata*, *Ennomos fuscautaria*, *Mesoleuca ocellata*, *Gortyna ochracea* (*flavago*), *Omphalosecelis lunosa*, and *Hydraecia micacea*, and also one ♀ *Acidalia subsericeata*, from which I obtained about a dozen ova, the larvæ from which are still (December) feeding. I also took one *Crocallis elingvaria*, and, on the rushes, *Tapinostola fulva*. Towards the end of October and November the lamps produced *Cheimatobia boreata*, *C. brumata* and *Oporabia dilutata*. A trip to Worth Forest in early November produced, besides the last-named insects, *Oporabia autumnaria*, *Hybernina aurantiaria* and *H. defoliaria*. *Diloba caeruleocephala*, *Himera pennaria* and *Poecilocampa populi*, were also visitors to the gas lamps at Horley. At ivy, in the Box Hill district, I took *Ochria aurago*, *Amathes macilenta*, *Miselia oxyacanthæ*, *Cerastis vaccinii*, *C. spadicea*, etc., and, over the juniper bushes, *Thera juniperata*.

### **Erebia gavarniensis, Warren = Papilio petrosus, De Prunner.**

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

At the risk of becoming tedious, I venture to supplement my previous note on *Erebia gavarniensis*, Warren (*antè* vol. xxv., p. 294), with a few further remarks on the subject of the nomenclature of this "all-black" butterfly. When writing in November I had not access to the earlier authorities, though I seemed to remember that a "*totus niger*," Erebiid, other than *pluto*, Esper, had received attention long before Boisduval's Catalogue appeared, and even before *manto* var. *caecilia* had been figured by Hübner. However, I think I am now in a position to show that *Erebia gavarniensis*, Warren, is no other than the *Papilio petrosus* of Leonardo de Prunner.

In the "Supplementum Papilionum quos Comes Excoffier di Lizzolo . . . mihi obtulit," published with his *Lepidoptera Pedemontana*, at Turin, in 1798, he describes (p. 71) this butterfly as "*Alis integerrime fusco-atris, mas et foemina aequales. Alpibus invenitur mensibus Maii Junii frequens.*" That is all. Staudinger ignores *petrosus* altogether in the various editions of the *Catalog*: but Kirby is more enterprising, and we find, *Synonymic Catalogue of Diurnal Lepidoptera*, vol. i., p. 62, under *Nymphalidae* (*Maniola*):—

26. M. MORIO, Giorna (Pap. M)

Calend. Ent. Tor., p. 102, n. 24, 1791.

*Pap. petrosus*, De Prunner, *Lep. Ped.* (1798).

etc.

On page 102 of the *Calendario Entomologico ossia Osservazioni* . . . di Giorna figlio. (Torino, 1791), it is written

## 24. PAP. MORIO

Lungh. lin.  $9\frac{1}{2}$ , Largh. lin.  $20\frac{2}{3}$ .

Pap. N.P. alis integerrimis. Totus niger. Antennis corporis longitudinem æquantibus.

Ne' contorni d'Exilles. In Fine di Luglio.

Of Kirby's *morio*, *Erebia alecto*, Hb., is also made a synonym, but I have little doubt from the locality mentioned—Exilles—that this “*totus niger*” butterfly is not *E. alecto* var. *pluto*, Esp., which only occurs at very high altitudes (7,000ft. to about 10,000ft., Wheeler), but *petrosus*=*manto*=*caecilia*=*gararniensis*, and, as the name *morio* was pre-occupied in 1791 by (*Hypogymna*) *morio* (L.S.N., ed. xii., 1766-68), I suggest that *petrosus* belongs to the “all-black” *Erebia* haunting the Piedmontese side of the Mont Cenis (6,050ft.) at Exilles (under 3,000ft.), which place is at little more than the altitude of the hills above Susa (1,600ft.), where I collected at the end of June, 1899 (*Ent. Record*, vol. xi., p. 290) and found on the higher ground only, the *Erebias* associated with the lower Alps—*E. medusa*, *E. ceto*, and *E. stygne*; though no doubt *E. manto*, and others of its range, would follow further up the Dora-Riparia valley, if not above Susa, in their season.

Apparently Kirby drew upon Duponchel for the material which led him to conclude that Giorna's *morio*, and Hübner's *caecilia* were synonymous. In the *Supplément à l'Hist. Nat. des Lépid. d'Europe*, 1832, vol. i, pp. 298-99, under “Satyre Cécile,” the synonymy is worked out as follows:

“SATYRUS CÆCILIA.

Papilio Cæcilia, Hb.

Pap. Morio, Giorna.

Pap. Petrosus, Deprunn.

Satyrus Pyrrha, var. Cæcilia, Boisdy.

Evergure 18 lignes.”

and my contention that *morio* and *petrosus* are identical with *gararniensis*, Warren, and that Kirby wrongly associated them both with *alecto-pluto* is further supported by Duponchel's own account.

“This Satyr, which at first sight might be confused with *alecto*, is but a variety of *pyrrha* in which all the tawny markings have disappeared. The four wings are rounded, and ‘shot’ (chatoyant) brown-black without any markings at all. Under side, same colour less deep, and also without the least spot” (as in the male). . . . “This variety is very common, and even constant in the Pyrenees. . . . The variety *caecilia* now figured was taken by M. Alexandre Lefèbvre, on the Pic de Biscos (*recte* Viscos)\*, in the valley of St. Savin, Department of Hautes-Pyrénées.” Godart (1822) may only be copying de Prunner when he says that this butterfly is common “in many of our Alpine mountains” in May and June. But he also describes Hübner's *caecilia* as absolutely without bands.

Duponchel's synonymy is derived from Ochsenheimer's “*Die Schmet. Sachsens*,” Dresden & Leipzig, 1805 (vol. i., p. 256), where

\* Caunterets region, and headquarters of the butterfly hereabouts,

*morio* and *petrosus* are coupled together under *Pap. caecilia*, Hb. But Ochseneimer is careful to state that in the one example from the Piedmontese Alps examined by him, the wings on both sides have a red-brown lustre (Schimmer) near the outer margin.

"Bei dem Exemplar, (aus den piemontesischen Alpen) welches ich besitze, haben die Flügel auf beiden Seiten gegen den Aussenrand einen rothbraunen Schimmer." But the fact that this example displayed a red-brown lustre on both sides can hardly be accepted as proof that the twice described "totus niger" butterfly was no more than Hübner's *caecilia*, and therefore a form of *manto* (*pyrrha*), as then known.

The objection that Giorna and de Prunner give different months for the appearance of *morio*=*petrosus* is slight evidence that the butterflies described by the respective authors are of different species. De Prunner may not have had the same knowledge of *petrosus* which Giorna presumably (because he adds a specific locality) had of his *morio*. Nor, in view of the great variation of size in *manto* in its many habitats, is the slight disagreement of Giorna's and Duponchel's measurements of real significance, even if both were made accurately according to modern methods. Incidentally, one would like to know whether these two ardent entomologists, who published their works in Turin at much about the same time, were personally acquainted. De Prunner's preface, signed 1792, is silent on the subject.

Whether or not, then, *garrarniensis*, Warren, turns out to be a specialised form of *manto*, or a distinct species, it would seem that, as species or variety, it should carry either the name of *petrosus* accorded the low-flying Piedmontese *Erebia* by de Prunner, or, if the pre-occupation of the name *morio* by a moth is no bar to its repetition in the case of a butterfly, then, I contend, it is entitled by priority to be known henceforth as *Erebia morio*, Giorna, or *E. manto* var. *morio*.

## SCIENTIFIC NOTES AND OBSERVATIONS.

*COLIAS EDUSA* VAR. *HELICE*. ABNORMAL PERIOD FROM OVUM TO IMAGO.—The following notes may interest readers. A specimen of *Colias edusa* var. *helice*, captured in the Isle of Purbeck, on August 20th, last, was placed in a large outdoor cage in which clover was growing. Ova were laid between August 22nd and September 1st, about 30 in all. The first ovum hatched on September 7th, and by September 16th all had hatched. On October 20th the first larva pupated, 15 eventually reaching the pupal stage, the last spinning up on November 14th. The first imago, a typical female, emerged November 18th, and was followed by others as appended:

- November 19th.—Var. *helice*.
- „ 24th.—Var. *helice*.
- „ 25th.—Male.
- „ 29th.—Male.
- December 1st.—Var. *helice*, and male.
- „ 2nd.—Male.
- „ 4th.—Var. *helice*, and male.
- „ 11th.—Var. *helice*.

The remaining pupæ are now dead, the last dying on December 30th.—LEONARD TATCHELL, Kereuz, Bournemouth, *January*, 1914.

## NOTES ON COLLECTING, Etc.

THE PROHIBITION OF THE CAPTURE OF *PARNASSIUS APOLLO*.—I have just read with great interest Mr. Gillmer's notes on the prohibition of the capture of *Parnassius apollo* by several Municipalities in Germany. (By the way, Cöthen is in the Duchy of Anhalt, in the North, and not in Hesse Darmstadt, which is my own native country). German entomologists are naturally delighted that this glorious Alpine butterfly has established itself in various localities in Germany. On my last visit to my native town, Biedenkopf (Hesse), in 1909, my nephew, William Werner (since dead), had just returned from Winnigen on the Mosel, near that river's confluence with the Rhine at Coblenz. He found the butterfly there in fair numbers, but also several collectors principally from Frankfort-on-Maine. Can you wonder that they took all they could get? and is it not the same here? If it were not so, might we not still boast of our *Chrysophanus dispar*, besides many others? That this prohibition will be the means of preserving the species I have no doubt, although it cannot be considered absolutely effective. I notice that one of the varieties mentioned is given as "*vinningensis*." Might that not refer to the specimens captured at the above mentioned place? Perhaps you may remember that on behalf of my late nephew, some years ago, I exhibited at our South London Society two lovely varieties of *Euranessa antiopa* (now in the Rothschild collection at Tring) where the blue spots on the margin were completely obliterated by the broad cream-coloured band overlapping.—J. JAEGER, 65, St. Quentin's Avenue, N. Kensington.

GREEK LEPIDOPTERA IN APRIL, 1911.—In the *Ent. Record*, xxiv., p. 59, we published a short paper with the above title. The few *Geometridae* we took at that time in Greece have lately been examined by Mr. L. B. Prout, in whose collection they now remain. The following corrections and amplifications of the above paper should be noted:—April 12th.—The *Acidalia* is *A. filicata*, Hb. April 18th.—*Gnophos obscurata* should stand as *G. ambiguata* var. *vepretaria*, Spr. *Gnophos variegata* (♂ at light) should be *G. mucidaria*, Hb. *Larentia salicata* was correctly identified. Mr. Prout informs us that the end of March and early April is quite the regular time for it in South Europe (*in litt.*). April 26th.—Of course "Stick insect" is a mistake for "Praying Mantid." April 27th.—The *Cidaria* from Tatoi is *Thera variata*, Schiff. ("The darkest specimen I possess."—L.B.P.). Since the original paper was written Dr. Chapman has rediscovered *Agriades thersites* (Boisd. MSS.). He has seen our Greek specimens of "*Polyommatus icarus*" and divides them as under. April 21st.—Epidaurus. 2 ♂s *A. thersites*. April 22nd.—Tiryns. ♂ *P. icarus* (not *icarinus* as misstated in former paper). April 27th.—Athens. ♂ *P. icarus*. It will be noted that we did not take *P. icarus* var. *icarinus* at all. It is to be presumed that former Greek records of this variety refer to *A. thersites*.—P. A. BUXTON (F.E.S.) and D. A. J. BUXTON, Fairhill, Tonbridge.

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## CURRENT NOTES AND SHORT NOTICES.

The President of the Entomological Society of London, Mr. G. T. Bethune-Baker, has chosen as his Vice-Presidents for the year, Dr. H. Eltringham, the Hon. N. C. Rothschild and the Rev. George Wheeler.

"The Verrall Supper" is organised by an Association of Entomologists with the assistance of the Entomological Club, and is carried out, as nearly as possible, on the lines of the annual Entomological Club Supper given for so many years by the late Mr. G. H. Verrall. Membership of the Association is open to any entomologist, the amount of subscription being entirely optional.

The Supper took place this year on January 20th, at the Holborn Restaurant, Mr. G. T. Bethune-Baker in the chair. Of the 118 acceptances no less than 108 sat down to table and a very pleasant evening was passed. Among those present the following gentlemen were noted:—B. W. Adkin, R. Adkin, H. W. Andrews, L. E. Ashby, P. J. Barrand, J. Platt-Barrett, Prof. W. Bateson, G. Bethell, J. E. Black, K. G. Blair, W. Bowater, F. Bouskell, Harry Britton, Dr. Malcolm Burr, E. A. Butler, D. A. J. Buxton, P. A. Buxton, M. Cameron, A. Cant, G. C. Champion, H. G. Champion, Dr. T. A. Chapman, Dr. E. A. Cockayne, J. E. Collin, J. Collins, C. W. Colthrup, W. C. Crawley, F. B. Carr, T. U. B. Dennis, A. W. Dods, H. St. J. K. Donisthorpe, J. H. Durrant, Hamilton Druce, H. M. Edelsten, Stanley Edwards, E. A. Elliott, C. Fenn, G. E. Frisby, F. W. Frohawk, J. C. F. Fryer, C. G. Gahan, Lachlan Gibb, A. E. Gibbs, E. E. Green, H. M. Hallett, A. H. Hamm, S. F. Harmer, B. L. Harwood, P. Harwood, T. F. P. Hoar, H. Hodge, Prof. Selwyn Image, O. G. Janson, O. E. Janson, A. H. Jones, Dr. Karl Jordan, Norman H. Joy, E. G. Joseph, F. B. Jennings, R. W. Lloyd, H. Main, G. Meade-Waldo, A. W. Mera, R. L. Mitford, Rev. F. D. Morice, Claude Morley, L. W. Newman, G. W. Nicholson, W. E. Nicholson, Col. C. G. Nurse, F. A. Aldaker, G. T. Porritt, Prof. E. B. Poulton, R. M. Prideaux, N. D. Riley, Hon. W. Rothschild, H. Rowland-Brown, A. G. Scorer, V. E. Shaw, W. E. Sharp, W. G. Sheldon, A. Sich, J. A. Simes, P. F. Skinner, G. O. Sloper, B. H. Smith, R. S. Standen, E. Step, Rev. J. E. Tarbat, Rev. C. F. Thornewill, J. R. le B. Tomlin, A. E. Tonge, H. J. Turner, C. J. Wainwright, J. J. Walker, C. O. Waterhouse, Christopher Whall, C. P. Wheeler, Rev. G. Wheeler, C. B. Williams.

Dr. Malcolm Burr has recently acquired the extensive and very perfect collection of Earwigs of the World formed by M. Henri Gadeau de Kerville. As many of the rarer and less known species are represented by long series, opportunity will be taken to enrich the National Collection at South Kensington with representative series of species not already there.

The Address read to the Entomological Society of London at their Annual Meeting on January 21st by the President, Mr. G. T. Bethune-Baker, dealt with "The Scales of the *Iuraidac*, with some Observations on their Colour Problems," and was a summary of the author's detailed study of the colour problems for many years past. It was illustrated with a very large number of lantern slides.

In the *Ent. Mo. Mag.* for November, Mr. Jas. Edwards describes a species of Hemiptera as new to Science, which he names *Psyllopsis distinguenda*. It was taken by Mr. Champion in the New Forest, in June, 1913, by sweeping *Circaea lutetiana* and other low plants. It is related closely to *P. fravini*.

In the same number Mr. R. S. Bagnall describes two species of British Thysanoptera (Tubulifera). *Haplothrips obscuripennis* taken amongst dead branches, old pea-sticks, etc., in Warwickshire and

Oxfordshire, and *H. cephalotes*, obtained from sedge stacks at Weston-on-the-Green, both new to science.

Practically the whole of the November number of the *Can. Ent.* is taken up with the Report of the fiftieth Annual Meeting of the Entomological Society of Ontario, including a number of the papers read thereat, with several plates, one of which portrays the faces of many entomologists well known to us by the repute of their labours as specialists.

There are one or two very interesting articles in the November number of the *Ent. News*. Frank E. Blaisdell writes on the "Variations in the Maculation of *Olla abdominalis* (Coccinellidae)," with a plate of some dozen striking forms. Phil Rau and Nellie Rau contribute an excellent paper of field observation and experiment with several species of mud-wasp, *Pelopaeus*.

In the December number of the *Ent. Mo. Mag.*, Dr. J. H. Wood continues his investigations on the more obscure sections of the Diptera. He describes a species of *Dolichopodidae*, *Thrypticus nigricauda* as new to science. Several specimens were taken in July, 1912, at Moccas Pool, and there is also a specimen from Norfolk in the late Mr. Verrall's collection.

An account of the "Preparatory stages of *Apocheima rachelae*," a species of Geometrina allied to our *A. hispidaria* is given by Arthur Gibson in the December number of the *Can. Ent.*, with one plate and text figures. Another paper which may turn out to be more than ordinarily useful is that by E. Harold Strickland, of Ottawa, entitled "Some Parasites of *Simulium* Larvae and their possible Economic Value," illustrated by one plate.

A series of articles is running through the pages of the *Entomologische Rundschau* on the Wasps, with figures of the nests of the various species. In the July issue there is an article on the Island of Capri and its entomology. Dr. Seitz contributes two articles on the Butterfly Fauna of Egypt in September and October.

The *Entomologische Zeitschrift* for the past few months has the following more or less useful articles. Emil Hoffmann names the form of *Erebia gorge* without eyespots on either side as *ab. impunctata*. His specimens came from the Tannen Mts., in Salzburg. Dr. Richard Schmidt gives an account of the *Odonata* of the Münster Thal; Dr. H. Geital gives his experience of the breeding of the Phasmid, *Eurygenema verfasciata*; Paul Wolff gives the results of a series of temperature-experiments with butterfly pupæ, the species dealt with being *Arctia rillica*, *Arctia caja*, *Callimorpha dominula*, *Pieris brassicae*, *Aglais urticae*, and *V. io*, a considerable number of figures of the resulting imagines being given; Assessor Fuchs has commenced a series of articles on "Forest Entomology"; Dr. P. Martell contributes some articles on the "Insect Enemies of Books"; H. Burgeff gives several articles on the *Anthroceridae* (*Zygaenidae*) of North Africa, with numerous illustrations of each species and its life-history, etc.

The Sixth Annual Report of the National Museum of Wales, presented by the Council to the Court of Governors is just to hand. From it we gather no effort has been spared to make this Museum worthy of the Principality and its usefulness will grow as time goes on. Our readers might well consider whether they can help the Council by offers of standard works of reference, or natural history specimens.—H.E.P.



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We must earnestly request our correspondents NOT to send us IDENTICAL communications with those they are sending to other magazines.

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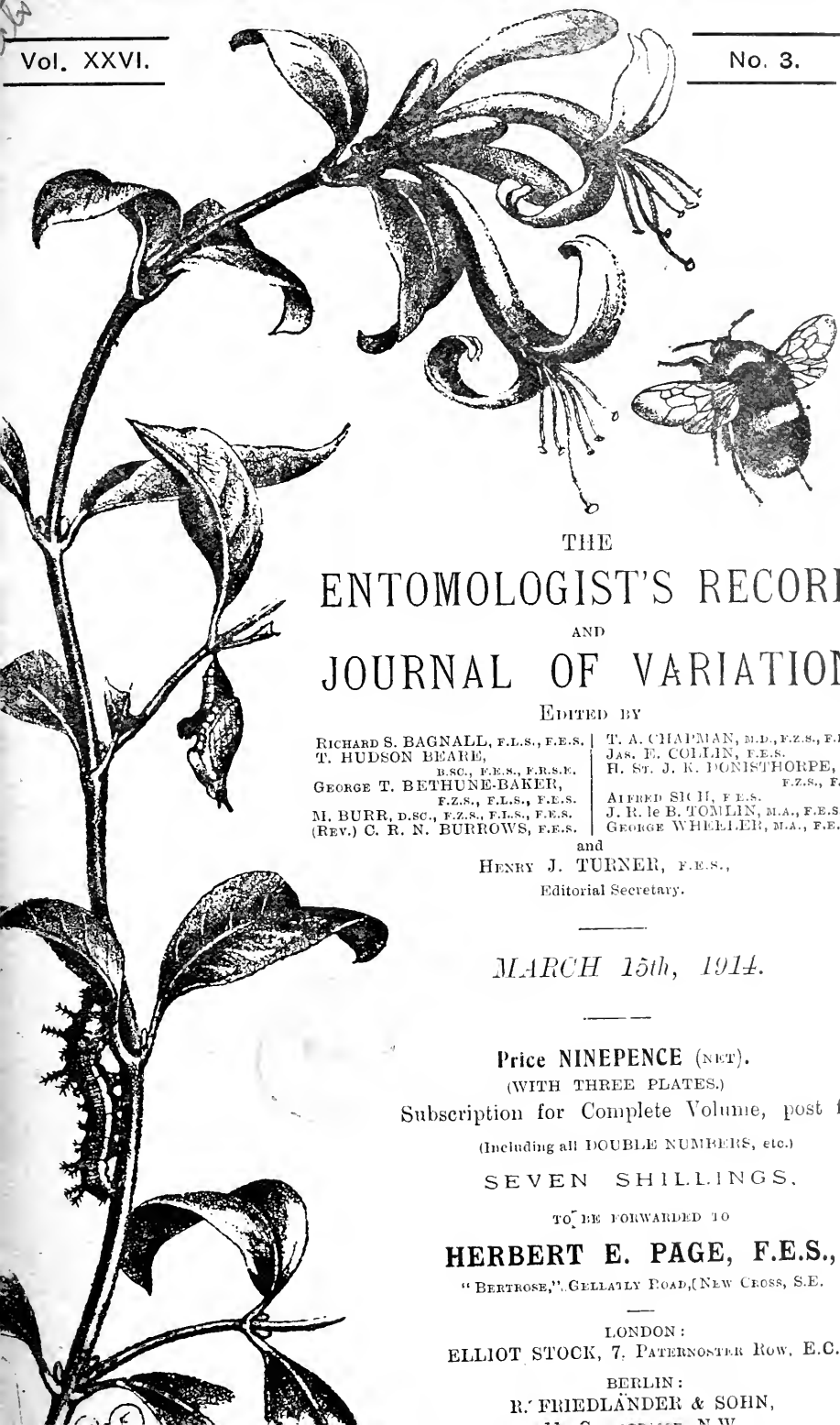
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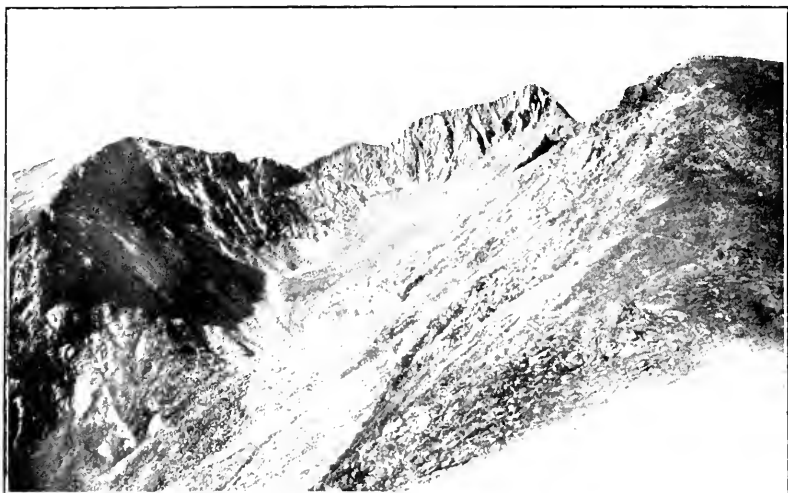
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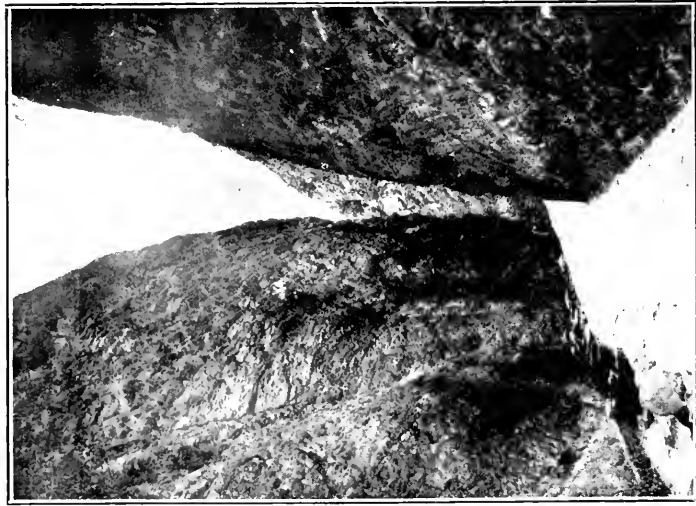


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## Eighteen days on Mount Canigou. Pyrénées Orientales.

(With two plates.)

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

Continuing my Vernet notes, Mr. and Mrs. Johnson and I wended our way to Canigou on July 14th. The day was bright and continued so until well on in the afternoon, when it became cloudy with more or less of a mist. There was but little to record in our captures, unless we make an exception of *Satyrus briseis*. This species we took on the side of the hill in front of the little way-side well and spring, where, no doubt, other pedestrians besides ourselves have often sat down and had their lunch. In that spot one or two of the *Argynnidae*, as well as *S. briseis* were disporting themselves in addition to many of the commoner species. The earlier part of the day was spent collecting, so that we did not arrive at the Chalet Hôtel des Cortalets till just before dinner time. If the accommodation seemed at first somewhat primitive, the proprietors, M. and Mme. Saporte were kindness itself and showed quite a personal interest in their guests; twice after the departure of Mr. and Mrs. Johnson did my good host come after me, fearing I had lost my way, as I was an hour or two later than usual. The first time I met him was about an hour from the hotel, and as he was gun in hand, I enquired whether he was after me or an izard, as I feared I had not much in my pockets that he would care for, and he replied, enjoying the fun, that he feared I should not be good for food, as he rather expected I should be a tough morsel. The mornings and early afternoons were glorious almost all the time, but occasionally the mists rolled up from below and involved an early return to afternoon tea. There were several species I was keen to get: first, I hoped for *Plebeius pyrenaica*, but in this I was disappointed and I suppose that there is no doubt it does not occur in the Eastern Pyrenees. Then there were *Erebia lefebrei* and *Hepialus pyrenaicus*, about which latter I especially wanted to ascertain something of their habits, and in both of these wants I was very fortunate. The first day we all three made for the Canigou glacier, whilst on the second day we explored a rocky gully on the left of the little valley through which we had to go to get to the glacier. In each case *Erebia lefebrei* was the object of our search.

On the 15th, in the trough of the vale or alpine pasture, *Erebia lappona* was the first species to be caught. Insects were by no means plentiful, and probably every one was chased. As, however, we approached the rougher ground some black *Erebiae* were espied, and soon we found ourselves among *E. lefebrei*, but it was not abundant, and a very different looking insect from the large spotted form I had taken at Gavarnie. Superficially, it was much more akin to var. *astur* from the Picos de Europa. There was also another difference; at Gavarnie, I only took the species absolutely on the screes *en route* to the Porte d' Espagne, or on the high track (now only a cattle track) just before the "Porte" is reached, this spot also being entirely screes again, though of a much finer material than lower down. Here, however, it by no means confined itself to screes, it liked the rocky and rough parts, but we were most successful away from the real screes, though it occurred on them, but less commonly. An

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occasional *Plebeius orbitulus* was taken also with a few *Anthrocera* (*Zygaena*) *exulans*, whilst I took a single quite fresh *Brenthis euphrosyne*. By the tiny little tarn, at the back of which the glacier rests, no insects at all were seen, though on the screens on the Canigou side one or two *Erebiae* were noticed, but quite out of reach. The next day we worked the gully already referred to, with considerable success so far as *E. lefebrei* is concerned. It was the rocky bed of a winter stream, now quite dry, leading up to the Barbet path, and on each side of it was a rough mountain pasture, on the difficult slopes of which I took more than one *Hepialus pyrenaicus*. It was here I took my second pair *in coitu*, but it was not until another day that I was able to verify my first observation on the curious method of mating as already recorded in this journal. *E. lefebrei* was fairly common, though the females were as yet much less in evidence than the males.

After this we spent a couple of days on the other side (south-west) of Canigou, going along the usual easy path to the summit, and our captures were but few. *Plebeius orbitulus* was taken very sparingly; it was evidently barely on the wing. The Canigou form is different in some respects from any other races that I know, but I will go into this question later on. *Colias phicomone* was not uncommon; one male is very yellow and clear, but generally they were dusted with grey fairly heavily, whilst the females are also very grey. *Pieris callidice* was by no means common, and my best specimen was taken on this first day. It seems probable that in this latitude they were going over. One or two Argynnidæ were captured, *Brenthis pales* being the commonest and quite typical, whilst a perfectly fresh female of *Issoria lathonia* fell to my net, in which the suffused basal areas of both wings are extraordinarily bronzy-green, that in the secondaries extends all over the cell and in both cases the golden greenish colour is exceptionally bright. *Brenthis euphrosyne* also occurred sparingly. Among the *Heterocera* that I captured on these days *Anthrocera* (*Zygaena*) *exulans* was the commonest. Remembering that I had taken *Anthrocera anthyllidis* just over the Vignemale Pass in a previous year, I worked hard and kept a keen look out for it all the time, but did not see a single specimen. *Anthrocera exulans*, however, was common all the time of my visit, but it was the only species seen near the summit or on the little pasture on which the Chalet Hôtel is situated. I cannot say that these two days' record satisfied us, but though bright it was not very warm and early mists rolled up so that we had to return home fairly early. Of course, we ascended to the hut on the Pic itself, where we had our lunch on one of the days, but it is a vast mass of stones and for some distance before the summit, scarcely any insects were seen, except one or two that were blown across. The following morning we took a walk downwards along the route towards Amélie-les-Bains, obtaining most beautiful views of the lowlands around. As we descended slightly on to the rich, but small, pastures below the hotel, a new capture was made that puzzled us at first. It was a form of *Erebia tyndarus* perhaps nearest *ab. dromus*, but the pale tawny patch on the primaries was very large and so bright that we could not think what form it was. It was by no means rare and all of both sexes were equally bright in coloration. I shall, however, refer to this later on. As we descended through the fir woods it soon became evident that

the Canigou fauna was disappearing. *Erebia stygne*, a species that was very rare in the higher altitude became common, then *Erebia euryale* put in an appearance, and low down in a rocky open ravine with a streamlet descending from the heights above, *Colias edusa* and *C. hyale* fell to my net. *Parnassius apollo* likewise was taken, and among the *Erebia stygne*, I took a pretty aberration in which the fascia of both wings is a peculiar coloured grey instead of the usual bright tawny hue, whilst the underside colour in the primaries is also much modified and the general tone of the brown colour is nearer to sooty-blackish than to the usual brown. *Erebia epiphron* var. *pyrenaica* was fairly common, the race being large with very prominent black spots in all the wings. In one grassy spot on our return, *Crambi* were very abundant, but most of them proved to be *Crambus perlellus*, with some nice forms of its aberration *warringtonellus*, and in addition there were some pretty *Phycitidæ* which I have not yet named. Among the pine and fir woods *Gnophos myrtillata* var. *obfuscaria* was common, and an occasional *ab. canaria* also occurred. I took a single *Boarmia repandata* as well, whilst one or two *Fidouia limbaria* likewise turned up. *Anaitis simplicata* was captured once or twice. The only Lithosiid that I saw was *Setina irrorella*, this species being by no means rare.

A day on the Perdrix slopes, *i.e.*, the slopes between the little wayside Perdrix fountain and the flagstaff at the end of the ridge, completed my friends', Mr. and Mrs. Johnson's, stay. This was one of the good places for the Canigou form of *Plebeius orbitalis*, and it was here that I made my first observation on the mating of *Heptalus pyrenaicus*. On this ground also I took the only *Loweia alciphron* var. *gordius*, a ♂, with scarcely any purple gloss at all. In addition to those I have recorded, the Johnsons took *Melitæa cinxia*, *M. parthenie* var. *varia*, *Brenthis (Argynnis) selene*, *Satyrus alcyone*, and *Hipparchia semele*. A single specimen of *Polyommatus amanda* was also captured by Mr. Johnson at an altitude of 7,500ft. I should imagine the specimen must have been blown up somehow or other as it is improbable that in any of its stages it could have withstood the rigours of a Canigou winter. It is said that from the "Pic" of Canigou the coast of Barcelona can be seen on a clear day, but I suppose that though we saw the Mediterranean frequently, it was, nevertheless, not clear enough to see so far as that. The greater part of the time of our stay, whilst we were in brilliant sunshine, Vernet was in cloud, for a thousand, or perhaps two thousand, feet below us rested a compact sea of clouds absolutely unbroken anywhere except by the summits of the mountains here and there. Very beautiful, indeed, were some of the effects, the clouds lying billow upon billow, looking so solid and yet so light as to make one feel that there could be naught below them, and it was only as one raised one's eyes heavenwards and saw the purple peaks of the distant hills and mountains standing out like isolated islets in the cloudy sea that one realised that below that sea lay the world and all its life and struggles, its hopes and fears; and one felt thankful for the rest and peace of the Alpine seclusion with all its revelations of nature's secrets. Several of the sunsets across these cloudy billows were also most fascinating, the differing densities of the clouds bringing out wonderfully different effects as the rays from the declining sun shot almost horizontally across them.

For the next ten days I made expeditions, generally alone, and I spent much more time on the Barbet side of Canigon, that is on the north and north-east side of the mountain. Before, however, describing those experiences, I would like to remind my readers of a very good method of collecting the *Plebeïinae*, that others as well as I have found efficacious. I had spent a day on the south side of the mountain in search of *Plebeius orbitulus* and others of its genus, as also of *Hepialus pyrenaicus*, when towards half-past four to five perhaps, in the afternoon, a cold wind suddenly sprang up, which I knew meant an end of collecting for that day. I was, however, by a sheltered grassy spot in full light of the sunshine, though it was somewhat of a feeble shine just then, when I noticed a *P. orbitulus* settle in front of me on the head of a withered scabious, so I approached carefully and found it resting head upwards with antennæ alert. Therefore, having seen that it was a fine female, I sat down for five minutes beside it. Gradually the antennæ relaxed, came together in front, and then slowly dropped back to its primaries. Then I boxed her and carefully searched that whole grassy plot, with the result that I succeeded in boxing quite a score of specimens, nearly all of which were settled head upwards, though one or two had inverted their positions, probably with the intention of crawling down among the roots of the grass.

On July 24th, amid brilliant sunshine, I took my second walk up to the Barbet. As I went along I took the usual things, *Erebia lefebvrei*, still quite good, and *E. epiphron* var. *pyrenaica* in beautiful condition. Then *Crambus digitellus* fell to my net, and I was glad to again make its acquaintance, for it is a rare species in most collections, and only occurs in the Pyrenees and the South of France. I was fortunate in securing some six or seven specimens in both sexes. So I went on happily, having nearly made the summit of the first part of the Pass, and had just flushed a ptarmigan and was gazing after it for it was very wild and shy, when a sudden loud clap pulled me up sharply, and I looked up to see a heavy dark cloud rolling over the Grand Pic. Then a flash of lightning and another nasty sharp clap with huge drops of rain; it came, however, from the side of the sun, so there was no rainbow to add to the beauty of the scene. It soon became necessary to seek for shelter, of which there seemed to be but little, for the position was very exposed. There was fortunately near by a low longish ledge of rock somewhat overhanging, and I was able just to lie lengthwise underneath it, whilst flash after flash and peal after peal crashed, and the rain soon came down very heavily for a time. Gradually, however, it abated, and I thought it wise to beat a retreat homewards, lest the storm should roll back again as is so often the case. I got back fairly wet, in time for afternoon tea, and found that mine host had gone to meet me with a great "south-western" sort of waterproof cape for me to put on, but as I had taken some short cuts across the hill-side, and he had taken the "sentier," we had missed. By dint, however, of lusty shouts from "Madame," and also from myself, which doubtless reverberated to him, and to which he in the end replied, we brought him back again in half-an-hour or so. The thunder and rain continued during the night and till "déjeuner" the next day, so the morning was spent putting my captures in order. Monsieur Eugène Simon, the President of the French Zoological Society and the well-known authority on

Humming Birds and on Spiders, also spent most of the morning doing likewise. He and Madame Simon had arrived a couple of days previously and for the next ten days we dined together, and I spent some very happy and profitable hours in their company, as I soon discovered he was deeply interested in "Nomenclature," and was as anxious as I that the "Code" should be revised. I was able therefore to tell him of the resolution of the Entomological Society of London for the then forthcoming Congress at Oxford, in which he quite sympathised. That afternoon I spent in making the circle of Canigou, going up the way of the Puig Barbet and on through the Brèche Durier. I arrived at the summit in a brief spell of sunshine with the cloudy mists rolling all around, and close around too, the effects of the few minutes sun on the misty fog around were very wonderful, but the sun was not to be the master that day, for soon the fog gained the upper hand, so on I went returning along the south side past "la Perdrix," and arriving home nearly an hour before I was expected, much to the astonishment of my host; time is no object in these regions and their pace up the passes is very leisured so that they do not quite understand the Englishman's love of a brisk walk for the sake of a walk alone. I took several more expeditions on to the same side of Canigou (North) after this in beautiful weather and flushed a pair of fine strong ptarmigans again much in the same place as before, but they were so shy that they did not give me a second chance of watching them. Immediately we descend on to the truly north side of the mountain we find ourselves in a veritable sea of stones, that are so rough and sharp that it is very difficult to do much collecting. On my first day the wind was so strong that no butterfly could stand against it, and I only caught the few *Erebiae* that I did, by holding my net against the wind and intercepting the insects that were disturbed here and there. I succeeded in taking half-a-dozen nice *Erebia gorge* in this way, and on a quieter day I took more, but it appears always to blow at this part, though sometimes it is less difficult to collect, but I have little doubt that, given good weather, *i.e.*, but little wind, a very profitable day's collecting could be done among this sea of stones. As it was, I caught, in addition, a nice little series of fairly typical *E. gorge*, *E. lefevrei*, and a series of very fine *E. epiphron* var. *pyrenaica*, whilst in the immediate neighbourhood I took several of each of the others of the genus that fell to my lot here, *viz.*, the pretty form of *E. tyndarus*, very fine *E. stygne*, and *E. lappona*. My plan was to go down the valley of the Cady to the Col du Cheval Mort, and then strike across the hill to the flagstaff above the Perdrix. The valley soon widens, and, if somewhat desolate, is yet very interesting and not unromantic. In it I took three beautiful little *Polygonmatus eros* with unusually dark grey and heavily spotted undersides. Both sexes of *P. icarus* also turned up, whilst *Plebeius argus* and *P. orbitulus* were likewise added to my bag. A single *Cupido minimus* was taken here, and on the grassy slopes of the mountains *Hepialus pyrenaicus*, in both sexes, also fell to my lot. Of course, the semi-apterous female was found under stones, and in this respect I was fortunate, for M. Simon, in his search for spiders, brought me more than one female of this species that he had found. I also took one *Enprepia cribraria* ab. *rondoui*. Some people would, I suppose, write "*Enprepia cribraria rippertii rondoui*," this, however, seems to

me entirely unnecessary, as there is only one "*roudoi*" belonging to this species therefore the name of the type form plus the special varietal name is sufficient for all purposes. Of course in the first description it would be quite correct to designate that *roudoi* might be an extremer form of *rippertii*. I also took this variety on Canigou itself. *Colias phicomone* occurred here, two females that I took being very fresh with beautifully pink fringes. Of *Melitaea aurinia* var. *merope* I took two specimens, and a single *Bupalus piniaria* was also captured, whilst earlier in the day, just below the vast scree, I took a single *Oreana helvetica* together with several *O. alpestralis* and the common *Titanio phrygialis*. Altogether a most exhilarating and delightful day was spent, and others followed with like enjoyment, though somewhat shorter, for this one, that I have just given details of, was a twelve hours' day, one's collecting involving naturally double the distance from point to point if not much more than double. I think I have omitted a few species that I took on other parts of this interesting and wild mountain. *P. apollo* was rare, I took a couple of *Lowia alciphron* var. *gordius* and a pair of *Chrysophanus hippothoe*. The female of the last named species was almost var. *eurybia*, but with a very restricted beautiful coppery sheen on the median area, and the underside postmedian row of ocellations radiated right into the subterminal row, whilst the underside of the right wing has no postmedian row at all, though the left is normal in this respect. In the primaries also the markings are asymmetrical, the radiations being lines in the right wing but heavy dashes in the left. *Lumicia phlaeas* typical and ab. *eleus*, both occurred rarely, within two days of each other, and I took a single *Adscites (Ino) statices*.

The day for my return at last came, for the Oxford International Congress was approaching, so on July 31st I went down to Vernet again and spent the night there previous to my coming straight through. I will only relate what I took in the Balatg Forest and below there. I took *Colias edusa* (a large magnificent female), *C. hyale* and *C. phicomone*. *Leptosia sinapis* (type) was still on the wing and *Melitaea athalia*, as also *Issoria lathonia*. Just by the wayside tunnel and the rocky precipice, where such fine views of the Vernet valley are obtained, *Epinephele lycæon*, with some very nice females, was not uncommon, and some fine males of *Hipparchia semele*, whilst a single *Epinephele ida* and *Lowia alciphron* var. *gordius* were also taken. Lower down I took a beautiful pair of *Pararge maera* var. *adrasta* and also some *Erebia euryale*. Among some rocky ground well above Vernet, *Satyrus actæa* was still on the wing, and *S. jidia* in beautiful condition, though, owing to the nature of the ground and the wariness of the species, I missed more than I took. *S. briseis* was yet in good condition, and I secured half-a-dozen or so, whilst of *Melanargia lachesis* I took one just for "auld acquaintance sake." Thus ended a most pleasant holiday, and if my captures were fewer in number (as they were) than usual, some were certainly most interesting and so made up for lack of numbers. I shall, a little later on, give a short paper on *Erebia lefevrei* and the Canigou forms, when I hope my friend Dr. Chapman will also be good enough to contribute some notes on the male armature of the species.

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## New and interesting forms of *Agriades coridon* from Herts.

By C. P. PICKETT, F.E.S.

A note in the January number of this magazine, under the heading "Societies," refers to the exhibition, by Mr. L. W. Newman, of a series of *Agriades coridon*, including an asymmetrical female with wings of one side smaller than those of the other, and well dusted with blue scaling. These were taken (I presume, in August, 1913) in the Herts district.

At first this note strikes one as referring to an aberration but very little out of the ordinary. However, to me it is quite a distinct form, and quite out of the ordinary when one comes to know how few of this particular form have really been taken. This specimen, although I have not seen it, I believe came from the exact spot which I have been working for the past three seasons, and one wonders if it has come from a special stock. During August, 1911, I came across a similar specimen, and was much struck at the extreme contrast of the two sides in size and markings, a contrast which gave one the impression that the two sides were from two distinct females. I searched hard in the same spot for a week, and managed to get four further specimens of this form. They all have one side more or less dusted strongly with blue, in the most extreme specimen the contrast of the two sides is very striking. In some specimens the area of the wings on one side is only about half the area of those on the other side. The shapes of the wings are also very divergent in some specimens, the wings on the one side being of the usual square form, whilst those on the other side are more elongated.

I am not at all satisfied that these specimens are merely asymmetrical females, and I think if they be put into expert hands we shall find out something quite new in *Agriades coridon*. As I was thus interested so much in this form, I gave the whole of my time during August, 1912, working the same spot day after day, and was rewarded by the capture of eight more specimens, all of which are certainly very fine examples of this form. It would seem that these specimens may originally have come from one brood, and that the strain has passed on from one generation to another. I again visited the same spot in August, 1913, and succeeded in getting another six specimens of this aberration during a week's stay. Thus in the three years I have taken no less than nineteen specimens, and one would like to know if others have been taken besides these and the one recorded by Mr. L. W. Newman.

With regard to the form of *A. coridon* called ab. *semi-syngrapha*, I do not remember ever to have seen it so common as it was in the summer of 1913. The females of the species were certainly in great predominance over the males, and were extremely abundant. One often saw quite fifty at a time flying in a mass and generally one or more ab. *semi-syngrapha* could be seen dodging among them. One curious fact, that was apparent, was, that the *semi-syngrapha* form was always being pursued by the other females, who appeared to take this aberration for a male. In fact this strange habit was often taken advantage of by the collector to recognise and obtain the form. Several of the *semi-syngrapha* are almost complete *syngrapha*. I wondered what had become of the males in the August of 1913, for

they were exceedingly scarce. I captured one example of this sex, which is quite different from anything that I had previously seen. The usual very dark marginal and submarginal area on the forewings is extended right round the hindwings and gives the specimen an unusual and striking appearance. Another lovely form, a female, is of an intense black on the upperside, without a trace of the orange lunules; really a black form. Another very noteworthy female, I have taken at the same place, is of the usual brownish ground-colour, having a row of whitish spots above each of the orange crescents with the lower parts of the crescents only just discernible. These whitish spots are extended along the margin of the forewings as well as the hind. A lovely underside of the ab. *obsoleta* form fell to my net, in which the underside is quite devoid of eyespots and without the central markings to the outer marginal characters. The ground colour is of a rich chocolate merging into whitish in the discal area. Two female undersides are of an intense smoky brown all over. One female has a whitish underside which could readily be taken for that of a male. Another female was very beautifully striated with long dashes on the underside in place of the usual spots. Two females were very bleached in appearance, having whitish patches, one specimen having half a wing bleached. Taken as a whole, the number of the strikingly beautiful and interesting forms of *Agriades coridon*, which I have taken in the Herts district, quite exceeds my experience in other localities, during the thirty years that I have been working at the variation of the "blues."

[Since writing the above I have received several items of information from other collectors and can now total about 43 females of this curious form, and have also seen a lovely asymmetrical male, which I hope later to be able to more closely examine. The smaller side of this last is on the left. All the additional specimens just reported to me were taken during August 1913, from the same spot. It will be very valuable information if any other collectors who have visited the same place will report on their captures during the past three seasons, and especially August 1913.—C.P.P.]

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### On the Arthropods inhabiting Molenests.\*

By W. E. SHARP, F.E.S.

It was in September 1906 that Dr. Joy of Bradfield surprised the Entomological world and opened a new chapter for Coleopterists by announcing his discoveries of beetles not only in the nests of moles, but peculiar to such a habitat. Since that time many Coleopterists in different parts of this country have, with more or less success, dug up molenests and added several species of Coleoptera to the list originally published by Dr. Joy. Nor have the mites, the fleas, and other inmates of the nests, been entirely neglected; but, so far as we are aware, no list has ever been published in English, indeed, no materials for any such list have ever, to our knowledge, been gathered together—of the whole of the Arthropods ever found under any circumstances within any series of British molenests. It is perhaps almost super-

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\* *Über Arthropoden in Maulwurfsnestern* von Fr. Heselhaus, S. J. Sittard (Overgedrukt uit het *Tijdschrift voor Entomologie*, Deel lvi., 1913).



fluous to state that such a task has been undertaken, and, with a thoroughness characteristically Teutonic, completed by a German, Father Heselhaus of Sittard, and the reprint, which lies before us, contains the result of his investigations.

It is, perhaps, curious that, although Dr. Joy's researches had been given to the world at least four years before our present author undertook his investigations, he only alludes to the English Doctor once, perhaps somewhat doubtfully as "der engleschen Forscher," and once by name as among authorities cited by Bickhardt, although he admits *in limine* that the stimulus to the investigation of molenests came to him, among other sources, through the kindness of a colleague, whereby he was enabled to look through an English magazine, where the good prospects attendant on an investigation of the nests of different mammals were pointed out,\* but that which finally fixed his attention on this subject was information received from Dr. Everts that R. Heinmann, a Coleopterist of Brunswick, had dug up some 100 nests in that district and discovered in them no less than 2,000 beetles referable to 90 species.

The theatre of Father Heselhaus' own operations seems to have been principally some swampy land in the immediate vicinity of his own town of Sittard. His digging began in the winter of 1910-11, during which he tells us he found but little. Unlike his English colleagues, he appears to have been able to find and explore molenests to some extent during the summer, but it was during the winter 1911-12 that most of his work was done and the great body of his list compiled.

We gather, although we may be mistaken in this, that although Father Heselhaus seems to have noted every arthropod, indeed, every living creature found in his nests, he is not himself a specialist in any group, since other authorities are responsible for nearly all the names; and to this defect, if it be a defect, is probably due the indiscriminating completeness of the inventory. Put a specialist in any order down to attack molenests, and he will probably become so interested in the manifestations of his own particular group there, that he will be more or less blind to those of any other, but for Father Heselhaus a Dipteron was evidently as good as a beetle, and an *Acarus* as either, and hence no one group has been favoured at the expense of any other. In this list then, in addition to a passing notice of a mouse as representing the VERTEBRATA—four classes, *vis.*:—

INSECTA, ARACHNOIDEA, MYRIAPODA, and CRUSTACEA, are included, and these comprise the following orders:

Of INSECTA; Hymenoptera, Coleoptera, Lepidoptera, Diptera, Suctoria and Apterygota.

Of ARACHNOIDEA; Pseudoscorpionina, Phalangioidea, Araneina, and Acarina.

Of MYRIAPODA; Chilopoda, and Diplopoda.

Of CRUSTACEA; Isopoda.†

\* In his list of works consulted, he mentions a paper by L. E. Adams, of Stafford, communicated to the Manchester Lit. and Phil. Society (Vol. 47, 1902-3, p. 1-39), but this, on examination, appears to refer entirely to the Natural History of *Talpa europaea* and to the architecture of their "fortresses," without any allusion whatever to any insects associated with them.

† We follow the author's classification of Arthropods.

Now perhaps the point that first strikes the reader of this list, who has had any experience of molenesting, is its generous comprehensiveness—Our author is evidently aware that many of the Arthropods found in molenests are there merely as accidental visitors, in no sense, belonging to any specialized molenest fauna, in fact following Bickhardt he divides the total nest inhabitants into three groups, *viz.*

- (a) Typical nest dwellers, peculiar to the nests where their metamorphoses take place, and such as are rarely met with outside the nests.
- (b) Species usually found in the nests and developed there but often otherwise developed.
- (c) Occasional or accidental guests.

Yet in the catalogue itself are included very many species, *e.g.*, as a Lepidopteron, a larva of *A. pronuba*, and among the Coleoptera such species as *Pterostichus nigrita*, *P. minor*, *Attagenus pello*, and *Apion frumentarium*—which have nothing to do with moles or their nests, and whose inclusion in this list add nothing to our knowledge of the relations existing between moles and insects.

Proceeding to a more detailed consideration of these lists, we note that Father Heselhaus found but one small Hymenopteron in his nests and that he had not so far succeeded in naming. He very properly, but somewhat inconsistently, omits the Ants—*Lasius flavus*, *L. fuliginosus*, and *Myrmica laevinodis*, which he tells us he found inhabiting certain nests, not reckoning them as true “Maulwurfs-gästen,” but in that case we feel the more surprise that he should have included a large number of the beetles. Thus he records a total of 86 species of Coleoptera as found in molenests, but not more than about 20 of these can be said really to belong to his groups (a) and (b). Some species, *e.g.*, *Batriscus oculatus*, and *Neuraphes rubicundus*, he is careful to note, owe their presence in the nests, more perhaps to association with ants, than with moles.

Nearly all the Coleoptera which have been taken in British molenests appear in Father Heselhaus' list, exceptions being *Atheta paradoxa* and *Medon castaneus*. For the determination of all the beetles Dr. Everts appears to have been responsible.

A single representative of the Lepidoptera we have already mentioned, a larva supposed to be that of *Ayrotis pronuba*, and as it was found in the earth surrounding, and not in the nest itself, its record is more evidence of Father Heselhaus' exhaustive method of work, than of any bionomic significance. The Diptera are more interesting. One species, new to science, *Peyerimhoffia subterranea*, is described at considerable length by Father H. Schmitz, who is, in fact, responsible for the whole of this section, and the description is accompanied by a plate and a table of other members of the genus *Peyerimhoffia*.\* Pupæ of *Eccoptomera microps*, Meigen, were discovered, but the total number of Diptera found in these molenests seems to have been but small. The fleas were determined by Dr. Oudemans, and five, possibly six, species are enumerated.

Of *Rhynchota* our author cannot report much. “Beobachtet habe ich 2 Homopteren, wohl Cicadelliden” is all he can say.

\* One species of this genus *P. brachyptera*, Kief., has lately been taken for the first time in Britain, and third time anywhere, in Lundy Isle by Mr. Donisthorpe in a nest of the ant *Lasius alienus* (see *Ent. Record*, xxv., 268).





Photo. R. Gurney.

STONY DESERT, EL KANTARA.

The grass is *Stipa tortilis*, the small bushes are *Zizyphus*,



Photo. R. Gurney.

THE GORGE, EL KANTARA.

Oasis in foreground. The bare slopes are the haunt of *Melanargia ines*, etc.  
*The Entomologist's Record.*

The Apterygota (*Podurae*, etc.) were determined by Dr. K. Absalon. Very few specimens seem to have been found, and out of 4 species only 1 *Campodea staphylinus* has been named with certainty.

The class ARACHNOIDEA is next dealt with.

In Pseudoscorpionina (*Chelifers*, etc.), a species of *Chernes*, in several stages of development, was all that was met with.

In Phalangioidea ("harvesters"), *Metopoctea melanotarsus*, Herm., and in Araneina (true spiders), *Lepthyphantes pallidus*, *Walckenaeria obtusa*, and *Gonyglidiellum rirum*, 1 specimen of each are recorded, and for these names Herr Embrik Strand is responsible.

The Acarina (mites) make a longer list, Dr. Oudemans has determined them, and records about 45 species belonging to 7 families. Of these, 10 species seem to have been described as new by Dr. Oudemans on these captures by Father Heselhaus.

The MYRIAPODA were named by Drs. Ellingsen and Verhoef. In the order Chilipoda 2, and in Diplopoda 7 species are enumerated.

The list of the Arthropods closes with the sole representative of the Class CRUSTACEA, the woodlouse *Platyarthrus hoffmanseggii*, Brdt.

Father Heselhaus adds a list of the authorities which he has consulted, among which the only English work is the paper by Mr. L. E. Adams, to which reference has already been made.

Finally, a supplement (Nachtrag) ends this remarkably interesting paper, and details the discoveries made by the author during the winter, 1912-13. Of Coleoptera, 37 species are added, but when we say that included among them are such beetles as *Paederus caligatus*, *Coccidula rufa*, and *Apion flavipes*, it becomes evident that they have not much more to do with moles than many of the species enumerated in his first list had. Two, however, are noteworthy: *Medon castaneus*, which, of course, is a true molenest beetle undiscovered previously by this explorer, and *Rhizophagus parallelus*, interesting from its supposed association with grave-yards and coffins in this country.

Besides these beetles, he adds to his previous list 2 Fleas, 2 Hemiptera, 30 Acari, about half of which appear to be new; and 8 Myriapods.

We can but congratulate Father Heselhaus on his energy, untiring industry, and careful and methodical treatment of the results as demonstrated in this paper, and if he has perhaps allowed himself too wide a latitude in his interpretation of the remarkable symbiosis which exists between moles and many Arthropods, he must at least have added very considerably to the Arthropod fauna as recorded from the vicinity of the town of Sittard.

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### Notes on Tunisian and Algerian Insects. (*With plate.*)

By P. A. BUXTON, F.E.S., M.B.O.U.

This paper deals with insects of several orders observed in Tunisia and Algeria between March 19th and April 18th, 1913. The notes are lamentably scrappy, owing to the fact that I attempted to cover very much too wide a field. Not only did I attempt to pay regard to several orders of insects, but I was ill-advised enough to skin birds and even to press a few flowers and pickle a few miscellaneous creatures. This was clearly a mistake. I wish to express my thanks

to the following gentlemen who have kindly helped me with the determination of individual insects or whole groups of insects:—Rev. F. D. Morice, Dr. M. Burr, Dr. F. A. Dixey, Sir G. Hampson, Messrs. J. Hartley Durrant, L. B. Prout, C. Oberthür, Hugh Scott and F. V. Theobald. A few Thysanura and Thysanoptera were collected and are being named by Prof. G. H. Carpenter and Mr. R. S. Bagnall. These are not mentioned here as they are of little general interest.

It is probably best to treat the region under discussion as an area composed of four or five "zones." Luckily we were enabled to see something of nearly every sort of country which is found in Algeria or Tunisia, with the exception of sandy desert and clay desert (Sebcha). Both of these formations are confined to the Sahara, and do not occur in the same desert country which I visited.

The Tell or Coastal Strip was only visited in the neighbourhood of Tunis. The land is mostly flat and low, and enjoys a fair rainfall. In spring the vegetation is lush and vigorous, and in character resembles that of the rest of the Mediterranean littoral. Characteristic plants are a rambling Fumitory, a large *Oxalis*, and a very tall Fennel (*Ferula*). You may see men hoeing *Gladiolus* out of their barley patches. Various localities near Tunis were visited between March 19th and 23rd, namely, Sidi Daoud, El Soukra, Sidi Bou Said, Carthage and the Bardo. Among butterflies *Pieris brassicae* was numerous—one ♀ practically lacked the black dash along the dorsum of the forewing. *Anthocharis eupheno*, L. (= *belia*, L.), one ♂ on March 20th, several on 21st, and so on. No ♀s were taken till we had left this district. The specimens of *Gonepteryx cleopatra* taken here and subsequently point unmistakably to the species hibernating in N. Africa. *Thestor ballus* was not taken in good condition. It occurred sparingly in various places. The following species were also noted:—*Pieris rapae*, *Colias edusa* (♂s), *Pyrameis atalanta*, *Pararge aegeria*, *Polyommatus icarus*\* (once only, a ♂), *Larentia ibericata*, Stgr. (worn ♂), *Aspilates ochrearia*, Rossi, *Plusia gamma*, *Scoparia angustea*, Steph., *Mecyna polygonalis*, and *Pionea ferrugalis*, Hb.

The following Orthoptera were taken:—*Pachytylus cinerascens*, Fab., *Trypocalis nasuta*, L. (brown), *Pyrgomorpha grylloides*, Latr., *Acridium aegyptium*, Linn., and *Epacromia strepens*, Latr., among the Acridians; also one Locustid, *Odontura algerica*, Br., among rank herbage by Lake Sedjoui. One ♀ of the earwig *Labidura riparia*, Pall., was taken on a pump handle at Carthage.

I also captured the following Hymenoptera:—*Polistes gallicus* makes its nest commonly on the swollen stems ("leaves") of the Barbary Fig or Prickly Pear (*Opuntia*, neither a Fig nor a Pear, but a Cactus!). Twice I found two individuals asleep on a nest. I am unable to say that they were of opposite sexes, as one eluded me on both occasions. It would, perhaps, be interesting to find the ♂ assisting the ♀. I found one single nest of *Chalicodoma sicula*, Rossi, and captured the ♀. The nest was on a flat stone in a very hot place, and consisted of a tower-like structure of red clay, containing at its base a little honey. I also took *Ellis ciliata*, F. ♂, *Odynerus* (*Hoplopus*), *consobrinus*, Duf., ♀, *Microdynerus abul-el-kader*, Sauss.,

\* This identification is critical. The specimen is emphatically *P. icarus*, not *Agricides thersites*.—P.A.B.

*Pompilus* sp. near *viaticus*, *Eucera nigrilabis*, Lep., ♀, *Anthophora atroalba*, Lep., ♂, and workers of *Apis mellifica*. I found one colony of *Messor barbatus*, L., in a flowery sand waste near El Soukra. The *M. abd-el-kader* was observed at flowers of red *Lycchnis* quite commonly.

I may, perhaps, mention specimens of a *Bombylius* which appear to be *medius*, taken near the Bardo. The spots on the wing seem smaller than in typical *medius*. This is a difficult genus, very characteristic, I fancy, of the Barbary countries, and, indeed, of the Mediterranean generally. I took a *Japyx*, which is, presumably, *J. solifuga*. This Bristle-tail was found under a fallen "leaf" of the Cactus, of which I have already spoken. May I suggest that fallen portions of this plant often harbour small insects, and should be worked carefully. Embiid nymphs occurred in such places, together with many snails, wood-lice and myriapods. I have attempted to mount the *Japyx* in Canada Balsam, but I find it quite impossible to dehydrate the insect without first puncturing its seemingly slight chitinous covering. The insect could not be cleared after many days in absolute alcohol, though, for the seemingly much more impervious thrips, one or two hours are sufficient! I took a good many other Thysanura here and elsewhere, but shall not again refer to them, as they are not yet worked out. The same applies to about 20 tubes of Thysanoptera, now in Mr. Bagnall's possession.

Three beetles are noteworthy. A large Carabid discharged an extremely irritating fluid into my eyes from a distance of six inches. A large clumsy black Tenebrionid was abundant in sandy places, such as the railway cutting near Sidi Bou Said. It is *Pimelia inflata*, Herbst., (= *barbara*, Sol.). It eats dung and dry sticks, and spends much of its time burying its head and body in the sand for no apparent purpose. It certainly was not ovipositing, nor finding any food. Was it possibly attempting to shield itself from a peculiarly hot sun? The Cetoniid *Epicometis squalida*, L., is a hairy creature, which is found in many flowers, but especially marigolds. It has a flight extremely like that of *Bombus*, and buzzes sharply on alighting, but not, I fancy, when actually in flight.

On one of the hills of Carthage, Chrysomelid larvæ were very abundant. At the same place I captured a very large ocellated lizard (*Lacerta ocellata*). This I preserved entire, and on my return to England was surprised to find its stomach packed with little else but these Chrysomelid larvæ. Yet these might be supposed to be protected; they belong, I fancy, to a family of beetles, which are often regarded as nauseous; the larvæ themselves are brilliantly metallic and walk in the daylight over stones, bushes and flowers, where they are most conspicuous; they secrete a yellow fluid from the mouth when handled; and, unless my memory deceives me, they have an unpleasant smell. (I have no note on this last point.) The larvæ shrink badly when preserved in spirits, but I judge my specimens to belong to the genus *Chrysomela*.

On March 22nd, we visited Hammam-el-Lif. The country here is so unlike the rest of the Tell that it merits separate notice. The sea-shore merges imperceptibly into a flat brackish marsh, of an exceedingly uninteresting, even repulsive nature. From this there rise at once steep dry hills covered with evergreen trees, most of which were newly planted. The resulting scrub consisted of Pines, Juniper, Erica, Ilex,

Cistus and other woody bushes. The gullies in the sides of these hills are slightly damper, and here I took ♂♂ *Glaucopsyche cyllarus* fresh and worn, and both sexes of *Euchloë eupheno*, in some abundance. *P. brassicæ* was also observed. I was struck with the fact that on these dry sultry hillsides, the Locustid nymphs, which are so characteristic a feature of the rest of the Tell, were absent. On this day, and frequently afterwards, I noticed that Bees and Fossors seldom or never survive a day in a chip box in hot weather. This I take to be due simply to the heat. Mr. O. H. Latter has\* described a case of a *Pompilus*, dying of heat apoplexy through chancing to run over a particularly hot patch of sand-dune. He quotes other instances showing that the Aculeata are extraordinarily subject to heat. *Anthidium sticticum*, F., is the only bee from Hammam-el-Lif, which I appear to have brought home.

On March 24th we motored from Tunis to Ferryville, near Bizerta. The country traversed was flat, cultivated and uninteresting, at any rate to an entomologist. Our wish was to explore a large lake called Garaet Achkel, in the neighbourhood of Ferryville. In actual fact, circumstances prevented this, and the dredge and tow-net were scarcely wetted. We devoted three days to exploring the east and south-east corners of this lake, which is brackish, though a wide river runs from it, at any rate in autumn, winter and spring. The country was typical Tell, and quite low-lying. We took worn specimens of *Thais rumina*, *G. cleopatra* ♂s and ♀s, *Pararge aegeria* ♀s, and *Thestor ballus*. Both sexes of *Euchloë eupheno*, L. (= *belia*, L.), were common, the males especially. The flight of the sexes is similar, near the ground and not so swift as that of our *E. cardamines*. The species is quite easy to net, unless you fail in your first endeavour at capture. We also took a few *Anthocharis belia*, Cr. (*crameri*, Butler), on a stony hill covered with cistus and other scrub, near Ferryville. *P. brassicæ* and *Rumicia phlaeas* also occurred, with *Plusia gamma* and *Larentia fluciata* ♀. The only Burnet we saw in Tunisia or Algeria was a freshly emerged *Anthrocera zuliema*, Pierret, found drowning in Garaet Achkel. *Mecyna polygonalis*, *Pyrausta arealis*, Hubn., and *Micra ostrina* were netted.

Oothecæ of a Mantid were noticed in large numbers on twigs, stones and other objects. All those which I collected were so completely parasitized by a Chalcid that not a single Mantid larva emerged. I judge the nests to be those of *Mantis religiosa*, Linn. The usual Acridians were taken, all commonly, to wit *P. cinerascens*, Fab., *A. ægyptium*, and *T. nasuta*. I took no Hymenoptera. The well-known dung-beetle *Scarabæus sacer* turned up, and a small Tenebrionid, *Opatrum emarginatum*, Luc., was common under stones. This species shams death to perfection, and is always smeared with clay and covered with dust. I passed several over as dead before discovering that they were merely shamming. A larva of a large Lampyrid species was common. One or two were found inside empty snail shells, and once I witnessed a conflict between a large snail and a Lampyrid larva. I found the snail in a dry ditch, bubbling and hissing. The Lampyrid was apparently biting it, and was covered with froth and mucus. Presently the Lampyrid ceased to move and was indeed dead,

\* "Bees and Wasps," in *Camb. Manuals. Sci. and Lit.*, p. 120.



as I subsequently found. The snail retreated unharmed. Can it be that the snail mucus is poisonous? I fancy this must be so.

This is not by any means in accord with Fabre's observations, a translation of which will be found in the *Century Magazine*, 1913, p. 105. The discrepancy is most puzzling. Fabre's Lampyrids were invariably victorious first anæsthetizing then devouring the snail. I cannot doubt my own observations, though I am sometimes tempted to fancy Fabre's insects almost too clever.

From Garaet Achkel and Ferryville we returned to Tunis, and from thence took train to Hanman Meskoutine, in East Algeria. This extremely pleasant place stands at an altitude of 1,500ft, among limestone hills. The little stream beds are full of a dense jungle of *Lentiscus* and similar shrubs, while the hills are mostly covered with olives. Among the olives there are small patches of wild, rocky land. There are many interesting birds and beasts here, and not a few insects either. One collecting ground was, perhaps, more favoured than any other. I refer to the wide meadow in the bed of the stream, which runs between the hotel and the railway. The actual stream is frequently buried in "jungle," but this green and flowery spot is frequented by a good many insects. Here, and in the neighbourhood, we took *Pieris brassicae*, *P. rapae*, *A. belia*, Cr., *Euchloë eupheno*, L., *Gonepteryx cleopatra*, *Colias edusa*, *Pararge aegeria* ♀, *Coenonympha pamphilus*, *Pyrameis cardui*, *T. ballus* and *Rumicia phlaea*: also a few moths, *Sesia (Macroglossa) stellularum* and *Plusia gamma*, both in great abundance. We were undoubtedly too early for most species. The above list is certainly not interesting, except for the apparent absence of Blues. The following *Geometridae* occurred at light. *Eupithecia pumilata* and *E. unedonata*, Mill. (?). Mr. Prout says, these are larger and of slightly different tone to his examples from Hyères. The food-plant, *Arbutus unedo*, quite probably occurs, though none of us noted it. Two males of *Hemerophila japygiaria*, Costa, also came to light, as did a ♀ *Myinodes interpunctaria*. The last is unrepresented in the National Collection. Orthoptera\* were neglected, but not at all abundant. The Blattid *Ectobia perspicillaris*, adult and nymph, was taken. An undetermined small Blattid was only found under the bulb scales of *Scilla maritima*, where, however, it was common enough. The well-known earwing *Forficula auricularia* occurred, as larvæ and adults.

The Hymenoptera were more in evidence. I took *Eucera ciliata*, ♂, *Tiphia morio*, F. ♀ (under a stone!), *Odynerus (Hoplopus)* probably *caroli*, Moraw, *O. consobrinus*, ♂, *Andrena giraudi*, *Eucera trivittata*, Brullé, ♂, *Bombus lucorum*, *Xylocopa violacea*, and workers of *Apis mellifica*. Ants were abundant, and I captured the following:—*Aphenogaster testaceopilosa*, Lucas, *Cremastogaster scutellaris*, Oliv., *Camponotus sylvaticus*, Oliv., *Messor barbarus*, L., *Cremastogaster laestrygon*, Emery, *Plagiolipsis pigmaea*, Latr., *Leptothorax?* *nylanderi*, Sp. and *Aphenogaster sardoa*, Mayr. I also took *Myrmecocystus viaticus*, F., with a Lepismid and *Tapinoma erraticum*, Latr., with an Aphid. I hope later to publish a note on myrmecophiles in general. The small chafer *Epicometis squalida* was abundant, but I never troubled to collect any beetles.

The following Diptera found their way into my net by accident:—

\* Cf., Longstaff, *Butterfly Hunter in Many Lands*, p. 168.

*Chloromyia formosa*, *Chrysotoxum italicum* (very small), *Bombylius discolor* and *B. medius* (same species as near Tunis).

One wet morning we took the boat on the subterranean lake and caught a large number of bats and their parasites. Mr. H. Scott has identified the *Nycteribiidae* as follows:—

On *Myotis oxygnathus*, Monticelli, *Penicillidia dufouri*, Westw., ♂ ♀ ♀, *Nycteribia (Acrocholidia) revata*, Westw., ♂ ♀ (typical or var.), and *N. (Listropodia) pedicularia*, Latr., ♂ ♂ ♂ ♀. These came from about a dozen of the host species, which was extremely abundant. On *Rhinolophus euryale*, Blasius, *N. (Stylidia) biarticulata*, Hermann, ♂—only one parasite on a dozen bats. On *Miniopterus schreibersi*, Kuhl, *N. (Listropodia) schmidti*, Schiner, ♀ ♀; the bat was not common, and only about three were secured. Some Streblid flies await determination. All the bats were determined by Oldfield Thomas. It is noteworthy that though one host harboured three parasitic species, yet no parasite was taken on more than one host, even though the bats were living in the same cave in large numbers. It is, however, to be remembered that the *Rhinolophus* and *Miniopterus* lived solitarily, or at most in twos and threes, while the *Myotis* occurred in extraordinary numbers on the roof of the cave in one place, but did not appear to sleep elsewhere. All the *Nycteribiids* are known from Europe, though the same is not true of the bats.

Mr. Robert Gurney, one of my travelling companions, found a colony of Embiid larvæ under a stone. As these insects are still alive, and as they have not yet completed their metamorphosis, I am unable to give their names. A short note on these and other Algerian *Embiidae* will be found in *Proc. Ent. Soc. Lond.*, 1913, p. lviii.

I cannot turn from Hammam Meskoutine without giving some notice to the plants which characterise this limestone region. The stream beds I have already referred to. The meadow-like spots beside them are full of *Borago*, *Cerithe*, *Calendula*, *Adonis*, *Convolvulus althaeifolia*, besides several *Centaureae*, and innumerable Leguminous plants. The high country and the ridges between the streams are dry and rather barren. The vegetation does not form a continuous carpet. A great deal of the dryer part of the country is planted with olives.

On April 2nd we went by train to Taya and climbed the mountain of that name. This spot is a *locus classicus* for ornithologists, the haunt of griffons and kites, and eagles and choughs in considerable numbers. No Lepidoptera were taken. The ant *Aphenogaster testaceopilosa* occurred. On the very top (4,000 ft.) I took the earwig *Anisolabis mauretanicus* ♀, the Blattids *Hololampra marginata*, nymph (?), and *Loboptera decipiens*, Germar, the last in numbers. The large grasshopper *Pamphagus elephas* was found. This insect when alive is of a delicate blue-green, lined with whitish at various salient points. This sounds cryptic, especially as it occurred among a tall yellowish grass, which I fancy is halfa-grass. In actual fact, however, the insect was extremely conspicuous, his blue-green colouring rendering him most noticeable on the yellow-green halfa. The whitish "facings," especially on the dorsal crest, acted as a definite boundary line, and are in part responsible for this.

On April 4th we left Hammam Meskoutine for Batna. A two hours' wait at Kroub in the middle of the day enabled us to take a few

insects in an almost English hay-field. *Coenonympha pamphilus* was quite abundant, and nearly fresh. I fancy that the underside, and especially the hindwings, are slightly dark in a general way. There was, however, no approach to var. *lyllus*. *Epacromia strepens* and *A. aegyptium* represented the Orthoptera; *Eucera saundersi*, Frièse, ♂, and *Andrena ranunculi*, Perez., ♂s, the Hymenoptera. The last-named species was quite abundant at buttercup flowers.

Batna itself is a square-walled town with a garrison, at about 3,000ft. The hotels vie with one another in dirt and expense. Nevertheless, if you go near Batna you should certainly stop and see the Roman remains at Timgad and Lambèse. We drove to this last place and walked back along the skirts of the hills. Everyone we met talked of M. Harold Powell, who has his base of operations here. The uncultivated and hilly parts of the country are covered with loose scrubby trees, about 12 feet high. *Quercus ilex* var. *ballota* was predominant. It is peculiar that all the flowering trees and bushes had purple flowers, for instance *Petama borei*, *Globularia*, and *Rosmarinus officinalis* var. *tourneforti*. The few herbs had all of them yellow flowers, e.g., various *Cruciferae* and the bulb *Gagea*. I was loaded with a gun or should certainly have done better with my net. Nevertheless Prof. Garstang and myself took *Pontia daplidice*, *Anthocharis belia* (*cramerii*), *A. belemia* var. *distincta*, Röber, *G. cleopatra* and a few species which may be specially noted. *Euchloë eupheno* (*belia*) occurred, both sexes in equal numbers. A good summary of female variation is to be found in Oberthür, *Lép. Comparée*, Fasc. iii., p. 137. It is surely noteworthy that the ♂ is so constant, at any rate when compared with the variable ♀. *Eugonia polychloros* var. *erythromelas* (?) was common. The specimens were desperately torn and rubbed also. I suggest they were hibernated specimens, and would remind those who doubt this that we were now high up, and that Lambèse has a late spring and a cold winter. No other butterfly was in such a delapidated plight; on the contrary, most were newly emerged. *Thestor ballus* was almost fresh, though everywhere else it had been quite past its best. This also must be due to altitude. *C. pamphilus* was common, and very lively. It was noted sitting perpendicular to the sun's rays ("across the sun") with a tilt of about 30% from the vertical. When only resting temporarily (say a minute or less) the forewings were kept forward, over the back; the red disc and eyespot were thus not covered by the cryptically coloured hindwings. *Callophrys rubi* var. *fervida-caeca*, ♂s were quite common—no trace of white on the underside. One ♀ *Hesperia* (*Syrichthus*) *ali*, Obthr., was captured. This is the Algerian representative of *H. sao* in Europe. The figure of the underside in Seitz's *Macrolepidoptera* (*Division Palaearctica*) vol. i., plate 85c. is most misleading. The text, however, is correct. Hymenoptera were very abundant. I took *Eucera ciliata*, ♂s, *P. gallicus*, ♀, *Andrena giraudi*, ♂s, *A. retula*, Lep., ♀, *A. morio*, Brullé, ♀, *Halictus scabiosae*, Rossi., ♂ small var., *Osmia gracilicornis*, Perez., ♀, *Anthidium sticticum*, F., ♂, *Xylocopa violacea* (abundant), *X. amedei*, Lep. (= *cirtana*, Luc.), ♂s, *Bombus lucorum* and *Apis mellifica*. The two males of *X. amedei* were buzzing round and round the verandah of a house. Also I took some few ants, *Camponotus sylvaticus*, Oliv., var.?, *Messor barbarus*, L., *Pheidole pallidula*, Nyl. and *Cremastogaster lacstrigum*, Emery. We also captured the following Orthoptera. Two male earwigs

(*A. mauretunica*) under stones, and the CEdipodid *Thalpomena algeriana*, Luc., on some baked clay which was exactly the colour of the insect itself, a quite peculiarly good case of protective coloration. At Timgad I took a few Embiid larvæ under stones.

On April 7th we climbed Djebel Tuggur, also called the Pic de Cedres. The whole mountain is thickly covered with a most magnificent forest of Cedars, in which the peculiar Cole Tit of the country was common. No butterflies, however, came my way. The Blattid *Loboptera decipiens* occurred up to the summit (6,000ft.), with the grasshoppers *T. algeriana* and *Eunapius brunneri*, both quite high up. The ant *Bothriomyrmex meridionalis*, Rog., was noticed at 3,500ft.

There is an extraordinary rockwall north of Batna beyond the railway. It is composed of a hard vein of rock tilted almost perpendicular. On its overhanging side there is a clear drop of forty or fifty feet, yet the wall is only about ten feet thick. The surrounding country is typical of the plateau, dry and stony, covered with xerophytic bushes and scrub. The usual butterflies were by no means rare, together with *Pararge aegeria*, *Scolitantides baton* and *Sesia stellatarum*.

(To be concluded.)

### **Papilio podalirius, Linné (= sinon, Poda).**

By JOHN HARTLEY DURRANT, F.E.S.

Dr. Verity in his "Revision of the Linnean Types of Palaearctic Rhopalocera" [Jr. Linn. Soc. Lond., Zool., 32, 173-191 (1913)] in a long note on "*Papilio podalirius* [(1758)-1764]" states (pp. 174-6) that he has decided to treat Linné's "first mention of the name in 1758 as null: the lack of any description, and the imperfect and incorrect statements accompanying it proving that Linneus did not know the insect he was mentioning, would, according to my [Dr. Verity's] views, be quite sufficient; furthermore, the original description of 1764 is given full value by the documentary evidence of one of the very specimens from which it was drawn."

Dr. Verity rejects *Papilio podalirius*, Linné (1758) and reduces the argument to *Papilio sinon*, Poda (1761) versus *Papilio podalirius*, Linné (1764)—but Dr. Verity has overlooked the description of *Papilio podalirius* by Scopoli in 1763!!!

What has to be actually determined is the application of the following names:—

1. **Papilio podalirius**, Linné, Syst. Nat. (ed. 10), 1, 463 footnote (1758).

2. **Papilio sinon**, Poda, Ins. Mus. Graec., 62, sp. 2, Pl. 2, fig. 1 (1761).

3. **Papilio podalirius**, Scopoli, Ent. Carn., 167, sp. 445 (1763).

The publication by Linné of "Museum Ludovicae Ulricae" (1764) and "Systema Naturae," ed. 12 (1767) are both subsequent to Scopoli who was **First Reviser** of the works of Linné and Poda.

It is necessary to reprint what Linné published about *Papilio podalirius* in "Syst. Nat.," (ed. 10), 1, 463 (1758). The footnote is as follows:—

"Podalirius. *Haj. ins.* 111. n. 3. *Pars. ins.* 1. *pap.* 2. t. 2. *Reaum. ins.* 1. t. 11. f. 4, 3.

*Habitat in Europa australis & Africa* Brassica.

*Hic tam multa habet cum Protesilao communia, ut Larva magis immotescat, antequam vere distinguatur."*

And under *Papilio (Equites Achivi) protesilaus* L. (*l.c.* 463 sp. 29) Linné made the further note:

"*Simillimus Podalirio Europæ australis & Africa; an satis diversus?*"

Dr. Verity argues that in 1758 Linné had no personal acquaintance with the species he named *podalirius*, and he declines to accredit the species to Linné with the date 1758, because of "the lack of any description"—but surely, when names are applied to figures and references, it cannot be fairly argued that such species are nondescript if the insect named can be recognised from the description and figures cited. Dr. Verity fails to realise that when Linné cited "*Raj. ins. 111. n. 3*" he furnished a careful description, to which description, and to the descriptions and figures by Roesel and Réaumur, he applied the name *Papilio podalirius*, L. (1758).

Ray's description [*Hist. Ins. (Opus posth.) 111, sp. 3 (1710)*] is as follows:—

"3. *Papilio alis amplissimis, pallidius flavicantibus, exterioribus areolis transversis nigris rariis, interioribus caudatis, maculâ in imo cœruleâ, Diurnarum tertia*, Mouff. *Hist. p. 99.*

Prope *Liburnum portum* in *Etruria* invenimus, atque etiam, ni malè memini, in *Anglia*. A prima specie differt, quòd pallidiùs flavicet, quòd alæ exteriores transversis lineis nigris pinguntur, quòd interiorum alarum ephyses quàm in illa longiores sint, totâque istarum extrema lacinia glastiva, ut loquitur *Mouffetus*."

Ray furnishes us with the locality "*Liburnum portum in Etruria*" for "nimitypical" purposes—probably Livorno (Leghorn) is indicated. Roesel lived in Nuremberg, his specimens may be assumed to have been Bavarian, and it is from this author that Linné deduced the food-plant "*Brassica*." Roesel (*Ins. Belustig., 1, Class II., Pap. Diurn., 9-14, Pl. 2, fig. 1-7*) describes this species, "Die einsame Spilling-gelbe Raupe, auf dem blauen Kohl, mit ihrer Verwandlung biss zum Papilion. Tab. II." and states that "Man trifft sie insgemein auf dem blauen Kohl an," etc. Réaumur's specimens [*Mém. Hist. Ins., 1, 271-2, 282, Pl. 11, figs. 3-5 (1794)*] were probably from the neighbourhood of Paris. Dr. Verity says "Evidently Linnæus was not personally acquainted with this insect in 1758," which is hardly supported by the fact that when giving the distribution "*Habitat in Europæ australis*" Linné adds the further record "*et Africae*"—had Dr. Verity accepted *podalirius*, L. (1758) he might have argued that the inclusion of "*et Africae*" was an original observation, supported by the evidence of the specimen extant in the Linnean collection—but he is convinced that Linné was not personally acquainted with African (or other) specimens in 1758.

Poda [*Ins. Mus. Graec., 62, sp. 2, Pl. 2, fig. 1 (1761)*] describes and figures *podalirius* under the name *Papilio sinon*, Poda, citing Roesel's figure as belonging to the same species—his type was probably from the neighbourhood of Grätz [= Graecium] in Styria. [N.B.—Podalirius, son of Aesculapius, was a celebrated

physician—Nicolaus Poda von Neuhaus (1723-1798), Ph.D., was Mathesis Professor in the University of Grätz. Would it be too rash to suggest that Linné's name "*podalirius*" had some punning reference to the name of Poda, and that perhaps Linné had seen Poda's specimen, which might even be "nimotypical.]"

In the year 1763 Scopoli, "*Ent. Carn.*," 167, sp. 445, carefully described and figured.

"*Papilio Podalirius*.

Roesel. Pabil. Diurn. Cl. II. Tab. 2. figs. 3. 4.

P. Poda. Mus. Græc. p. 62. *Sinon*. Tab. 2. fig. 1."

This action may be taken as the selection of Roesel's figure as the Type of *Papilio podalirius*, L., Sep., and the definite sinking of *sinon*, Poda, as a synonym of *podalirius*. Scopoli was the First Reviser and as both *podalirius*, L., and *sinon*, Poda, had the common exponent "Roes. ins. 1. pap. 2. t. 2" he was certainly justified in this decision, which must be accepted as final. Scopoli seems to have been well-acquainted with *podalirius*, for he writes of its occurrence in Carniola thus:—

"Apud nos frequens, cœnosis in locis & circa aquas libenter sedens."

The Type-localities for *Papilio podalirius*, L., would seem to be Etruria (Liburnum) *Ray*; Bavaria, *Roesel*; France, *Réaumur*; Africa, *Linné*; with the added localities Styria (Grätz), *Poda*; Carniola, *Scopoli*.

The word "**Nimotypical**" has been mentioned above. I have been asked many times the meaning and derivation of this word—it is, doubtless, a mere *laps. cal.*, which it is hoped that Dr. Verity will take an early opportunity of explaining.

[Poda's "*Insecta Musei Græcensis*," (1761), is a very rare work. We have three copies in England—Linné's copy in the Library of the Linnean Society; the Hon. Walter Rothschild has a copy in his Museum at Tring; and the Entomological Society has a copy from the library of Mr. McLachlan.]

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## SCIENTIFIC NOTES AND OBSERVATIONS.

THE SPECIES-STATUS AND THE SPECIES-CONCEPT.—In the January number of the *Entomological News*, Chas. H. T. Townsend, of Lima, Peru, deals with the old question, "What is a Species?" and it may be interesting to some of our readers to give the Summary of his remarks and conclusions, with their influence on the "vexed question" of Nomenclature.

1. In old stocks, species have normal values and well defined limits, because evolution has become inactive in those stocks and maturity has been attained by the forms.

2. In young stocks, the contraction of taxonomic values due to youth restricts the scope of species, and the presence of many transitionals due to active evolution obscures their limits.

3. Therefore the species-status is not uniform in old and young stocks, and the species-concept must be modified to agree with it.

4. Though transitionals obscure limiting lines in dead material, species exist in young stocks, and the actual limits of each are such as it makes for itself by the general interbreeding of its constituents under normal conditions.

5. The normal self-observed limits of species in nature among young stocks must be worked out on the merits of each case by the study of living material through all its stages with relation to its environment.

6. As a basis for this work all recognizable forms in young stocks must be described, named, and regarded as tentative species, until their status is finally determined.

7. All recognizable forms in young stocks demand a name and final place in the taxonomic system down to race rank, and none should be lost sight of by lumping of names.

8. Isolated or aberrant transitionals need no distinctive name, but as a matter of record they should be descriptively differentiated from that form which they most closely approach.

9. It follows that the describing and naming of forms in young stocks should be based on as large series as possible.—H.J.T.

**BOARMIA CONSORTARIA.**—In April 1912, I took a typical female of *Boarmia consortaria* at Oxshott. In all probability it had paired with a melanic male, ab. *consobrinaria*, Bkh. I obtained ova and bred 83 imagines, 40 typical and 43 melanic. Of the typical specimens 21 were males, 19 females and of the melanic 18 were males, 25 females. Nearly all emerged between 5 p.m. and midnight. Mr. Prout tells me he has taken a worn melanic specimen at Oxshott, and Mr. King took one there two years ago. It has evidently definitely established itself in this locality. There is little doubt that it first appeared near Maidstone, where Mr. Goodwin found it. It has been taken at Chislehurst, which does not lie on the direct route from Maidstone to Oxshott. It is greatly to be hoped that anyone, who has any data, which might throw light on the question as to whether it has spread to these new localities from Maidstone or whether it has arisen in them *de novo*, will publish his information.—E. A. COCKAYNE (M.D., F.E.S.), 16, Cambridge Square, W.

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## NOTES ON COLLECTING, Etc.

**FURTHER ABERRATIONS OF LEPIDOPTERA.**—In the *Revue Mens. Soc. Ent. Namur.*, are descriptions of:—

*Papilio machaon* ab. *symmelanus*, in which the forewings have the two black costal spots practically coalesced and the cellular spot extended. The nervures are more emphasised with black, with much less yellow in the black outer marginal band.

*Colias hyale* ab. *mellaerti* ♂, in which the forewings are of a deep citron-yellow and hindwings of a deep orange-yellow with large discoidal spots. The fringes are of a deep carmine-red. The undersides of the hindwings and of the apex of the forewings are of a deep orange-yellow.

*Pyrameis atalanta* ab. *hyensis* ♀, an underside aberration, in which the apex of the forewings is largely yellow, browner towards the white costal spot, the yellow external spot at end of the red band is larger and paler; in the lower wings the marginal area in the middle is also pale yellow, and the disc is largely marbled with brownish-yellow.

*Lowia amphidamas* ab. *derennei* ♀, in which the forewings above have two well-marked fawn-coloured bands, the first marginal between the margin and black points, the second the ordinary (antimarginal)

band is very wide from the costa to the inner-margin; the median fawn-coloured area is much reduced and is suffused with black and violet blue, producing the reflection as in the ♂. M. L. J. Lambillon is responsible for these new forms.—H. J. T.

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## CURRENT NOTES AND SHORT NOTICES.

Part III. of the *Trans. Ent. Soc. Lond.*, for 1913 appeared just before the Annual Meeting of the Society in January, and contains "The Urticating Properties of *Porthesia similis*," by H. Eltringham, D.Sc.; "Illustrations of specific differences in the Saws of ♀ Dolerids," by the Rev. F. D. Morice, M.A.; "On the Relationship between certain West African Insects, especially Ants, *Lycaenidae* and Homoptera," by W. A. Lamborn, F.E.S., with Appendices by Messrs. Bethune-Baker, W. L. Distant, H. Eltringham, Prof. Poulton, J. H. Durrant and Prof. Newstead; "Description of new species of *Staphylinidae* from India," by Malcolm Cameron, F.E.S.; and "Additions and corrections to my Catalogue of the Lepidoptera Rhopalocera of Trinidad (1904)," by W. J. Kaye, F.E.S., together with more than 60 pages of interesting matter connected with the proceedings at the meetings of the Society.

In the *Bull. Soc. Ent. Fr.*, no. i., 1914, M. F. le Cerf describes two new species of *Aegeriidae* (1) *Melittia asraël* with upperwings entirely black with deep bluish green reflection and lowerwings also black with a steel blue reflection. The insect extremely resembles a Hymenopteron and is from the French Congo. (2) *Chamaesphecia clermonti*, from Hirsova (Dobroudja), Roumania, has considerable resemblance to some of our larger European species of "Clearwing." Both these species are named from "single" specimens. In no. 2 of the *Bull.* are some useful notes on the lepidopterous fauna of the neighbourhood of Rheims with especial reference to the occurrence of *Euchloë belia* var. *ausonia*, together with a large number of notes on Coleoptera, Hymenoptera, etc.

In the *Ann. Soc. Ent. Belg.*, part xiii., 1913, is printed the address read to the Society by their President, M. Ch. Kerremans, at the annual meeting in December last. The author bewails the fact that out of a population of over seven and a half millions, only seventy-two interest themselves in Entomology sufficiently to join the Society, and notes that although the study of entomology has important bearings on biology, embryology, zoogeography, political economy and agriculture, scarcely sufficient new workers come forward to fill the vacancies in their ranks caused by death. He discusses ways and means to attract young workers, and endeavours to show that entomology is quite as attractive and beneficial to its votaries as collecting postage-stamps or joining in the "savage struggles" of football. In part i., 1914, of the *Annales* is the third and last instalment of the "Contribution to the Study of the Flight of Insects," by M. R.-E. Bervoets. The paper deals particularly with the pterostigma and its function in flight, and concludes with a useful bibliography.

The quarterly *Jour. of Ent. and Zool.*, for December (Claremont, California) contains numerous studies of more or less obscure and new species in the "other" orders, and the articles are well illustrated. A new *Eriococcus*, Laguna Beach *Isopoda*, nervous system of *Chelifer*, and



*Collembola* from Laguna Beach, and an account of the Laguna Marine Laboratory, are the chief features of the present number.

In the January number of *The Scottish Naturalist*, Mr. J. R. Malloch has commenced a "List of Clyde *Teuthredinidae*, Sawflies." In the February number Mr. W. J. Lucas gives some notes on the *Odonata*, etc., taken by Col. Yerbury in the Spey area during the spring of 1913; the most interesting species was probably *Agrion hastulatum*, of which eleven specimens were captured, 9 ♂ s and 2 ♀ s.

In the *Irish Naturalist* for January Mr. Chas. Langham records the capture of a specimen of *Schoenobius mucronellus* on the shore of Upper Lough Erne, about ten o'clock at night on July 17th, flying over *Equisetum*. On subsequent evenings with the use of a boat he obtained twelve more examples. When Mr. Kane published his *Catalogue of Irish Lepidoptera*, only one specimen had been taken in Ireland.

We hear that it is proposed to place a memorial to Alfred Russel Wallace in Westminster Abbey, a portrait in the Royal Society's rooms, and a statue or bust in the Natural History Museum (British) South Kensington.

We regret to read the announcement of the death of Dr. Geo. Wm. Peckham, so well-known for his works on spiders and on wasps, at Milwaukee, U.S.A., on Jan. 11th, 1914.

In the *Ent. Mo. Mag.* for January Dr. G. B. Longstaff gives a series of "Further Notes on Scents in Butterflies," a subject he dealt with at some length in his interesting work "Butterfly-hunting in many Lands," and which he has repeatedly referred to at the meetings of the Entomological Society of London.

Messrs. H. F. Fryer and J. C. F. Fryer, in the *Ent. Mo. Mag.*, announce the discovery of a genus and species of Homoptera new to the British fauna in *Grypotes pinetellus*, taken in August and October last near Mildenhall, among patches of rough grass growing beneath or near Scotch Pine (*Pinus sylvestris*). At the same time they record the capture of macropterous forms for the first time in Britain of *Araeopus pulchellus* and *Euidella speciosa* by sweeping rough grass and reeds at Chippenham Fen.

Dr. Chapman contributes a long and detailed series of observations on the "Larvæ of *Hirsutina (Agriades) damon* and *Plebius argyromonon* to the *Ent. Mo. Mag.* illustrated by seven plates, one in colour.

In the February number of the *Ent. Mo. Mag.* Mr. R. S. Bagnall continues his descriptions of new British species of *Thysanoptera (Tubulifera)*. *Hoplandrothrips ellisi* was taken by beating dead branches at Balsall Common, Warwickshire. *H. collinsi* was taken at the same place as the last species. *Cryptothrips major* has been found by Mr. C. B. Williams in Surrey.

The nineteenth Annual Congress of the South-Eastern Union of Scientific Societies will take place at Bournemouth from Wednesday, June 10th, 1914, to Saturday, June 13th, under the presidency of Dr. P. Chalmers Mitchell, M.A., LL.D., F.R.S. A handbook of the natural history, etc., of the district is, we hear, in course of preparation, following the excellent example which was begun at Woolwich some years ago, and has been followed at St. Albans and elsewhere, when visited by the Congress.

The Spring meeting of the South-Eastern Union will take place at Stratford-on-Avon in conjunction with the Selborne Society on

Saturday 4th. All the members of affiliated Societies are at liberty to join and no doubt the meeting will be a successful one.

## REVIEWS AND NOTICES OF BOOKS.

A TEXT BOOK OF MEDICAL ENTOMOLOGY.—By W. S. Patton, M.B., and F. W. Cragg, M.D. Published by the Christian Literature Society for India, Madras. xxiv+768 pages. 89 plates. Price £1 1s.

This large and weighty volume is intended as a *vade-mecum* for medical and veterinary officers practising in the tropics, to give full, most recent and reliable information on all entomological matters relative to sanitation or disease in all parts of the world. Plenty of treatises exist dealing with general entomology, or with groups of insects in systematic order, but hitherto no work has been written to comprise just that amount of practical detail which deals with the breeding and manipulating insects, ticks, etc., with the internal anatomy of disease-bearing forms and with particulars of those species in the various groups which are known to be carriers of disease. Much of the matter contained in this book has been obtained from special memoirs hitherto existant only in magazines and in many languages, and therefore not generally available for ready consultation, while much is the result of years of study on the spot and of original observation and experiment. Quite half the book is taken up with the consideration of the DIPTERA. Chapter II. deals with the Anatomy and Physiology of the Blood-sucking Diptera. Section 1 takes in detail just that portion of General Structure with which it is necessary to be acquainted for the purpose of the book, making frequent comparison with familiar insects in other orders. Section 2 deals in a similar way with the Internal Structure, and, in addition, treats of the functions of the different organs and their co-ordination with the habits and life history of the various genera to which reference is made for illustration. Chapters III. and IV. deal with those species in the order DIPTERA, which are known to be prejudicial to life and health by being carriers of disease, giving characters, class, generic and specific, sufficient for identification, and many items of life history, with indications how and when measures may be taken to minimise or prevent the spread of the deleterious effects of attacks. Chapter V. treats in a similar manner with the order SIPHONAPTERA or Fleas. Chapter VI., with the RHYNCHOTA or Bugs. Chapter VII. with the ANOPLURA, or Lice. Chapter VIII., with a portion of the ACARINA, the family IXODIDÆ, or Ticks. Chapter IX., with a further portion of the ACARINA, the family *Acari*, or Mites. Chapter X., with the Order PENTASTOMIDA, the family *Linguatulidæ*, or Tongue Worms, and the Order EUCOPEPODA, the *Cyclops*, or Water Fleas. All these chapters are profusely illustrated by first-rate drawings of details and figures (enlarged) of many individual species in black and white. Lastly, a chapter is devoted to Laboratory Technique in dissecting, mounting, preserving, staining, and examination. A final essay is added on the "Relation of Arthropoda to their Parasites." Each section contains a capital bibliography without which, in these days, no work of any aspiration is issued. We are quite sure that the present volume will be of the utmost use to those for whom it was written, supported as it is by the comprehensiveness of its detail, and the abundance and clearness of its illustration.—H.J.T.

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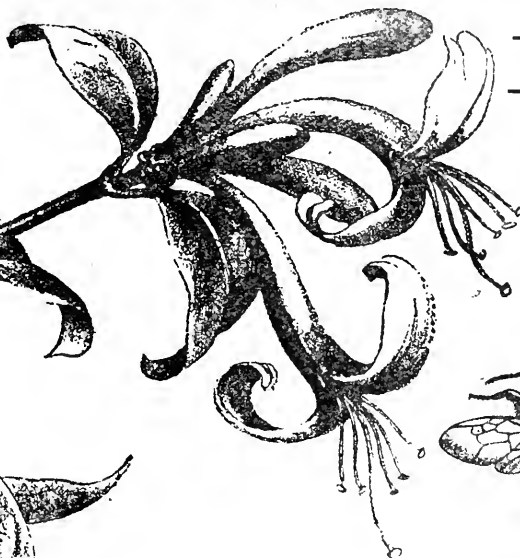
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**Erebia lefebvrei, Bdv., on Canigou.**

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

As already recorded (*ante* p. 53 *et seq.*), I found *Erebia lefebvrei* very plentiful on Canigou in July 1912, and the forms are so variable (within limits) and interesting, that it may be worth while to go into some detail with them. It may be well to state that apparently *E. lefebvrei* (type form) does not occur there, *i.e.*, out of close on two hundred specimens taken by Mr. Johnson and myself not one of the fine largely ocellated form was captured by either of us. Monsieur Charles Oberthür has very kindly lent me Boisduval's type specimens, ♂ and ♀, from his magnificent collection for comparison, as well as others, which have been of great assistance to me. As long ago as 1884, M. Oberthür dealt very fully and effectively in the eighth volume of the *Études*, p. 19 *et seq.*, with the various forms of the species, and again also in his *Lépidoptérologie Comparée*, vols. 3 and 4, so that there is very little to be said so far as their localities and differences are concerned. M. Calberla (*Iris*, ix., p. 357) has shown, by a comparison of the male armatures of *E. melas* and *E. lefebvrei*, that the two insects are distinct species, whilst Dr. Chapman has strongly emphasised this fact in his "Review of the genus *Erebia*" (*Trans. Ent. Soc.*, 1898, p. 225), and again in the same *Transactions* (1908, p. 307). It is thus abundantly confirmed that the two are not one species, but are two good and distinct species. It is also, I think, correct to say that *E. melas* does not occur in Western Europe, whilst *E. lefebvrei* does not occur in Eastern Europe.

I do not propose to mention *E. glacialis*, an allied species, more than to say that it frequents, on the whole, the stoniest and the highest localities of the three species. *Erebia melas* occurs in very stony localities, from 3,300ft. to about 5,000ft. *Erebia lefebvrei* occurs, as a rule, though not universally, in yet more stony places from about 5,000ft. up to 9,000ft., whilst *Erebia glacialis* occurs on absolute scree—I have never taken it away from scree and moraines—from probably 6,500ft. to 10,000ft. I have taken it on the top of the Gornergrat, not uncommonly.

To return to *E. lefebvrei*. M. Oberthür, in the *Études* (*loc. cit.*) described the form *astur* from the Picos de Europa, from whence my specimens came. It is entirely black above and below, the primaries generally having two small ocellations below the apex. I have one specimen with a very small third dot above vein 2, all are visible below, but the latter only as a black dot. Below, however, the secondaries are blacker than the primaries, there is very rarely any trace of the tawny patch in the primaries. I have one specimen showing only the least trace of paleness where this patch should be. The female does not differ appreciably above from the male, but below it is greyish and often has a somewhat tawny patch in the primaries.

The form *pyreneaca*, Obth., described in the same place, is more variable, and it is common on Canigou, in fact the form figured in vol. iv. of the *Études* (Pl. xlvii., figs. 370, 372 and 373) is the commonest form, though we get all the other forms as occasional varieties with the exception of the type race, that is, the large beautifully spotted race of the Hautes Pyrénées. *Pyreneaca* may be described as black

above and below in the male, generally with two or three small ocellated spots in the primaries, often with two or three decidedly smaller ocellations in the secondaries. There may or there may not be a tawny patch below in the primaries. Generally there is a trace of it—occasionally the wings are absolutely spotless.

The form *intermedia*, Obth., was described (*loc. cit.*) from the Cambrès-d'Ase mountains on the South of Montlouis. It is evidently very rare, I took it on Canigou and have it from elsewhere as I shall show later. It may be described thus (Through the kindness of M. Oberthür I have the types before me as I write):—

The ♂ above and below dark brown, not black, in both wings. The primaries have a faint tawny band in which are two ocellations of medium size below the apex and a black dot above vein 2; the secondaries are quite spotless. The colour and pattern below are so close to that above as to need no further mention.

The ♀ is paler than the male above, and in addition to the spot above vein 2 in the primaries, is an ocellation as large as those below the apex, and there are three small ocellations in the secondaries. Below, the primaries are somewhat tawny brown with the ocellations as above—the secondaries are uniformly brownish all over, of a very finely irrorated appearance, with no marks of any sort.

*Erebia lefebvrei* (type) is too well known to need a description here again. As I have already stated, I have Boisduval's types through the kindness of M. Oberthür. It is a species that has always been correctly identified—the most beautiful of the group—it is the largest of the forms with large deep black ocelli in both wings, nearly always in the primaries in a red fascia, whilst in specimens freshly caught there is a beautiful bronzy sheen that gives an appearance quite "distingué" to it. The female follows closely the characteristics of the male, only the red band and all the ocellations are larger and more prominent.

I will now proceed to the Canigou specimens. We found them in all suitable spots around and on the mountain. I took them just below the hut, not less than 9,100 feet, they occurred more or less frequently all along the long ridge westward from the Pic, *i.e.*, the route that nearly all the visitors usually take. We found them on the sunny-side of the slopes of that ridge and up to the glacier near the Brèche Durier. Again on that vast "sea of stones" below "le Barbet" they occurred frequently, but through that valley a wind always blows, generally furiously, and they were difficult to catch, though I think I must have taken nearly a third of my 120 specimens there, and they occurred all round to the South side, but I should say rarely below 7,000 to 8,000 feet. I think, however, the spot, where they were the most at home and the most plentiful, was a narrow gorge in the dry bed of a stream, which became narrower in its ascent up the hill until it disappeared altogether. Here, and on the grassy slopes directly adjacent, it was very abundant, and they by no means confined their attentions to the rocky bed. The locality and the day quite perceptibly affected their flight, they would probably not rise on sunless days, but on warm days, when the sun was visible or not occasionally, they appeared indifferent to it, and thus showed quite a different habit to *E. lefebvrei* at Gavarnie, where they would disappear as if by magic, when the sun



was shadowed by a cloud. Their flight is certainly quick, and if struck at, very straight, but ordinarily they dart here and there zig-zagging or direct as the case may be, and many a chase up the grassy slopes did I have after them, sometimes the reward was a miss or a closer acquaintance with "mother earth," but by no means generally so. I took each of the three forms described by M. Oberthür.

*E. lefebvrei* var. *et ab. astur*.—I have well over a dozen specimens that are quite indistinguishable from any Picos specimens of this form, the special character being the uniform blackness of the underside, combined with a rather rough texture, whilst the secondaries are without spots. But this is not quite absolute as already intimated. The form occurs without doubt as an aberration on Canigou, both on the North and South sides of the mountain, and I have a single specimen from the Hautes Pyrénées that is a "transit" between the form and *pyrenaea*.

M. Oberthür has very kindly lent me a pair of his *astur*, these are spotless and I did not take a specimen quite spotless, but in his descriptions he refers to ocellated specimens that are like mine from the Picos and Canigou.

*Erebria lefebvrei* var. *pyrenaea*.—This is the Canigou race, but as M. Oberthür has shewn long ago it is very variable within narrow limits (he has also very kindly lent me a pair of this form for comparison). The absolutely spotless form of the male figured in the *Lép. Comp.*, Pl. xlvi., fig. 369, is apparently very rare indeed. Mr. Johnson took a single specimen, I did not, though I had one or two with only a very minute dot. The commonest form are those figured (*loc. cit.*) figs. 370 and 371, which are quite black above with two to four ocellations in the primaries only. The four-spotted form is evidently a great rarity for we did not take a single example, though we took plenty with three spots. On the underside the commonest is without doubt entirely unicolorous black, but examples frequently occurred with traces of a red fascia, and others with quite a bright red fascia in the primaries of the males.

There are, however, two other varieties that should be referred to. One, by no means rare, is similar to *pyrenaea*, but has two or three small ocellations in the secondaries. M. Oberthür referred to this point in his original description in the *Études*, but does not happen to have selected one for figuring in the *Lép. Comparée*. Both those he has kindly sent me for comparison, however, have three ocellations in the secondaries. The other variety is one of which I took about a dozen specimens, whilst Mr. Johnson took some also. In these there is a red fascia on the upper side of the primaries in which the ocellations are placed. In some specimens it is a trace, in others it is a distinct small fascia, extending down to the third ocellus. In my companion's series there is one in which the fascia is as large as in the females, but generally it is decidedly smaller.

Turning now to the females, the type form as originally described is that figured (*loc. cit.*) No. 372. This is dark brown in both wings, with three ocelli in the primaries, and none in the secondaries, whilst the red fascia is small; this character is variable. Equally common with this is that figured at No. 373 with a good-sized bright fascia in the primaries, and three fairly prominent ocelli in the secondaries. I have also some examples in which there are four prominent and large

ocelli in the primaries, but not more than three in any case in the secondaries.

There remains one very handsome variety of the female to be mentioned, of which I took two examples. It is entirely black above in both wings. The black is very deep; it is as black as the blackest *astur* or the blackest *melas* that I have seen. There are three prominent ocelli in the primaries, rather oval in shape, the very intense black of the "iris" of the spot making itself quite visible. In the one specimen there are no spots at all in the secondaries, thus following out the lines of the male sex, the second specimen, which perhaps is not quite so deep a black, has two very small ocelli in the secondaries. Below, they are very dark brown in both wings, the primaries having a tawny fascia.

*E. lefebvrei* ab. *intermedia*, Obth.—This is apparently the least common of the named forms. Whether it is really a geographical race remains to be worked out. At present, I imagine, there is not sufficient material to settle the point. The types were taken on the Cambrès-d'Ase, Montlouis. I have two specimens from Canigou, and Mr. Johnson has two also. This form is dark brown with a small red fascia in the primaries in which are the two ocelli, whilst there is a black dot above vein 2; there are no ocelli in the secondaries. The underside follows precisely the colour and marking of the upper. The female is paler, the primaries having a third ocellus, and the secondaries three minute ocelli, not visible below. I have, of this form, in addition to those from Canigou, one taken by Dr. Chapman at Gavarnie and two from the Barrière de Lourcide. It will be interesting to record that Boisduval's type male, *E. lefebvrei*, has the very small apical ocellus above the two that are universally present.

The range of variation in both *Erebia melas* and *Erebia lefebvrei* seems to be along entirely parallel lines.

*E. melas* var. *hungarica* is quite an equivalent of *E. lefebvrei* type. The larger size of the insect with its large and prominent ocelli—altogether a handsomer form—seems to be quite analogous to Boisduval's type form from the Hautes Pyrénées. *Erebia melas*, from the whole of the Isthmian peninsula, including the Balkans, is analogous to the *Erebia lefebvrei* var. *pyrenaica* in its two main varieties those from Greece being the duller and less dark variety, whilst those from Herzegovina are blacker and smaller closely similar to the *astur* race, in fact, so close were they that I hoped they might prove to be *melas*, "vera." This, however, was not to be, for I sent specimens to my friend Dr. Chapman, and he very kindly mounted a small series of male armatures, and of the neuration that show, as will be seen by a subsequent paper and plates, they are not *melas*, but are without doubt *lefebvrei*, for I quite concur in the Doctor's conclusions.

*Erebia tyndarus* var. *dromus*, H.S.—I referred (*antea* p. 54) to the beautiful race of *E. tyndarus* that flew on the lower slopes of Canigou. We found it exceedingly common on the pastures about five minutes or so below the Châlet Hotel. The tawny patch on both wings, but especially on the primaries, is very brilliant, and yellowish not red; the two ocelli are prominent, and the ocelli are moderately prominent generally in the secondaries. Oberthür (*loc. cit.*, p. 25, *Études*), has likewise referred to the species, comparing it with *hispania*, Btl. from

the Sierra-Nevada as also with *dromus*, H.S. In Vol. xx., of the *Études*, p. 38, M. Oberthür writes of *dromus* as follows:—

“It is certainly the most beautiful and the most brilliant form of *Erebia tyndarus* that has yet been observed.” The Canigou race is without doubt this form, as mentioned before (*loc. cit.*) it was very plentiful and is quite a good local race.

*Erebia gorge*, Esp.—I found this flying with *E. lefevrei* var. *pyrenaica* and with *Epiphron pyrenaica* (the heavily spotted form) on the “sea of stones,” on the Barbet (North) side of Canigou. I did not find it very common, but contrary to the general rule as mentioned by Oberthür in the *Études*, several specimens had no ocelli at all in the secondaries.

It seems evident that the high-flying *Erebiae* find Canigou a good place for the development of special forms, the reason being probably that as the mountain is isolated and is so frequently cut off from the world below by an ocean of cloud, while it is in brilliant sunshine, that the species have perhaps less opportunity than usual of being blown into the deep intervening valleys, or vice versa, so that very little intermingling can take place.

---

### Colias edusa in 1913.

By C. W. COLTHRUP.

Once again have I had the pleasure of renewing my acquaintance with *Colias edusa* in the field, and still I do not tire of seeing him. Apart from being a decent insect, he is a sport, giving one a good run, and if beaten, one respects him the more. I speak of *him*, because the female does not often travel so fast except with a strong wind or when thoroughly scared, but it is more often to be found lazily sucking at a flower of hawkweed, or busy ovipositing on clover, generally not far from the field where it emerged, where one will probably walk it up. It is a good plan to walk with the wind, as if a female is disturbed it will fly with it and be seen, whereas, if one is walking against the wind it will often get up under one's feet and fly behind unobserved.

On May 29th, 1913, when returning home from Hastings, I saw from the railway carriage window three specimens of *C. edusa*, flying in a sheltered corner of the railway bank near Bexhill-on-Sea, which gave promise of some good sport later in the year, and I was not disappointed.

I arrived at Eastborne on July 19th, but nothing was seen or heard of *C. edusa* till August 2nd, when my friend Mr. E. P. Sharp heard of two specimens being taken, and himself took two freshly emerged ♂s on the same afternoon.

On August 3rd Mr. Sharp, Commander Gwatkin-Williams and myself took between us five ♀s and fourteen ♂s, some freshly emerged others worn, so that the species had been on the wing some time before we came across them.

We were lucky in finding the field where they were emerging and continued to take freshly emerged specimens up to the time I left on August 24th. All the specimens we saw were feeding on a small yellow flower, a hawkweed I believe, not on clover at all. This probably accounts for Mr. Louis Meaden (*antea*, vol. xxv., p. 287) finding them in a stubble field, where they were no doubt feeding on a

similar plant. We tried two or three clover fields at Eastbourne but saw none in them at any time. Lucerne in the Eastbourne district is conspicuous by its absence, but I found one field and with the exception of one stray worn ♂ no *C. edusa* were seen it.

Mr. Sharp took two var. *helice*, and I took one. Two of these we kept for ova, Mr. Sharp undertaking the rearing. From the *helice* ova he bred 31 ♂ s, five ♀ s, and eight var. *helice*. From ova laid by a typical ♀ he bred 71 ♂ s, 45 ♀ s, but no var. *helice*, all of which I exhibited on his behalf at the South London Natural History Society's Variety Exhibition in November last.

On August 31st I went to Margate, and on September 2nd, in an interval of sunshine, took three ♂ s and 1 ♀ *C. edusa*, all worn. I released the former and kept the latter for ova.

On September 5th I had arranged to meet Commander Gwatkin-Williams, who was staying at Broadstairs and had found an "emerging" field. We cycled to it, and immediately on our arrival rain began to fall, and came on so badly that we were kept prisoners in a barn for two hours, after which we cycled home and got thoroughly drenched.

On September 7th I again met Commander Gwatkin-Williams at this field. I had just fixed up my net and was getting some pill-boxes from my satchel when a butterfly flew quite close to my face, and as it went by I noticed it was var. *helice*. A short chase and I had it in my net. It proved to be a freshly emerged specimen, a piece of good luck, as Commander Gwatkin-Williams had been on the lookout for the variety for three weeks previously without seeing one. I took another on the last day of my stay, these being the only two seen. A north-east gale was blowing, but we managed to take between us during the morning nineteen ♂ s and two ♀ s besides the var. *helice*. The two ♀ s and two of the ♂ s were freshly emerged, the remainder good, bad and indifferent. Those not worth setting were released with the exception of some that had single notches in one wing, which I set for reference in connection with the attacks by birds theory; not a single specimen was found during my stay with more than one wing notched. Swallows were flying up and down the sheltered side of a hedge all day, where also *Polygonommatus icarus* and other butterflies were enjoying the shelter and sunshine. I paid particular attention during my stay, but never once saw a swallow attack a "blue" much less an *edusa*, and Commander Gwatkin-Williams's experience was the same. *C. edusa*, ♂ s and ♀ s, continued to emerge daily up to September 15th the last day on which I visited the field. Both were most variable, the ♂ s in size (some were twice the size of others), and also in width of black marginal bands, etc., the ♀ s in size of yellow spots in the black marginal band, one specimen being referable to var. *obsoleta*. On one morning we took between us 35 specimens.

Some of the lucerne fields I visited in Thanet had quite a number of ♂ s in them, all worn, and which made the fields a playing ground, circling round them, engaging in mock combats, occasionally settling on a flower for an instant only, and were no doubt wanderers from the true emerging field. On September 9th I cycled down to Dover and came across a collector who had been taking *C. edusa* ♂ s freely in a field there for three weeks, during which time he had not taken a freshly emerged specimen, nor had he seen a single ♀, which to him

seemed quite unaccountable. To my mind the moral is "Don't be satisfied with taking only worn specimens," or come to the conclusion that the species is going over, try elsewhere and you will probably find fresh ♂s and ♀s too in the field in which they emerge.

I should mention that I did not hear of a single specimen of *Colias hyale* being taken or seen.

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### Notes on Tunisian and Algerian Insects.

(Concluded from page 70.)

By P. A. BUXTON, F.E.S., M.B.O.U.

On the evening of April 8th we moved from Batna to El Kantara. Here I remained till the 18th, and as I collected a good many interesting creatures, it will be profitable to describe the country worked. There is a range of rocky hills running east and west for many miles, quite impassable except for men on foot. This range is divided by a deep gorge through which runs a river, an ancient highway, and a railroad. The words "El Kantara" signify "The Bridge," in reference to a Roman bridge, which still spans the river. The level of the bottom of the gorge is 1,500ft., and from this the very barest of rocky hills rise, perhaps another 1,500ft. To the north of the gorge lies country which is fairly typical of the high Plateau, to the south you find an oasis, and stony desert. The transformation is abrupt and striking, though travellers have, perhaps, exaggerated when they state that in a few yards you step from a land of pines into a land of palms. Most of our collecting was done in the desert, though the very comfortable little French Hotel of Madame Bertrand lies on the northern side. The desert is a waste of loose stones of all sizes, interspersed with cushions of the Hawkweed *Zollikofferia spinulosa* and small bushes of jujube (*Zizyphus*, sp.) In some places there is a sparse growth of a barley-like grass, *Stipa tortilis*. This last is a most unpleasant plant; the seeds are provided with a sharp beak, break easily from the parent plant, and then worry their way through your clothes, and, if you are careless, right through your skin also. Even the Arab's hide is by no means impervious to this pest. This list of plants by no means pretends to be exhaustive, but must give the botanical reader an idea of a flora characterized by spikes, spines and tough woody stems. This forbidding country offers some obstruction to the man with the net unless he wears the local rope-soled shoe, with the aid of which, however, he will soon find himself running over the loose stones. These shoes only last ten days, but then they cost 6½d. per pair. They are indispensable. With surprising abruptness the desert passes into the oasis. This is a grove of date palms, some miles long. Here and there you may find a village built of mud and surrounded by a few very barren gardens. To a naturalist the palms and the gardens are most uninteresting. The principal butterfly of the oasis is *Pararge aegeria* type form, just as in South Europe. The first spot in the marginal series on the hindwing is always discernable in my short series (all ♂s), but never well developed. In the gardens *Pieris rapae* flies. It is to be noted that Dr. Ernest Hartert found this species as far south as El Golea, on his journey to Insalah. It occurred in the oases, never in the desert. \*Rothschild has determined Hartert's specimens

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\* *Novit. Zoolog.*, Vol. xx., p. 110.

rather tentatively as var. *leucotera*, Step. My El Kantara specimens show some tendency to approximate to this Saharan form. They are characterised by an almost obsolete black tip to the forewing upperside, in the male at any rate. *P. brassicae* also occurs in the gardens, though rarely. *Pontia daplidice* was common along the edge of the oasis, e.g., in the barley patches. It was in fair condition by April 17th. It appears that there are two well-marked forms of this species in Algeria, a form in the Tell and mountains, and var.\* *albidice*, Obth., in the real desert. The form from El Kantara is intermediate, though nearer the mountain form, from which it differs in having its underside paler and of a clearer yellow. In fact it is nearer the Spanish variety than that from the Algerian mountains. *Papilio podalirius* was just beginning to appear when I left on April 18th.

Out in the stony desert *Lampides boetica*, *Pyrameis cardui* and *Colias edusa* were common enough, but some interesting species also occurred. The most abundant of these was *Euchlōe charlonia*. This singularly unvarying butterfly could be taken *ad nauseam* all over the desert. It was in good condition at the time of my visit. Various very swift white butterflies were to be seen. If I had read up the butterflies of the place before going thither I should doubtless have cared more for these insects. It is no easy matter to course over stony desert in a hot sun after a very agile insect that may only be *Anthocharis belia*. Consequently these insects were neglected. However, I took not only *A. belia*, but also † *A. belemia* var. *evanesceus*, Röber. (?) and *A. falloui*. Of the last, a rare insect, I captured four males on Mount Lalbatre, a red hill four hours' ride, south of El Kantara. This locality well repays a visit; an Arab butterfly hunter, Boukhsarah Mohammed, who accompanied me, showed me the food-plant of *Teracolus nouna*. This butterfly was not yet flying; it is remarkable as being about the only truly African butterfly found in Algeria. The mountain side is scored with sharp-cut little oueds (wâdis), and the roughness of some of the ground quite beggars description. Such is the haunt of *Anthocharis falloui*. *Papilio machaon* var. *hospitonides* flies over the desert, though its emergence was barely commenced when I had to return northwards. This form is so named by Oberthür because its larva resembles that of *P. hospiton* rather than of *P. machaon*. I suppose this sort of variation to be almost unparalleled in the present state of our knowledge. The imago shows no tendency to assume the facies of *P. hospiton*.

*Euchlōe eupheno* (*belia*) was occasionally taken. I fancy that this place must be near the southern limit of its range. The few specimens taken are distinctly small. *Melanargia ines* was taken, but very sparingly, on the base of the crags at the side of the gorge. The ground colour of my ♂ is white, of my ♀ creamy. The ♂ has a supplementary hindwing ocellus between the two groups of ocelli, which are normal to the species. This ocellus is very imperfect, and more conspicuous from above than from below. The species is, of course, very conspicuous in flight, and certainly not so strong on the wing as *Pieris rapae*. In the same place I took the very small form of

\* *Études d'Entomologie*, VI., p. 47. Cf. also *Novit. Zoolog.*, XX., p. 110, Seitz., *Macrolep. of World (Palearctic Dir.)*, vol. I., p. 49, and pl. 21 f.

† Probably an intermediate leading up to var. *evanesceus* (= *desertorum*, Tur.) which occurs further south.

*Scolitantides baton*, known as var. *famelica*, Seitz. This is simply a dwarf race of var. *panoptes*, Hübn., which differs from the type in the absence of orange lunules from the outer margin of the hindwing. One of my specimens shows a faint trace of orange. One of the most characteristic butterflies is the small tailed-blue *Telicanus theophrastus*, which is always taken flitting up and down over a jujube bush (*Zizyphus*). This is one of the thorniest and woodiest of bushes, a perfect terror to one's net. The bush and butterfly are inseparable, and both are highly characteristic of the Palæarctic deserts of the region. *Pumicia phlaeas* is not rare. I cannot suggest what it eats; no place on earth could be more unsuitable for a luscious sorrel! The specimens were extremely uninteresting. They showed no tendency to blackness, indeed, two females had the pale ground colour of var. *intermedia*, Tutt. Both sexes showed an occasional tendency towards var. *caeruleopunctata*. Doubtless the summer brood would be more interesting. I am afraid I have treated the butterflies at some length, but they are really rather interesting.

The lights of the hotel were a great attraction to moths. The following Noctuæ came my way: *Euxoa segetum*, *E. radius*, Haw., *Agrotis pronuba*, *Pronotestra silenides*, Staud., *Carlepija irrisor*, Ersch., *Cirphis l-album*, *Laphygma exigua*, *Athetis flava*, Oberth., *A. claripalpis*, Scop., *Thalpocharis ostrina*, *Tathorhynchus esiccata*, Led.; also the following Pyrales: *Eromene ramburiella*, Dup., *Pempelia ardosiella*, Rag., *Heterographis candidatella*, Led., *Myelois echinopisella*, Chrèt., *Constantia syrtalis*, Rag., *Evergestis renatalis*, Oberth., *Nomophila noctuella*, *Pionea ferrugalis* and *Cornifrons ulceratalis*. A few *Geometridae* also came to light, to wit, *Gnophos mucidaria*, Hb., ♂, *Larentia fluriata*, ♂, *L. sandosaria*, H.S., ♂, and *Eupithecia pumilata* (quite common). During the day I took *L. sandosaria* ♀, *L. disjunctaria*, Stgr., ♂ and *Acidalia okbaria*, Chrèt. (?), ♀.

The small *Acidalia merklaria*, Oberth., was not rare. It is only known from Algeria. On April 14th I took a ♀ *Acidalia* of an undescribed species allied to *A. cerrataria*. It was sitting with its wings flat, making an equilateral triangle. I have never seen a more perfect example of protective coloration. The insect exactly matches the stones on which it lives, and is exactly the colour of the desert lark (*Ammomanes*). On Mont Lalbatre I found larvæ of *Eupithecia pumilata* devouring the blossoms of a gigantic, succulent "broom rape" (*Phellyphaea* sp.). The moths emerged in England.

Among the Hymenoptera I saw the very rare *Chrysis chobauti* several times, sunning itself on hot stones, and secured a ♂ on the day of my departure. I also took the following: *Scolia bidens*, L., ♂, along a clay bank by a roadside; *Ammophila hirsuta*, Scop., ♀s; *Odynerus (Lionotus) manretanicus*, Lep., ♂ and ♀; *O. parvulus*, Lep., ♀; *Vespa germanica*, F., ♀; *Polistes gallicus*, ♀; *Andrena rufiventris*, Lep., ♀; *Anthophora senescens*, Lep., ♀; *A. calcarata*, Lep., ♀; *A. atroalba*, Lep., ♀; *Osmia tricornis*, Latr., ♀ and workers of *Apis mellifica*. The following ants mostly occurred under stones: *Myrmecocystus viaticus*, *Messor barbarns*, *Plagirolepis pygmaea*, Latr., *Monomorium subopacum*, Sm. and *Tapinoma erraticum*, Stgr.

The Orthoptera were very well represented. In one place some small *Locustid* nymphs were devastating a barley patch. The only other *Locustid* observed was a solitary *Eugaster guyoni*, Serv.

This truly remarkable insect is large and stout. It is black all over and highly polished, with some red prominences on the thorax. The species has lost the power of jumping, and the hindlegs are barely stronger than the forelegs—a most unusual state of affairs in the *Locustidae*. The insect is apparently protected by an orange oily\* fluid which, I think, comes from the mouth. I could detect no smell at all in this fluid, but had not the courage to taste it. The Mediterranean Acridians *Stauroderus bicolor*, *Pyrgomorpha grylloides* and *Acridium aegyptium* were taken. The first is not generally green at El Kantara, most individuals being pale straw-colour, exactly the colour of the barley stems among which the species was taken. The Orthoptera more than any other group were coloured to match the desert. This applies to such species as *Eremobia pulchripennis*, Serv. (?), *Pamphagus hespericus*, *Thalpomena algeriana*, Luc., *Caloptenus seraphis*, Serv. and *Eremocharis insignis*, Luc. (taken at Biskra by Prof. Walter Garstang). I should like to record here a few notes on the above species. Nymphs of *Eremobia* sp. were extremely numerous. They are quite invisible when at rest, as they are cryptically coloured, except for black, red and orange marks on the inside of the hind-femora. The hindlegs are tightly adpressed to the abdomen, the tarsi placed under the body, the anterior and middle legs are also placed under the body. I strongly suspect that the antennæ are folded vertically downwards when the insect is really resting. It is, however, quite impossible to see the insect till it has moved, and then it is awake and carries its antennæ porrected, though the legs are in the position which I have described above. Nymphs were very numerous all over the stony country. A few of the crimson winged adults were taken at the end of my visit. It is most startling and unnerving to see one of these very large insects rise suddenly at your feet, out of nowhere, fly rapidly away with a whirring zig-zag flight, and instantly disappear on again reaching the earth. The cryptic colouration is, as I have said, perfect. I suggest that the crimson wings and brightly coloured legs act as a flash colour. By this I mean that the insect perhaps frightens an enemy when it rises suddenly; more than that, it is certainly most difficult to the eye to follow a gigantic crimson insect, which quite suddenly becomes invisible. I assure the reader that this sudden disappearance renders it extremely difficult to mark the exact spot where the insect has disappeared. Of the habits of the wingless and clumsy *Pamphagus hespericus* a good deal might be written. The ♀s are desert-coloured and live among the stones. The males are browner, and generally are irregularly marked with a particular shade of lavender grey. They thus resemble very closely the stems of a *Zizyphus* bush. It cannot be due to accident that, three times in one day, a male took refuge in the nearest tuft of *Zizyphus*, when I was pursuing him. I never observed one of the clay-coloured females take one of these directed leaps into a bush. At El Kantara I took a single very large *Caloptenus*, probably an undescribed species. Of the other Orthopteran families I took the cockroach *Ectobia perspicillaris* (nymph) and the earwig *Forficula*

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\* I am aware that many grasshoppers and locusts secrete such a fluid on being captured. The fluid secreted by *Eugaster* is five times more abundant than that of an ordinary insect.



*auricularia*. The egg-cases of the Mantid, *Sphodomantis guttata*, Thunb. were extremely common in oueds near Fontaine des Gazelles. They were placed on sticks, stones, tamarisk bushes, etc., quite indiscriminately. Mr. C. B. Williams and myself have bred insects from these cases, which appeared to be completely free from Chalcid parasites. I happened to capture the Dipteron *Nemastrinus aegyptiacus*, a curious long-beaked insect belonging to a family which does not occur in Britain, also *Chrysotorum italicum* and *Anthrax paniscus*.

Beetles of the family *Tenebrionidae* were abundant among the stones of the desert. Large black Tenebrionids are characteristic of most, if not all, of the deserts of the Old World. At El Kantara the most abundant species is *Adesmia biskrensis*, Luc. (= *A. acerrata*, Klug.)\* These long black-legged insects were even more abundant than the grasshoppers *Pamphagus* and *Eremobia*. They run rapidly about in the daytime. I fancy that they are too large and hard to be eaten by the Chats and Larks. I found one specimen apparently enjoying life on two legs and a few stumps. Its elytra showed no dints, though, I presume, some bird had attacked it. I never discovered the food of these insects; they always seemed to be too busy running to take any thought for other matters! I was interested to take a nearly black Cantharid beetle (sp. inc.) The only markings on this insect are two coral spots on each elytron, representing, I suppose, the red or orange band so characteristic in many blister beetles. The rest of the insect is entirely black. I should like to call your attention to the fact that many creatures of the stony desert are either black or sand-coloured. The latter is a sufficiently well-known phenomenon, characteristic of deserts all the world over, a special form of protective colouration, in fact. I am not sure that much attention has been given to black desert animals. You will call to mind that *Eugaster* among the *Locustidae* is black, further, it is the only non-saltatorial grasshopper, or locust. As I have suggested, the genus *Adesmia* (*Tenebrionidae*) is probably safeguarded by hard integuments; both these insects are extremely conspicuous. These black desert forms are not found, I think, among the Lepidoptera. With regard to the birds I would call your attention to the fact that some† Chats are black or black and white. With this exception true desert birds are coloured like the soil on which they live. At present we must be content simply to remember that certain species of desert animals, which, perhaps, we may regard as in some way "protected," are coloured black. The meaning of this is not apparent, the facts are indisputable.

Among the "Bugs" I took two Coreids, *Stenocephalus agilis*, Scop., noted as "quick runner, flies readily," and the curious *Phyllomorpha algerica*, Villiers (? = *P. laciniata*, Lucas, from S. Europe). As the British Museum collection shows, there is a good deal of variation in the shape of the spiny thoracic and abdominal processes. The male is said to carry the eggs under the mass of interlocking spines which cross over his dorsal surface. The insect, which is of a lovely rose-pink colour in life, was taken running over the stones in the desert.

One of my most interesting captures was two insects noted at the

\* Fide von Heyden, *Novit. Zoolog.*, Vol. xx., p. 98.

† *E.g.*, *Saricola lugens* and *S. leucurus*, both of them wary birds, so wary that frequently you cannot approach within sixty yards of them.

time as being "perhaps in association;" a red onisciform insect as large as a hazel nut and a tiny "fly" with a very long tail of many fine waxy bristles, the whole looking like a bunch of spun glass. The "fly" was running round the large insect with great rapidity, jumping into the air, and altogether appearing as the most nervous, jerky, excitable creature imaginable. These two insects are the ♀ and ♂ of a Coccid, of which Prof. Newstead says: "The Coccid (El Kantara) is apparently *Margarodes mediterraneus*, Silvestri. I should point out, however, that there are a few minor morphological characters which do not fit in with Silvestri's diagnosis, but they do not seem to me to be sufficiently important to warrant the creation of a new species." The ♂s of Coccids are very rare; I had the good fortune to find a second ♂ in my net on the same day as that on which I captured the pair.

Turning stones in the desert is not a very profitable task. There are so many stones that there is not much competition for any particular eligible plot. Nevertheless animals were to be found in these places, though generally only Scorpions or Machiliids. Among the insects which concern us here, I may mention scattered colonies of a White Ant, *Hodotermes ochraceus*, Burn. (determined by Prof. Nils Holmgren) and *Embia mauretanicus*. These last insects were very rare. I found one colony of twenty under a stone in a fairly green oued, among some tamarisk bushes. In nature the tubes ramify dichotomously; regular passages lead out from under the stone into the dead sticks and grass outside. A few tunnels also enter the earth for a short distance. The colony has a "nest" in the centre of its webs, and to this the individuals retreat when disturbed\*. All the members of a colony appear to move together, and in the same direction, consequently they are always found congregated in one part of their web, all facing in the same way. In captivity the animals soon filled the tube in which they were kept with an irregular mass of silken tunnels running in all directions. They always regard one part of their domicile as home, and here they make a nest where all roads meet, and where the walls are distinctly thicker than elsewhere. The insects are highly skototropic. In a glass tube they may be observed spinning galleries of silk from the glands in their anterior legs. The legs in question are moved about independently with a vague waving motion. Mr. C. B. Williams has bred an adult ♂ from my larvæ, thus setting the determination beyond a doubt. His larvæ were kept warm and damp, and his ♂ emerged about August 12th. My larvæ, kept dry and in a living room, are still alive (December 26th, 1913). Their metamorphosis is not yet complete.

During my return journey across the Mediterranean many of my specimens were partially devoured by a small red ant, *Monomorium pharaonis*, which emerged in large numbers from a den of iniquity behind the steam-pipes in my cabin.

A few notes on the rest attitudes of Pierine butterflies had perhaps better appear together. The attitudes are all described from specimens in a state of repose in glass-bottomed boxes. It is well-nigh impossible to observe these things in the field during a flying visit. Dr. Longstaff\*

\* Cf. Imms, *Trans. Linn. Soc. Lond.*, 2nd. Ser., Zoology, vol. xi., pt. 12, p. 184, *et seq.*

\* "Butterfly Hunting in Many Lands," p. 162, pl. 5, fig. 10.

has figured *Anthocharis beleuia* at rest. The forewings are so depressed that only the green mottled tips are visible when the wings are folded over the insect's back, *i.e.*, the pattern on fore- and hindwings is continuous. *Anthocharis belia* rests in a precisely similar attitude. *Euchloë eupheno* (*belia*) rests with the antennæ approximated and porrected; sometimes the costa of the hind-wing is considerably more forward than that of the forewing. That is to say, the forewings are sunk between the hind-wings so that only their tips appear. I noted that *Euchloë charltonia* rested with the fore- and hind-costæ exactly superimposed. Longstaff, however, notes this species as resting with the posterior costa advanced to lie forward of the anterior, though I never noticed this among two score or more of this species. *Pontia daplidice* rests with the hind-wing costa just a little in advance of that of the forewing, but this is not so marked as in *E. eupheno*.

I expect that many of the facts here recorded seem trivial and disconnected. More than once I have hesitated to draw any conclusions from my hasty observations, thinking that the facts are undoubted, while any theory I attempted to build upon them might easily be upset by a more gifted, fortunate, or leisured observer. The evidence for or against such theories as mimicry, sexual selection, protective odours or warning colours is, all of it, built up from isolated observations, some of which appear contradictory in the light of our very limited knowledge. It is by amassing more facts, insignificant individually, perhaps, that we shall eventually be led to sound conclusions in these matters. It is such considerations as these which must form my apology for troubling the reader with these rather detailed extracts from a day to day note book.

NOTE.—With the very kind assistance of Dr. F. A. Dixey I publish this synonymy; I trust it is correct, but the question is very difficult, and my main purpose is not to solve questions of priority, but to show what I refer to as "*belia*."

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| 1. The Orange Tip.   | <i>Euchloë eupheno</i> , L.<br>= <i>belia</i> , L. (and Longstaff, <i>l.c.</i> ).   |
| 2. The "white" with green and<br>pearl underside hindwing. | <i>Anthocharis belia</i> , Cr.<br>= <i>bellidice</i> , Hübn.<br>= <i>bellezina</i> , Boisd.<br>= <i>tagis</i> , Hübn. (not of course the Spanish<br>species).<br>= <i>crameri</i> , Butl. |

## A Revision of the Genus *Leptothorax*, Mayr, in the British Isles.

By W. C. CRAWLEY, B.A., F.E.S.

The following paper is an attempt to rectify the errors in the determination of the sub-species of *Leptothorax tuberum*, Fabr., recorded and described by Farren White, E. Saunders, and others.

Until the year 1912, all examples of the *tuberum* group taken in Britain were recorded either as *nylanderi*, Foerst., or as *unifasciatus*, Latr., according as the antennal club in the ♀ was the same colour as the body, or darker. Mayr<sup>1</sup> and Forel<sup>2</sup> distinguish the ♀ of the former from the others chiefly by the impressed line between the mesonotum and metanotum, a character not made use of by either F. Smith, White, or Saunders. In the ♀ of *unifasciatus* one of the

<sup>1</sup> *Europ. Formic.*, 1861, p. 59.

<sup>2</sup> *Fourmis de la Suisse*, 1874, p. 84.

principal characters mentioned by continental myrmecologists is the distinct dark brown or black band across the base of the first segment of the gaster; Farren White<sup>3</sup>, however, says that the abdomen in this subspecies is not so distinctly banded as in *nylanderi*, and Saunders<sup>4</sup> that the black bands on the body are narrower than in *nylanderi*, and often wanting. F. Smith himself realized that the determination of this ant as *unifasciatus* was incorrect, though he made no attempt to rectify it. He says<sup>5</sup>, "The *unifasciatus* of British collections is not that which continental Hymenopterists consider to be Latreille's species . . . the ♀ has the abdomen nearly entirely fuscous, only the base and apex pale; it cannot be said to have 'une bande noire transverse sur le bord postérieur du premier segment.'" Again he says<sup>6</sup>, "*M. unifasciata* of Nylander is certainly not the *unifasciata* of Smith's Essay, nor have we seen it in any British collection."

Nylander<sup>7</sup>, followed by Smith<sup>8</sup>, suggests that Latreille confounded this species with *M. cingulata*, Schenck, which, however, differs in having its antennæ entirely yellow.

In August, 1912, I paid a visit to Dr. Forel in Switzerland, taking with me all the specimens of *Leptothorax* from the various Oxford and Cambridge Museum collections, as well as those from several private ones, for his inspection, and all the ants labelled *unifasciatus* were re-named by him *tubерum*, Fab. (*sensu stricto*), with two exceptions referred to below. Dr. Forel also named as *tubерum* (*s.str.*) all specimens labelled *unifasciatus* in the British Museum and Saunders collections shown him by my friend Mr. Donisthorpe, on his visit in October, 1912.

In recent years several subspecies and varieties of *tubерum*, distinct both from *nylanderi* and that hitherto known as *unifasciatus*, have been discovered in this country. In April<sup>9</sup>, 1904, I found an incipient colony (♀, ♂, and larvæ) near Pangbourne, which was named by Forel as "*corticalis*, Sch., var. with longer spines"; in June, 1912, I found a colony at Seaton, Devon (♂ s, ♀ s, ♂ s), which Forel named "*tubерum*, F., var., approaching *interruptus*, Sch."; and in July, 1912, Donisthorpe and I found numerous colonies, with all sexes, of a sub-species named the same year by Forel "*tubерum*, F., var. *tubero-affinis*, For." Among the ants in the Hope-Westwood collection at Oxford were two ♂ s from Hayling Island, presented by Saunders, that Forel named *affinis*, Mayr, and in the Cambridge Museum are a number of ♀ s from the Isle of Wight (Perkins) that Forel considered "*tubерum*, F., with spines similar to *corticalis*, Sch." With these exceptions, all the ants labelled *unifasciatus* were re-named by Forel as *tubерum*, F., (*s.str.*) It seemed desirable, therefore, to correct the errors in the naming of this group of ants in Britain, and with this end in view I have made a careful examination of all the specimens in public and private collections throughout the country that I could obtain, in

<sup>3</sup> *Ants and their Ways*, 1883, p. 226.

<sup>4</sup> *Syn. of Brit. Heterogyn and Foss. Hy.*, 1880, p. 220.

<sup>5</sup> *Cat. Brit. Foss. Hy., Formicidae*, 1858, p. 31.

<sup>6</sup> *Cat. Hy. Ins. B.M.*, pt. vi., *Formicidae*, 1858, p. 120.

<sup>7</sup> *Syn. Form. France et Algérie*, Ann. Sci. Nat., 4 série, T. 5, p. 92, 1856.

<sup>8</sup> *loc. cit.*, p. 120.

<sup>9</sup> *Ent. Rec.*, vol. xxiv., no. 3, p. 63, 1912.

addition to numerous foreign examples that continental myrmecologists have kindly lent me.

The study of these ants presents considerable difficulty, owing to the scarcity of specimens, particularly of ♂s, and also the great variation among the ♀s of some of the sub-species. In this connection it may not be out of place to emphasize the great importance, when collecting ants, of keeping the specimens from each colony or nest separate; a letter or number on the labels showing this, is a great help, and, of course, whenever possible, all sexes should be taken and labelled so as to show they come from the same nests. Odd specimens, except in a few instances, are of very little value.

I have to thank my friend Mr. H. Donisthorpe for the use of his data for the distribution of the species, for references and the loan of specimens; Dr. A. Forel and Prof. C. Emery, for descriptions and drawings of specimens that I was unable to see; and Messrs. J. Bondroit (Belgium), and H. Scott (Cambridge Univ. Museum), for the loan of specimens from their collections.

GENUS LEPTOTHORAX, MAYR. (*Form. austr.*, 1855, p. 159.)

WORKERS.

TABLE OF ♀s.

Antennæ 11-jointed .. .. .	<i>L. acervorum</i> , F.
Antennæ 12-jointed .. .. .	.. .. . 1.
1. Club no darker than rest of antenna .. .. .	.. .. . 2.
Club darker .. .. .	.. .. . 3.
2. A slight impressed line between mesonotum and metanotum. Spines long .. .. .	<i>L. tuberum</i> , F., sub-sp. <i>nylanderi</i> , Foerst.
Without impressed line. Spines short .. .. .	sub-sp. <i>corticalis</i> , Sch.
3. Thorax coarsely rugose. Spines very long and narrow. Club only slightly darker .. .. .	sub-sp. <i>affinis</i> , Mayr.
Thorax finely rugose. Spines shorter. Club nearly black. Top of head dark brown .. .. .	sub-sp. <i>tuberum</i> ( <i>s.str.</i> ), F.
Like the preceding, but with longer curved spines and only front of head darker .. .. .	sub-sp. <i>interruptus</i> , Sch.
Paler; a sharply defined dark band across base of first segment of gaster. Club only slightly darker .. .. .	sub-sp. <i>unifasciatus</i> , Ltr.

Antennæ 11-jointed. Head and thorax rugose. An impressed line between the mesonotum and metanotum. Middle of clypeus almost always smooth, slightly concave from the anterior to the posterior border.

Legs hairy. Spines of epinotum long, about two-thirds as long as the basal face of epinotum. Red or reddish brown. Club of antennæ, top of head and gaster, and often middle of femora and a patch on the metanotum, darker brown.

L. 3·2-3·7mm. . . . *L. acervorum* (*s.str.*), Fabr.

Widely distributed and common. Colonies small, with one or more queens, which are hardly larger than the workers. (Saunders<sup>10</sup>, in his remarks on the genus, states that "the ♀ is small, scarcely larger than the ♂"; this only applies to *acervorum*, as the ♀s of the *tuberum* group are not at all ergatoid in form, and much larger than the ♂s.) The nests are usually situated in old stumps, roots, and under bark, and often in stumps in the centre of nests of *Formica* (*Raptiformica*) *sanguinea*, *Formica rufa*, or *F. exsecta*, and the ants seem to be unnoticed by the larger species.

<sup>10</sup> *loc. cit.*, p. 218.

Antennæ 12-jointed. Clypeus not concave in the middle, but generally with a small median ridge and two or more lateral striæ. Legs without hairs.

*L. tuborum*, Fabr.

Thorax finely rugose. A slight impressed line between the mesonotum and metanotum. Spines of epinotum broad at base, and long, about two-thirds as long as the basal face of epinotum.

Yellow; club of antennæ, legs and mandibles of the same colour; top of head often darker; a broad dark band across the base of the first segment of gaster.

L. 2.5-3.0mm. . . . Subsp. *nylanderi*, Foerst.

Widely distributed and fairly common. Colonies small, with one or more queens. Nests usually in stumps and roots.

Thorax not quite so finely rugose as in the preceding. Spines very broad at base, horizontal, and extremely short.

Reddish yellow; club of antennæ, mandibles and legs of the same colour; top of head darker; first segment of gaster dark brown.

L. 2.5-3.2mm. . . . Sub-sp. *corticalis*, Sch.

I have taken this description partly from Schenck,<sup>11</sup> and partly from Forel,<sup>12</sup> as I have been unable to see a typical example. This subspecies may be distinguished from *nylanderi* by the absence of the impressed line between the meso- and metanotum, the shorter spines, and darker colour. A variety with longer spines was taken by me near Pangbourne in 1904, and named by Forel. The following is the description of the ♀.

Thorax finely rugose, less than in *nylanderi*. Spines very broad at base, long, about two-thirds as long as the basal face of epinotum.

Reddish yellow; mandibles, whole of antennæ, and legs of the same colour; top of head dark brown; whole of gaster as seen from above, except a small patch on the front of first segment, black-brown.

L. 2.3mm. Sub-sp. *corticalis*, Sch., var. with longer spines.

As mentioned above, a ♀ and ♂, with larvæ, were found in an empty beech-nut in a wood near Pangbourne. Forel<sup>13</sup> mentions a similar variety from the Tyrol. According to Schenck<sup>14</sup> and Forel<sup>15</sup> *corticalis* nests almost entirely under bark. Among the ants in the Cambridge University Museum are the following: a single ♂ from the Isle of Wight (Perkins), that Forel says is "nearly *corticalis*." It has the antennal club no darker, and the short broad spines and coloration of the typical *corticalis*. As there is only one ♀, I have not placed it under *corticalis*, though I have little doubt that it is this subspecies. Also a number of ♂ ♀ (no data except "Perkins collection"), called by Forel "*tuborum* with spines almost *corticalis*." The spines are very short, but the antennal club is dark brown, and in other respects the ants are exactly similar to *tuborum* (*s.str.*), so I prefer to consider them a short-spined variety of *tuborum* (*s.str.*).

All the following subspecies have the club of the antennæ darker than the rest, in some cases nearly black.

Thorax coarsely rugose. Spines long, more than two-thirds as long as the basal face of epinotum, extremely narrow, hardly wider at the base than at the point, and slightly curved.

<sup>11</sup> Besch. Nassau. Ameis., 1852, p. 100.

<sup>12</sup> Loc. cit., p. 85.

<sup>13</sup> Ameis. Zool. Mus. München, 1911, p. 268.

<sup>14</sup> Loc. cit., p. 101.

<sup>15</sup> Fourm. de la Suisse, 1874, p. 180.

Yellow, slightly reddish; whole of top of head, middle of femora, upper surface of gaster except the front of the first segment, brown; club of antennæ generally brown, sometimes only dark red.

L. 2·6mm.-3·3mm. . . . Sub-sp. *affinis*, Mayr.

Two ♂s in the Hope-Westwood collection at Oxford were named *affinis* by Forel. These ants were taken by Saunders in Hayling Island, 1883, and labelled *unifasciatus*. Saunders<sup>16</sup> says he found large colonies of "*unifasciatus*" at South Hayling under stones. *Affinis*, however, in Switzerland is, so far as I know, only found in hollow twigs and under bark, principally of walnut trees and oaks. Donisthorpe found a colony in walnut tree twigs near Yvorne in October, 1912, containing ♂s and one queen. Before definitely establishing this sub-species as British, it will be necessary to see more ♀s and also a ♂ and ♀.

Thorax finely rugose. Spines narrow at base, variable in length, generally half as long as basal face of epinotum.

Yellow or reddish-yellow; club of antennæ dark brown, almost black; top of head and vertex, and an irregular patch across the base and extending up each side of the top of first segment of gaster, dark brown.

L. 2·3mm.-2·7mm. . . . Sub-sp. *tubерum* (*s.str.*), Fabr.

This is the ant almost universally labelled in British collections as *unifasciatus*, Latr. It may readily be distinguished from the latter by the absence of the clearly defined dark-brown band across the lower half of the first segment of gaster and by the dark top of head and antennal club, the latter in particular being much darker than in *unifasciatus*. This sub-species is variable, passing into *affinis* on the one hand, and into *interruptus* on the other (v. below). Forel<sup>17</sup> says that those colonies that inhabit bark merge into *affinis*, and those that live under stones, into *interruptus*. Some varieties with shorter spines and paler antennæ approach *corticalis* (v. above). The following is its distribution (where not otherwise indicated, it has been recorded as *unifasciatus*, Latr.); Colney Hatch Wood (Smith); Lambeth (Wing); New Forest and Lulworth (Dale); Coombe Wood (Smith); Dover (Curtis); Gravesend (Baly); Landslip, Isle of Wight (Lewis); Torquay (Hamm coll.); Isle of Wight (Smith); Isle of Wight, Seaton, Devon, and Portland (Dale); Hayling (Saunders); Stoke Fleming (Perkins); Weymouth (Dale); Ventnor, Isle of Wight (Saunders); Fairlight and Hastings (Vict. Hist. Sussex); Lyme Regis (Nevinson); St. Margaret's Bay, Kent (Donisthorpe); Sherborne (Bignall); Worcester (Fletcher); Black Pond, Oxshott (in coll. Arnold); St. Margaret's Bay, Kent (Donisthorpe, as *tubерum*, 1912).

In St. Margaret's Bay, Donisthorpe and I have found nests in the sand on the cliffs.

Thorax finely rugose. Spines as in *tubерum* (*s.str.*). Reddish-yellow; club of antennæ, front of head, but not vertex, and an irregular patch on the base of first segment of gaster, dark-brown.

L. 2·5mm.-2·7mm. . . . Sub-sp. *tubерum* (*s.str.*), Fabr., var. passing to *interruptus*, Sch.

At Seaton, Devon, in June, 1912, I found in moss under flints on the cliffs a small colony of this variety, consisting of 16 ♀s, one ♂, several pupæ of all sexes, and larvæ. The ♀ pupæ, some days before

<sup>16</sup> *Hy. Acul. Brit. Isles*, 1896.

<sup>17</sup> *loc. cit.*, p. 85.

emergence, present a striking appearance, the gaster assuming a bright orange colour. Forel, to whom I sent some ♂s, named them as above. He says in his letter ". . . it has the head brown in front, and reddish behind, which brings it very close to a slight variety which I have called *tubero-interruptus*, because the character of its colour brings it near to *interruptus*. We consider the forms *unifasciatus*, *interruptus*, *nigriceps*, and *affinis*, as sub-species of *tubereum* in spite of a considerable difference, precisely because of numerous bastard or intermediary forms found between them."

It will be seen from my description that the sole difference from *tubereum* (*s.str.*), is in the coloration of the head, which in *tubereum* (*s.str.*), is entirely dark, except in occasional specimens. The ♂ and ♀ of this variety, however, show rather more distinct differences, but it can only be considered a very slight variety of *tubereum* (*s.str.*).

Forel<sup>18</sup> gives the following intermediary forms as occurring in Switzerland:—*nylanderocorticalis*; *nylanderounifasciatus*; *tuberonigriceps*; *tuberoaffinis*; *tuberointerruptus*; *unifasciatointerruptus*.

Thorax finely rugose. Spines narrow, long, about two-thirds as long as the basal face of epinotum, and slightly curved.

Yellow or reddish-yellow; club of antennæ, front of head, but not vertex, and often an indistinct patch on the base, and extending up the sides, of the top of first segment of gaster, dark brown.

L., 2mm.-2.3mm. Sub-sp. *interruptus*, Schenck.

This sub-species is new to the British Isles. It was found by Donisthorpe and myself at Beaulieu Road, New Forest, in July, 1912. There were numerous colonies, many containing ♂s and winged ♀s, and the nests were either alone in the earth, or actually in the sides of nests of *Tetramorium caespitum*. A solitary dealated ♀ was found in the earth of a nest of the latter species. Judging from the experiment of placing colonies of the two species together in an artificial nest, I conclude that though not actively hostile, the *Tetramorium* and *Leptothorax* avoid contact with each other as much as possible. The latter may find protection in their proximity to the more powerful and populous colonies of *Tetramorium*.

As stated above, Forel named these ants "*tubereum* var. *tuberoaffinis*," but after examining the ♂s, and comparing them with drawings and descriptions kindly supplied by Emery and Forel, and also with the *interruptus* ♂ in the Saunders' collection in the British Museum, presented by Schenck, I have no doubt that they are true *interruptus*, Sch.\*

Thorax finely rugose. Spines about one half as long as basal face of epinotum.

Yellow; front of head and club of antennæ red or reddish brown; a clearly-defined band across the base of the first segment of gaster, dark brown, the top of the segment bright yellow.

L. 2.5mm.-3.5mm. . . . Sub-sp. *unifasciatus*, Latr.

Although not yet found in Britain, I have included this sub-species in order to emphasize its difference from *tubereum* (*s.str.*). The clear-cut dark band on the gaster, standing out against the bright yellow above it, at once distinguish *unifasciatus* from any of the others.

<sup>18</sup> *loc. cit.*, p. 86.

\* Bondroit, to whom Donisthorpe sent some specimens, considered them to be *interruptus*, Sch.



NOTE. The following remarks may be of some help to beginners in myrmecology in naming the ♂s of this genus.

1. Antennæ uniform in colour. *L. nylanderi* and *corticalis*. The former has a slight impressed line between the mesonotum and metanotum, and long spines. The latter has no impressed line, and very short spines, except in the variety.

2. Antennal club darker than the rest. *L. affinis* has very long, thin, curved spines, and club of antennæ only slightly darker. *L. tuberosum* (*s.str.*) has shorter and broader spines, whole of head dark, and club extremely dark.

*L. interruptus* has long spines, only the front of head dark, and club very dark. *L. unifasciatus* always has sharply defined dark band across the first segment of gaster, and spines short. Front of head and club only slightly darker.

## FEMALES.

## TABLE OF ♀♀.

Antennæ 11-jointed	..	..	..	..	..	..	..	<i>L. acervorum</i> , F.
Antennæ 12-jointed	..	..	..	..	..	..	..	1.
1. Club no darker than rest of antenna	..	..	..	..	..	..	..	2.
Club darker	"	"	"	"	"	"	"	3.
2. A sharply defined broad dark band across base of first segment of gaster, and a narrow one on each of the following segments. Spines long.								
								<i>L. tuberosum</i> , F. sub-sp. <i>nylanderi</i> , Foerst.
Gaster without bands. Spines short	..	..	..	..	..	..	..	Sub-sp. <i>corticalis</i> , Sch.
3. Spines long	..	..	..	..	..	..	..	4.
Spines short	..	..	..	..	..	..	..	5.
4. Mesonotum coarsely striated. Club brown	..	..	..	..	..	..	..	sub-sp. <i>affinis</i> , Mayr.
Mesonotum and scutellum finely striated.								Club nearly black
								sub-sp. <i>tuberosum</i> ( <i>s.str.</i> ), F.
Like the preceding, but with scutellum smooth and shining in centre, and longer spines	..	..	..	..	..	..	..	sub-sp. <i>interruptus</i> , Sch.
5. A sharply-defined broad dark band across base of first segment of gaster, and a narrow one on each of the following segments								sub-sp. <i>unifasciatus</i> , Latr.

Antennæ 11-jointed. Radial cell open. Middle of clypeus almost always smooth, slightly concave from the anterior to the posterior border.

Spines as in ♂. Wings clear, legs hairy. Colour as in ♂; upperside of head, thorax and often pedicel, gaster, and antennal club, dark blackish brown. Mesonotum sometimes yellow with patches of dark brown.

L. 4mm.-4.5mm. . . . . *L. acervorum* (*s.str.*), Fabr.

Antennæ 12-jointed. Clypeus not concave in middle, but longitudinally striate. Wings clear; radial cell small and closed. Legs without hairs.

. . . . . *L. tuberosum*, Fabr.

Mesonotum finely striated longitudinally. Middle of scutellum smooth and shining. Spines long, one-third as long as basal face of epinotum.

Yellow; club of antennæ no darker; a broad band across the base of first segment of gaster, and a narrow one across the bases of the following segments, dark blackish-brown. The head, thorax, and pedicel sometimes dark brown.

L. 4.2mm.-4.5mm. . . . . Sub-sp. *nylanderi*, Foerst.

Mesonotum and scutellum finely striated longitudinally. Spines short, nearly horizontal.

Antennæ, mandibles, and legs entirely reddish-yellow; the rest of the body dark brown.

L. 3.5mm.-4mm. . . . . Sub-sp. *corticalis*, Sch.

This description is taken partly from Schenck and partly from Forel (v. sub. ♀).

Mesonotum finely striated longitudinally. Middle of scutellum smooth and shining. Spines long, about one-third as long as basal face of epinotum.

Antennæ, mandibles, mesonotum, legs, and front of first segment of gaster, entirely reddish-yellow; head, scutellum, and remainder of gaster, dark brown.

L. 3.7mm. . . . Sub-sp. *corticalis*, Sch., var. with longer spines.

From the ♀ found at Pangbourne.

Mesonotum coarsely striated longitudinally, middle of scutellum smooth and shining. Spines medium length or long.

Colour varying from yellow to dark reddish brown; antennal club brownish, middle of femora brown.

L. 3.6mm.-4.5mm. . . . Sub-sp. *affinis*, Mayr.

This description is taken partly from Førel<sup>19</sup> and partly from Donisthorpe's ♀, the only one I have been able to examine. This ♀ is of the dark variety, the whole of the gaster being dark blackish-brown, and the ant measures 3.6mm.

Mesonotum and scutellum finely striated longitudinally. Spines medium, longer than in *unifasciatus*, but not so long as in *nylanderi*. Dark brown; club of antennæ dark blackish-brown, rest of antennæ, mandibles, legs, and sometimes a patch on the front of the first and second segment of gaster, yellow.

L. 3.7mm.-4.0mm. . . . Sub-sp. *tuberum* (*s.str.*), Fabr.

Mesonotum more coarsely striated than in *tuberum* (*s.str.*). Scutellum smooth and shining in centre. Spines rather shorter than in *tuberum* (*s.str.*).

Club of antennæ, top of head and thorax, pedicel, and a broad indistinct band across the middle of the first segment of gaster, and a narrow one across the succeeding segments, dark blackish-brown. Mandibles, legs, and rest of antennæ yellow.

L. 3.6mm. . . . Sub-sp. *tuberum* (*s.str.*), Fabr., var. passing to *interruptus*, Sch.

From two ♀s bred in the nest taken at Seaton.

Mesonotum finely striated longitudinally. Scutellum smooth and shining in centre. Spines long, longer than in *tuberum* (*s.str.*).

Dark brown, often blackish; mandibles, antennæ except the club, legs, and a small indistinct patch on the front of first segment of gaster, yellow.

L. 3.7mm. . . . Sub-sp. *interruptus*, Sch.

Mesonotum finely striated longitudinally. Scutellum smooth and shining in centre. Spines extremely short.

Yellow; club of antennæ, top of head, scutellum, pedicel, middle of femora, and a broad distinct band across the middle of the first segment of gaster, and a narrow one across the succeeding segments, dark brown.

L. 4mm.-4.5mm. . . . Sub-sp. *unifasciatus*, Latr.

(To be concluded.)

## Lepidopterology.\*

By Dr. T. A. CHAPMAN, F.E.S.

The two volumes, one of text and one of plates, constituting the VIIth Fasciculus of the *Lépidoptérologie comparée*, are a splendid monument to the talent and energy of M. Oberthür. It begins with a resumé of the action of the Entomological Congress of 1912, and a criticism of its proceedings and deliberations on the subject of nomenclature, and especially on the question of good figures. Much of this

<sup>19</sup> *F. de la Suisse*, p. 88.

\* *Études de Lépidoptérologie comparée*, par Charles Oberthür. Fasc. VII.

chapter is given in English and German, as well as in French, and so emphasises the point that a figure can be understood in any language, but a description in a foreign tongue may waste much time in translation only to find that is not the one sought.

Then follows a note on *Liphyra brassolis*, with figures of the imago with its emergence scales, and of the eggs, out of which have emerged parasites (Chalcids?), which are also figured.

A record of *Sphinx* hybridisation, by Lieut. G. Grosse of Pilsen, occupies 15 pages; the prominent fact here recorded is that a hybrid *galiphorbiæ* ♂ proved fertile with a ♀ *gallii*. A specimen of the result, named *helenæ*, is figured, and the original account by Lieut. Grosse and a translation of it are given. Lieut. Grosse also reports having bred three other secondary hybrids of *Sphinxes*. These results are very interesting, but fail to be fully grasped, except by those who specialise in these hybrids and know the names given to them, of which a number occur in Lieut. Grosse's paper; no doubt I might, by some research, learn what hybrids precisely *irenae*, *emiliae*, *kindervateri*, etc., may be, but I should understand them at once were they specified as *gallii* × *euphorbiæ*, (*gallii* × *euphorbiæ*) × *gallii*, or as the case may be.

There are more than 100 pp. devoted to the "Distribution and Variation of *C. typhon* in the United Kingdom," by H. Rowland-Brown, with a note of introduction by M. Oberthür, calling attention to the fact that the habitats of many species are being rapidly destroyed, and that such studies as this should be made about each of them before they disappear. He almost takes one's breath away when he points out that all species, not only in Europe but everywhere, should be studied with equal care, that this is only an essay on distribution and variation in a fraction of the area of the species, and that many questions of biology, of symbiosis, of parasitism, have to be similarly treated in each case. Something of the Life-history of *typhon* is, however, added to the paper from Zeller, and by Mr. Frohawk; these additions, however, have no illustrations. The three plates, with 36 beautiful figures of the imagines, give a very complete view of the British forms of the species, notwithstanding that it is one in which hardly two specimens are quite alike.

Section VI. is a further addition to the research into the *alveus* group of *Syrichthus* (*Hesperia*), in which Prof. Reverdin is doing such good work; this is illustrated by two plates. M. Oberthür inclines to believe that *S. ruffelensis* is a good species. The short notice of Larche is of much interest to one who has collected there.

Section VII. introduces a study of the races of *Zegris eupheme*, Esp. by M. S. Alphéraky, with interesting reference to various side issues, and is illustrated by a plate drawn by a Russian lady artist. In referring to all these plates, it is difficult to suppress adjectives of approval of their excellence, but the plates are so uniformly of the first quality that to do so would become too monotonous.

Section VIII. continues, in correspondence with 33 plates, the revision with figures of Guenée's species of Geometers; it includes, however, a number of other species and varieties. It deals with the groups, of which prominent genera dealt with are *Nyssia*, *Biston*, *Hemerophila*, *Cleora*, *Boarmia*, *Tephrosia*, *Hypochroma*, *Gnophos*, and *Psodos*.

The notice of the genus *Ithysia* is identical with that in the *Entomologist*, 1912.

The remaining 220 pages of the Volume are occupied by an account of "The Hybrid *Bistoninae*," by J. W. H. Harrison, B.Sc., in English and French, in which he deals exhaustively with nine first crosses and four secondary hybrids between *Lycia hirtaria*, *Poecilopsis pomonaria*, *P. lapponaria*, *Ithysia zonaria*, and *I. graecaria*.

Though several of Mr. Harrison's hybrids have been obtained previously, his essay is practically entirely founded on his own experiments and observations, and not on reports culled from magazines, etc. The result is to give him a grasp of the whole subject hardly obtainable in any other way. His concluding remarks occupy fourteen pages and cannot be abbreviated with advantage, but we may mention several of the more important facts which he specially discusses, these are (p. 467):—1. The great constitutional strength of the larvæ. 2. The variation in sterility of the different primary hybrids reared. 3. The apparent dominance of *zonaria* and *graecaria* characteristics in the products. 4. Independent of the last point, the greater influence of the male in determining the appearance of the hybrids. 5. The distaste of the hybrid larvæ for such foodplants as yarrow, trifolium, etc., *i.e.*, the foodplants of the *Ithysia* group. 6. The failure to yield females observed in certain crossings. 7. The gynandromorph nature of certain of the secondary hybrids.

Not the least valuable of the Plates in Fasc. VII., are 111 Photographs illustrating the Exploration of Algeria (Aures) by Harold Powell, in 1912. Nine of these illustrate the devastations of *Liparis dispar* on Evergreen Oaks, one interesting point as to these is that one tree may be denuded of leaves and the next one hardly touched, and another that a tree denuded of leaves and looking dead has three weeks later a new and vigorous burst of leaves. The thirty-two following plates are of living larvæ and imagines of which the most striking are perhaps these of *H. suberifolia*, whose outline renders it barely visible, those of *Pygaera powelli*, Obthr., and of *C. nonna*. The remainder illustrate typical aspects of country and vegetation, and of habitats of particular insects, many of them, though suggesting desert conditions, obviously promise interesting entomologising.

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## SCIENTIFIC NOTES AND OBSERVATIONS.

FERTILE QUEEN OF *LASIUS UMBRATUS* ACCEPTED BY QUEENLESS COLONY OF *LASIUS ALIENUS*.—On August 27th, 1913, at Woolacombe, Devon, I took about 50 workers, about 50 pupæ, and 80 to 100 eggs, of a nest of *Lasius alienus*. These were placed in a "Crawley" nest the same day. The nest from which they came was situated on the golf links, and could only have been a few yards above the sea at high tides. By the end of August all the pupæ had fully developed.

About August 15th I had taken a queen of *Lasius umbratus* just after swarming; she was already minus her wings. This queen was the subject of the following experiment:—

September 15th.—Introduced the *umbratus* queen into the *alienus* nest. She showed no special nervousness, but nevertheless entered slowly and cautiously. Neither were the *alienus* workers much excited, but one seized the queen by an antenna for about one minute. The queen was introduced at 8 p.m.

8.5 p.m.—No special notice of queen being taken; any passing ant examines her carefully, but without hostility; no worker has saluted.

8.10 p.m.—A worker holding queen by antenna.

8.15 p.m.—The queen apparently fully accepted, as several workers are around her, and saluting her. Other workers in the near neighbourhood also giving the usual saluting jerk.

September 30th.—Changed the colony to a new and larger "Crawley" nest; the workers dragged the queen in by her jaws, showing the greatest solicitude for her.

November 11th.—For some time the queen has been surrounded by a cluster of workers, whilst another cluster surround their own larvæ, of which there are now 80 to a 100, the eggs having hatched.

(The species of the above ants was very kindly determined for me by Mr. W. C. Crawley, and, at the time of writing, the nest is in a thoroughly satisfactory condition, February 15th, 1914).—D. W. PINKNEY, 8, Burgess Hill, Finchley Road, N.W.

## NOTES ON COLLECTING, Etc.

C. EDUSA AB. VELATA, RAGUSA.—In working out my 1913 captures of the above species with Seitz *Palaearctic Butterflies*, Vol. i., I came across the description of the above aberration on page 68 which reads:—"ab. *velata*, Ragusa, from Sicily, are specimens in which the black marginal band is shaded with greenish scaling, appearing covered with a veil." As this so admirably describes the condition of freshly emerged ♂ *C. edusa*, I think this aberrational name should be dropped. I took a number of ♂ specimens in this condition last year at Eastbourne, and in a long series bred by Mr. E. P. Sharp all the ♂s had this scaling on the marginal band of the forewings only.—C. W. COLTHRUP.

RECORDS OF COLEOPTERA FOR 1913.—The following record of Coleoptera captured during the last year may be of interest. At Lyme Regis, in January, 1913, I took a single specimen of *Leptacinus parumpunctatus* in stack refuse. At Crynant, Glamorgan, in March, were found *Paracymus nigro-aeneus*, *Rhizophagus cribratus* and *Gyrophæna strictula*. In April on Llangenydd Burrows in the Gower peninsula of Glamorgan, I took *Pachylopus maritimus*, *Psammobius sulcicollis* and three specimens of *Philonthus pullus*. Mr. Tomlin informs me that he had previously taken this last species at Candleston in the same county. At Rhosilli, also in the Gower, I found *Deliphrum tectum* and *Caulotrypis aeneopiceus* in April. In Barrowdale, Cumberland, in July, were found *Megacronus cingulatus*, *Geodromicus nigrita*, *Cantharis paludosus*, *Rhagonycha unicolor* and *Limnobaris T-album*. At Buttermere, Cumberland, in August, I took single specimens of *Clinocara tetratoma* and *Pterostichus parumpunctatus*. I may add that in 1914 I have taken *Stenolophus respertinus*, *Bembidium clarhi*, *Pterostichus gracilis* and *Tachyusa atra* at Hendon and *Psammoechus bipunctatus*, *Hippuriphila modeeri* and *Thryogenes scirrhosus* at Rickmansworth.—J. W. ALLEN.

THE SEASON.—I saw in Reigate to-day, a real summer day after a wintry spell, a *Fanessa io* disporting itself, and a *Pieris rapae* ♀ on the wing, as well as a humble-bee, *Bombus terrestris*, rifling the flowers of blackthorn, which she clearly believed to be open, though it was difficult to agree with her.—T. A. CHAPMAN. March, 31st, 1914.

A *Celastrina argiolus* was seen riding in a tram car in S.E. London to-day by Mr. J. P. Barrett, and was arrested for its temerity.—H.J.T., *April 1st.*

Larvæ of *Abraxas grossulariata* are feeding freely and in abundance in the open in gardens in S. London.—H.J.T., *April 2nd.*

## CURRENT NOTES AND SHORT NOTICES.

The Entomological Club and other Entomologists were entertained by Mr. H. St. J. K. Donisthorpe, at 58, Kensington Mansions, on March 3rd. Tea was served by Mrs. Donisthorpe to her guests at 6.30, and at 8 o'clock a large party sat down to supper, and it was after eleven when they separated after a most enjoyable evening. The Members of the Club present, in addition to the host, were Messrs. R. Adkin, H. Rowland Brown and A. Sich, with the Honorary Members, Messrs. J. E. Collin and A. H. Jones; and the following guests were also present:—Messrs. R. Beck, C. Best-Gardner, G. T. Bethune-Baker, W. C. Crawley, J. H. Durrant, E. E. Green, H. Maxwell-Lefroy, Prof. E. A. Minchin, R. S. Mitford, C.B., Rev. F. D. Morice, E. Step and Rev. G. Wheeler.—G.W.

The National Trust for the Preservation of Objects of Historic Interest or National Beauty has acquired the option to purchase Highdown (locally pronounced "Hydon") Heath, including the summit of a Highdown Ball for £5,500. The total area of this beautiful stretch of woodland and heath, rising to over 600 ft. high and commanding magnificent views, is about 90 acres, so that the price is very reasonable, taking into account the amount of building in progress round about and the fact that Godalming is only three miles away. The Trustees of the Octavia Hill Memorial Fund have agreed to contribute £1,200 towards the cost in memory of the late Miss Octavia Hill. The option expires in June next, and it is urgent that the total amount be raised as soon as possible. The National Trust is appealing for funds and a local committee is at work with the same object. The scheme is one which should appeal to all naturalists, who will, it is hoped, respond generously both as Societies and as individuals.—E.B.B.

Even entomology is getting topical. Mr. Hugh Main, at a recent meeting of the Entomological Society of London, in the course of a lantern demonstration illustrating the investigations into the life-history of the ant-lion, which Mr. K. G. Blair and himself had made last year in Switzerland, described a method of "forcible feeding" of the gravid females, which had proved quite successful in keeping them alive and in a condition sufficiently healthy for ova to be deposited. Subsequently Mr. Synnerton described a somewhat similar method which he had adopted with equal success in the case of butterflies in Central Africa.

We should like to call our readers' attention to the forthcoming exhibition of the South London Entomological and N. H. Society on April 23rd. In addition to its annual exhibition, which takes place in the late autumn, this Society for the past two years has held a special exhibition of insects of all orders other than lepidoptera. As usual visitors will be cordially welcomed, and it is hoped that members and

their friends will succeed in bringing together a large and interesting collection of exhibits on that evening.

M. J. Poskin is again President of the Société Entomologique Namuroise with M. Lambillion as Vice-president. M. le baron Georges de Crombrugge de Picquendaele is the Honorary President.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*October 1st, 1913.*—Herr Wilhelm Junk, 68, Sachsische-strasse, Berlin, W. 15, was elected a Fellow of the Society.—HAPLOTHORAX BURCHELLII.—Mr. H. F. Bartlett exhibited a specimen of *Haplothorax burchellii* found under a stone on the lower part of Flagstaff Hill, St. Helena, on March 25th, 1913. LARVAL AND IMAGINAL EMBIIDÆ FROM TUNISIA AND ALGERIA.—Mr. P. A. Buxton exhibited specimens (sp. as yet undetermined) from various localities in Tunis and Algeria and from the coast to south of the Atlas Mountain. REMARKABLE COLEOPTEROUS PALPI.—Mr. E. E. Green exhibited a Drilid (?) beetle, from Ambalangoda, Ceylon, with remarkable elongate spatulate mandibular and maxillary palpi. BRACONID SILK.—Mr. W. J. Lucas exhibited, on behalf of Mr. G. T. Lyle, some silk wound from a Braconid cocoon, together with specimens of the cocoons themselves. CONIOPTERYGID COCOONS.—Mr. C. B. Williams exhibited specimens of the cocoons of the three British Coniopterygids. MIMICRY IN RELATION TO GEOGRAPHICAL DISTRIBUTION.—Dr. F. A. Dixey exhibited several boxes of Lepidoptera in illustration of the geographical relations in Mimicry. PAPILIO DARDANUS, BROWN, BRED IN S.E. RHODESIA BY MR. C. F. M. SWYNNERTON.—Prof. Poulton read an extract from a letter written from Chirinda, S.E. Rhodesia, August 28th, 1913, by Mr. C. F. M. Swynnerton, and said that Mr. Swynnerton's breeding experiments showed that the *hippocoon* form at Chirinda in S.E. Rhodesia is, genetically, just as predominant as the *cenea* form is in the Durban district. AN IMPORTED JAPANESE LOCUSTID.—Mr. W. J. Lucas exhibited, on behalf of Dr. Burr, a specimen of *Diastrammena marmorata*, Haan, a Stenopelmatid Locustid from Japan, which occurs alive in Relf's Nursery at St. Leonards. ARASCHNIA LEVANA IN THE FOREST OF DEAN.—Mr. H. Rowland-Brown, brought for exhibition an example of *Araschnia levana*, sent him by Mr. T. Butt Ekins of Penarth, who said that he had captured it at the end of May this year on the outskirts of the Forest of Dean. AN ABERRATION OF COLIAS EDUSA.—Comm. J. J. Walker exhibited a ♀ *Colias edusa*, F., taken by himself in the Isle of Sheppey, August 21st, 1913, in which the margin of the hindwings was almost entirely clear golden-yellow. AN IMPORTED SYNTOMID.—Comm. Walker also exhibited a specimen of a *Ceramidia* near *C. chloroptegia*, Druce, taken by a lady in a fruiterer's shop in North Oxford, no doubt imported with fruit. SCARCE AND ABERRANT COLEOPTERA.—Comm. Walker also exhibited the following Coleoptera:—(1) A short series of the very rare Halticid beetle *Psylliodes cyanoptera*, Ill. (2) A specimen of *Coccinella 10-punctata*, L., var. *confluens*, Harr., and another very curious aberration of the same beetle with golden-yellow spots. (3) The very rare ♂ of *Malthodes atomus*, Thoms. (4) A monstrosity of *Haliphus confinis*, Steph., with three perfectly developed tarsi on the right-hind leg. A COLLECTION OF CATOCALIDS.—Mr. Dadd exhibited a collection of

Catocalids, containing most of the European species. Mr. Durrant exhibited, on behalf of Mrs. W. C. Boyd, a series of specimens of British Lepidoptera of great historical interest which she is presenting to the British Museum. ABERRATIONS OF LEPIDOPTERA FROM THE GUILDFORD DISTRICT.—Mr. H. O. Holford exhibited a specimen of *Coenonympha pamphilus* of abnormally large size, and a ♀ of *Ematurga atomaria*, almost without markings. BUTTERFLIES FROM THE TYROL.—Mr. D. Pearson showed a drawer of butterflies taken this summer in the Tyrol, including specimens of the large Tyrolean form of *Polyommatus amandus*, and a series of *Erebia euryale* var. *ocellaris*. The following papers were read:—"Illustrations of Specific Differences in the Saws of Female Dolerids," by Rev. F. D. Morice, M.A., F.E.S. "Additions and Corrections to my List of the *Rhopalocera* of Trinidad (1904)," by W. J. Kaye, F.E.S. "On the Urticating Properties of *Porthesia similis*," by H. Eltringham, M.A., F.E.S.

October 15th, 1913.—The following gentleman were elected Fellows of the Society:—Messrs. Edward O. Armitage, Geelong, Victoria, Australia; F. W. Cragg, M.D., Capt. I.M.S., King Institute of Preventive Medicine, Saidapet, Madras; Walter James Dow, The Cottage, Lynwood Avenue, Epsom; Leslie John William Newman, Dept. of Agriculture, Perth, W. Australia. THE EVOLUTION AND DISTRIBUTION OF ASYMMETRICAL INDO-AUSTRALIAN PASSALIDÆ.—Mr. F. H. Gravely, who was present as a visitor, exhibited lantern slides illustrating the evolution of asymmetrical from symmetrical forms of Indo-Australian *Passalidæ*. A NEW GENUS OF MYMARIDÆ.—Mr. F. Enock exhibited photographs of the ♂ and ♀ of a new Mymarid, which he had named *Neurotes iridescens*. It is closely allied to Holiday's genus *Limacis*, and he had placed it at the head of the British *Mymaridæ*. RARE MYRMECOPHILOUS DIPTERA.—Mr. Donisthorpe exhibited specimens of the rare myrmecophilous Diptera:—1. *Platyphora lubbocki*, Verrall, two specimens bred out of his observation nest of *Formica sanguinea*. He expressed his opinion that his two specimens had hatched from pupæ of *F. fusca* given to the *sanguinea* colony as slaves. 2. *Enigmatias blattoides*, Meinert. A specimen of this curious little apterous Dipteron was taken in a nest of *F. fusca* at Nethy Bridge, July 21st. 3. *Peyerimhoffia brachyptera*, Kieff., taken in a nest of *Lasius alienus* on Lundy Island, June 9th. SCOTCH ZYGÆNIDS.—The Hon. N. Charles Rothschild exhibited specimens of *Anthrocera (Zygæna) filipendulæ* from the Isle of Lismore, Scotland, and an example resembling them from Folkestone. CHRYSOPHANUS DISPAR, VAR. RUTILUS. Also specimens of *Chrysophanus dispar* var. *rutilus* from Hungary and other localities. CHRYSOPHANUS DISPAR, VAR. RUTILUS AND FORMS OF AGRIADES CORIDON.—Mr. H. Rowland-Brown brought for exhibition examples of *Chrysophanus dispar* var. *rutilus*, captured by him in the marshes of the Gironde below Bordeaux, to compare with the much larger form taken in Hungary by Mr. N. C. Rothschild. He also exhibited specimen of *Agriades coridon* var. *syngrapha*, Kef., taken in the Chiltern Hills on August 9th, 1913, being the first ever recorded therefrom; with several examples of the variety taken by him at Dompierre-sur-Mer, Charente-Inférieure, and an example of the form *semisyngrapha*, Tutt. SMERINTHUS POPULI.—Mr. L. W. Newman exhibited four gynandromorphous specimens of *Smerinthus populi*, three with the left side ♀ and right side ♂, and one *vice versa*. AGRIADES CORIDON.—Mr.



Newman also exhibited four curious ♀ specimens of *A. coridon*, three having the right pair of wings much smaller than the left and heavily dusted with blue scales, the left side being normal; also one specimen similar but *vice versa*. GYNANDROMORPHOUS GONEPTERYX CLEOPATRA.—Capt. E. B. Purefoy exhibited a short series of *G. cleopatra* which included two gynandromorphous specimens. AN IRISH PTEROSTICHUS ATERRIMUS.—Dr. G. W. Nicholson showed a specimen of *Pterostichus aterrimus*, Pk., from Cloverhill, Co. Cavan. The only other Irish record is from the Co. Cork. ABERRATION OF TELCHINIA VIOLÆ.—Mr. E. E. Green exhibited a transfer of a remarkable aberration of *Telchinia violæ*, Fab., taken by Mr. G. Halkett, in the district of Kurunegala, Ceylon. He also showed transfers of the normal form. PARASITISED JASSIDÆ.—Also *Jassidæ* from Ceylon, parasitised by an undetermined species of *Gonatopus*. ACANTHOCINUS EDILIS FROM BOW.—The Rev. G. Wheeler exhibited on behalf of Miss Macbride a number of living specimens of the Longicorn beetle *A. aedilis*, L., taken at Bow. BUTTERFLIES FROM THE SUDAN.—Dr. Longstaff exhibited on behalf of Mrs. Waterfield, a box of Sudanese Pierine Butterflies taken by her, and on which she contributed notes. INSECTS BRED BY MR. W. A. LAMBORN FROM THE NESTS OF HYMENOPTERA ACULEATA.—The material of the following observations made at Moor Plantation was exhibited by Prof. Poulton. 1. A male *Megachile cincta* (September 17th), and the Cantharid beetle *Zonitis eborina*, Fabr. (September 17th). "A nest made by *Megachile* was found in an outhouse on June 5th, 1913. A *Megachile* emerged on September 17th, and a bright pink beetle left the same cell on the same day." 2. *Odynerus* sp. inc. (September 17th):—"A large mud nest, which I thought belonged to *Megachile*, was found in an outhouse July 24th. A small wasp emerged on September 17th." 3. A female *Mutilla floralis*, Klug.—"This female Mutillid emerged July 26th, from a mud nest, probably that of *Sceliphron spirifex*, L., found July 14th." 4. *Chrysis* (*Tetrachrysis*) sp. inc. (July 26), *Chrysis* (*Tetrachrysis*) *lyncea*, F. (August 3rd), and *Sceliphron spirifex*, L., ♀ (July 31st). All three insects emerged at the recorded dates from "mud nest of *S. spirifex*, found in my store July 20th."

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October 20th, 1913. EXHIBITIONS.—Mr. W. Mansbridge brought a long bred series of *Hadena glauca* from Burnley, some of which shewed a strong melanic tendency; also from Burnley the melanic variation of *Ematurga atomaria*, *Hyria muricata*, purple form, and *Coenonympha typhon* var. *rothliebii* from Witherslack; *Nyssia zonaria* from the Crosby Sandhills and the insects captured on the occasion of the Society's Field Meeting at Mold, on June 7th, 1913, including *Lobophora viretata*, *Cnephasia musculana*, *Capua favillaceana*, *Argyrolepis hartmanniana* and *Agriopsis aprilina* (larva). Mr. R. Tait showed a long and variable series of the beautiful melanic form of *Boarmia repandata* from Pennaenmawr, also bred *Agrotis lucerneae* from the same district; varieties of *Abraeus grossulariata*, including ab. *varleyata* bred from various localities in 1913; *Aplecta nebulosa* var. *robsoni* and *Geometra papiliomaria* from Delamere; *Hecatera serena* and *Calligenia miniata* from Sussex. Mr. Tait also gave an account of his collecting holiday in Sussex, from which it appeared that Lepidoptera had been as difficult to obtain in the South of England as in the North during the past summer. Mr. Johnson exhibited a long and fine series of

*C. typhon*, including some very dark forms from Witherslack, also *Acidalia fumata*, *Nisoniades tages*, and *Aricia (Lycaena) medon (astrarche)* from the same place. Dr. P. F. Tinne, various species of autumn Lepidoptera from the North of Ireland, including a nicely varied series of *Cidaria truncata*, several being the var. *centumnotata*. All the members present reported a very poor season from a collector's point of view.

November 17th, 1913.—ELECTIONS.—Messrs. W. Bowater, B.D.S., F.E.S., Brandon Lodge, Russell Road, Moseley, Birmingham, and Arnold W. Hughes, 33, Dacy Road, Everton, Liverpool, were elected members.—PAPER.—Dr. P. F. Tinne read a paper entitled "Insects concerned in the Pollination of Plants," in which he dealt very thoroughly with the part played by insects in this important process. Interesting examples were given, chiefly drawn from the Hymenoptera and Lepidoptera, as to the methods of the various species; he described the structure of the floral organs of plants which facilitated the operations of the insect principally concerned in the pollination, and also indicated how unwelcome or inefficient visitors were repelled and imprisoned, or otherwise prevented from interfering with the process. Mr. W. A. Tyerman, a fine bred series of *Notodonta dromedarius* var. *perfusca*, *Dianthoecia nana*, *D. cucubali*, and *Phibalapteryx vittata* from the Southport district, also *Sphinx convolvuli*, *Nemophila plantaginis*, and *Callimorpha dominula*. A specimen of *Chaerocampa neri* captured by a farmer near Ainsdale, on September 14th, 1913; it was in a very dilapidated condition, but easily recognisable, and it forms a very interesting addition to our county list. COMPARISON OF *T. VARIATA* AND *T. OBELISCATA*.—Mr. W. Mansbridge showed a short series of *Thera variata*, and pale forms of *T. obeliscata* for comparison.

December 15th.—ANNUAL MEETING of the Society held at the Royal Institution, Co quit St., Liverpool, the President, Mr. F. N. Pierce, in the chair. ELECTION.—Mr. John Wilding, 52a, Orrell Lane, Liverpool, was elected a member. ELECTION OF OFFICERS.—The following members were elected Officers and Council for next year:—*President*, R. Wilding. *Vice-Presidents*, F. N. Pierce, F.E.S., R. Newstead, F.R.S., M.Sc., J. R. le B. Tomlin, M.A., F.E.S., H. R. Sweeting, M.A. *Hon. Treasurer*, J. Cotton. *Librarian*, F. N. Pierce. *Hon. Secretary*, Wm. Mansbridge, F.E.S. *Council*, L. West., H. S. Leigh, F.E.S., A. E. Gibbs, F.L.S., F.E.S., A. W. Boyd, M.A., F.E.S., C. E. Stott, P. F. Tinne, M.A., S. P. Doudney, Wm. Webster, R. S. Bagnall, F.L.S., F.E.S. PRESIDENTIAL ADDRESS.—Mr. F. N. Pierce delivered the Presidential Address taking for his subject "The Hairs and Scales of Lepidoptera." He described in detail his original observations upon this branch of insect morphology and illustrated the same by many drawings and microscopic preparations. In the course of his remarks he described a difference he had found between certain scales in *Tephrosia crepuscularia* and *T. biundularia* and stated that this was the only difference of a structural character he had been able to discover in these two species. A RECORD FOR THE NORTH OF ENGLAND.—Mr. R. Wilding brought a specimen of *Eubolia bipunctaria* for exhibition and stated that it was taken by himself so long ago as July, 1880, but he had never before recorded it. Captured at West Kirby, this is the second record of this unlikely moth for our two counties. COLOUR PHOTOGRAPHS OF LEPIDOPTERA.—Dr. J. Cotton showed a number of colour photographs of Lepidoptera by the Paget process, and pointed out the advantages of these plates over the older processes.

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Communications have been received or have been promised from Messrs. G. T. Bethune-Baker, G. Wheeler, R. S. Bagnall, C. W. Colthrup, A. Horne, H. St. J. K. Donisthorpe, F. W. Frohawk, Dr. Burr, Dr. Chapman, H. J. Turner, C. W. Crawley, C. P. Pickett, etc., with Reports of Societies and Reviews. Several more plates have been promised to illustrate articles.

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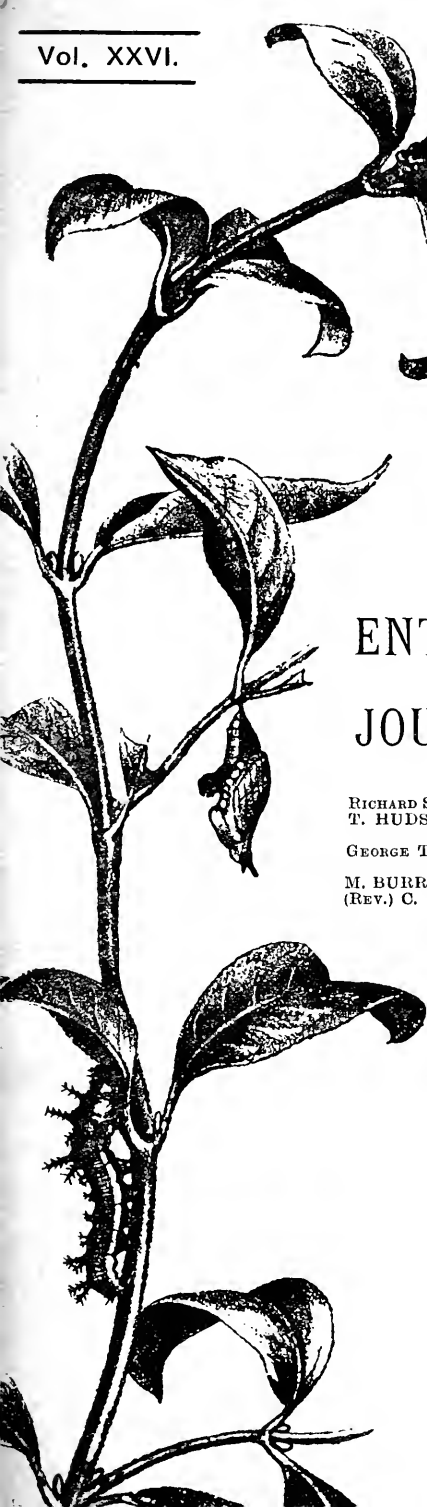
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Vol. XXVI.

No. 5.



THE  
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AND  
JOURNAL OF VARIATION

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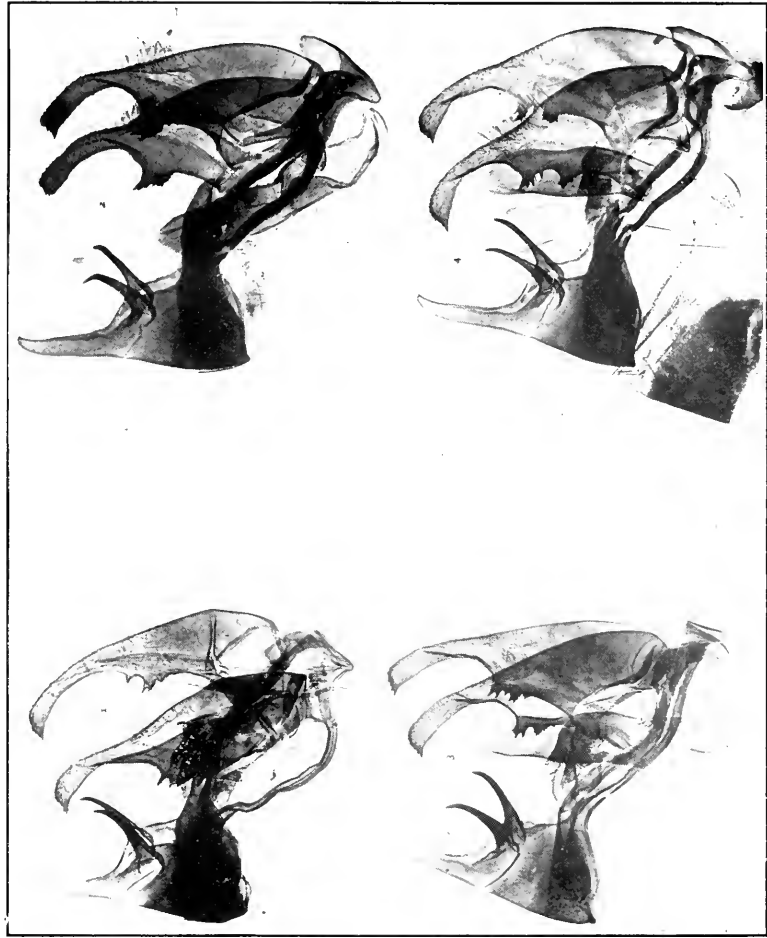
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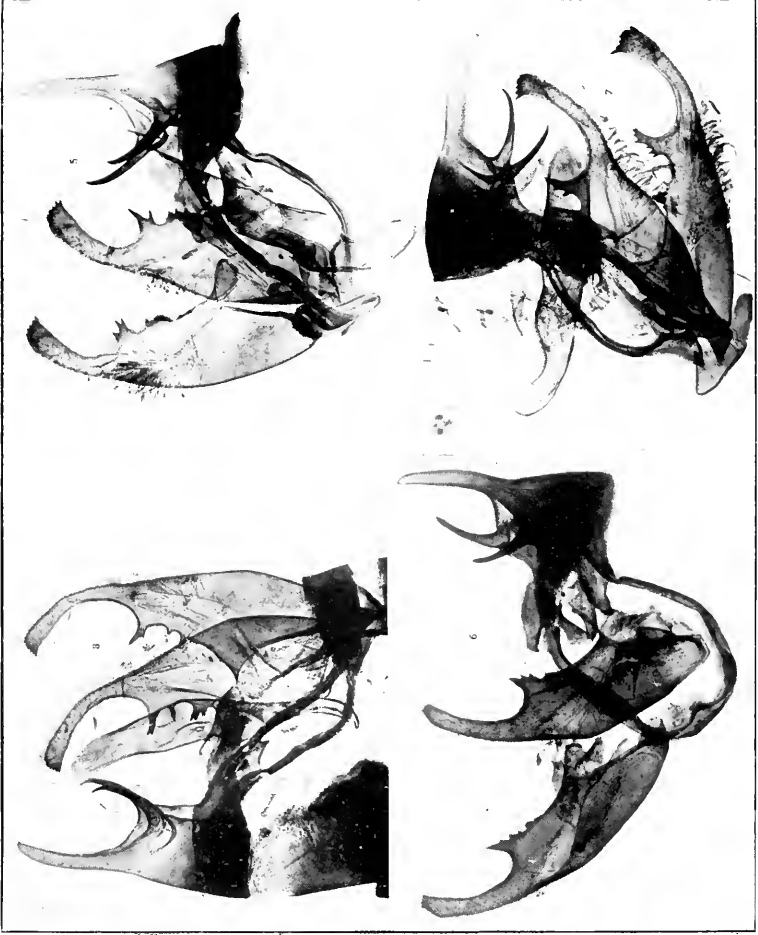


MALE APPENDAGES OF *ERIIHA LEFEBVREI* (CANIGOU),  $\times 16$ .

Photo, F. N. Clark.







MALE APPENDAGES OF *EREBIA LEFEVREI*.

*The Entomologist's Record*, 5, CANIGOU. 6. ♀. 7, 8, GAVARNIE, ×16.

Photo, F. N. Clark.



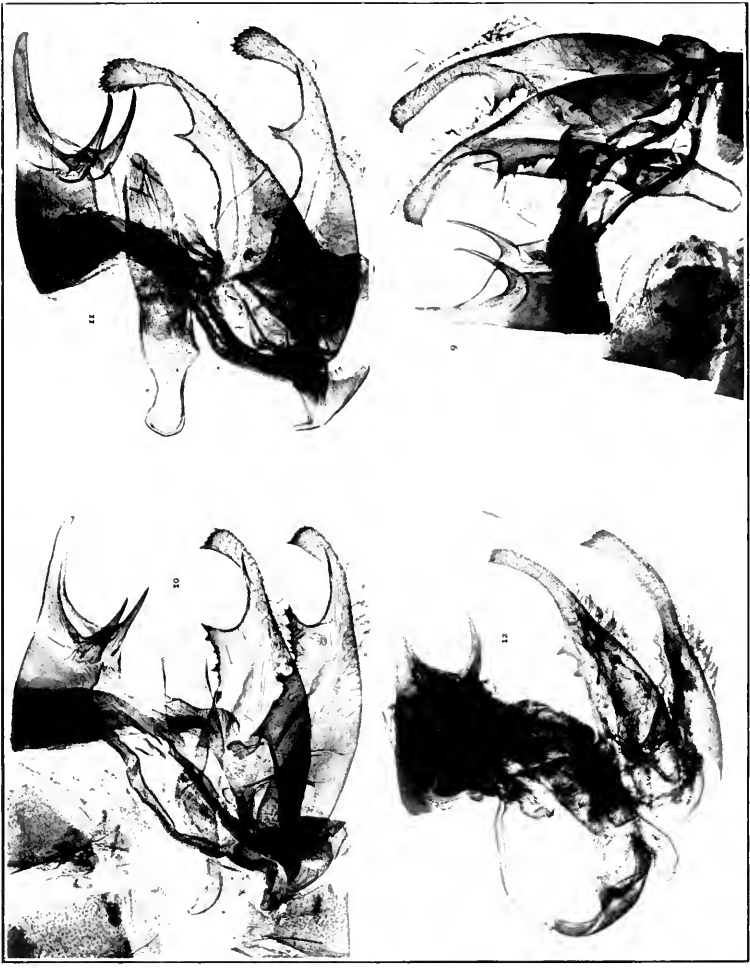
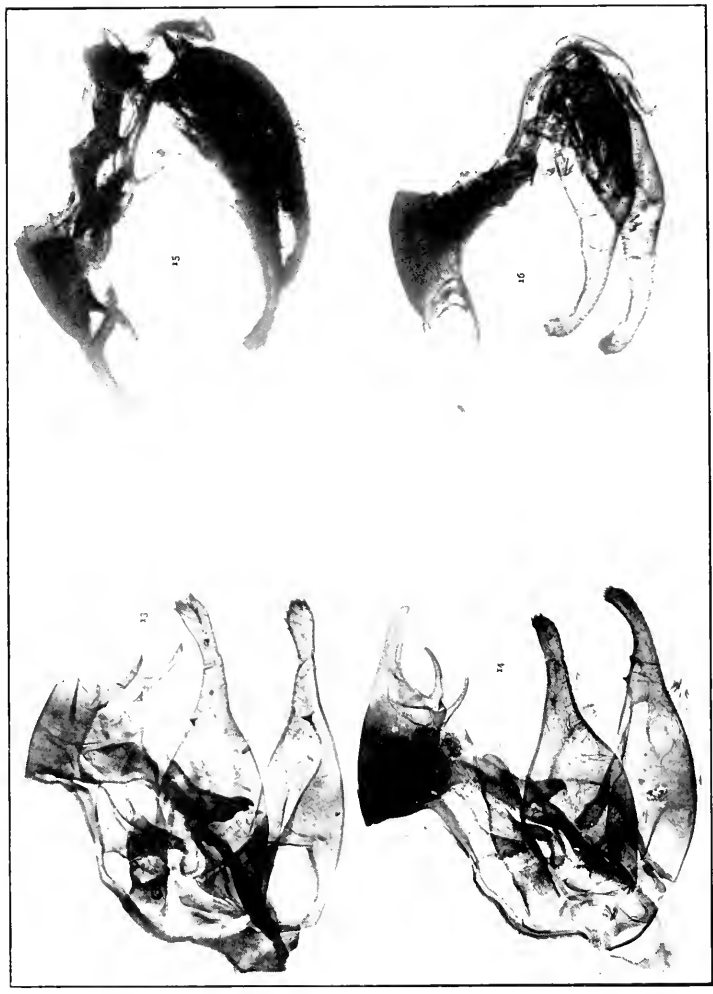


Photo. F. N. Clark.

MALE APPENDAGES OF EREHIA.

9, LEFEVREI (GAVARNIE). 10, ASTUR (PICOS). 11, SCIPIO. 12, PROE,  $\times 16$ .

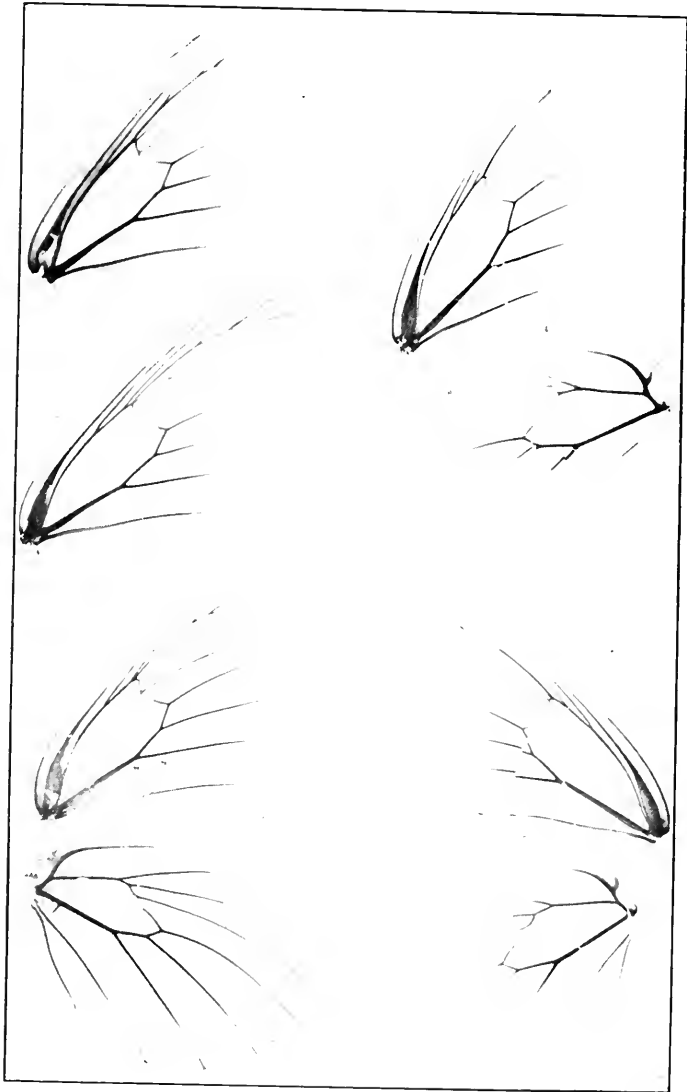




MALE APPENDAGES OF EREBIAS.  
13, 14, 15, MELAS. 16, NERINE.

Photo. F. S. Clark.





*Photo. F. N. Clark.*

NEURATION OF *EREBIA*, 1, 2, 3, *LEFEBVREI*. 4, 5, *MELAS*.





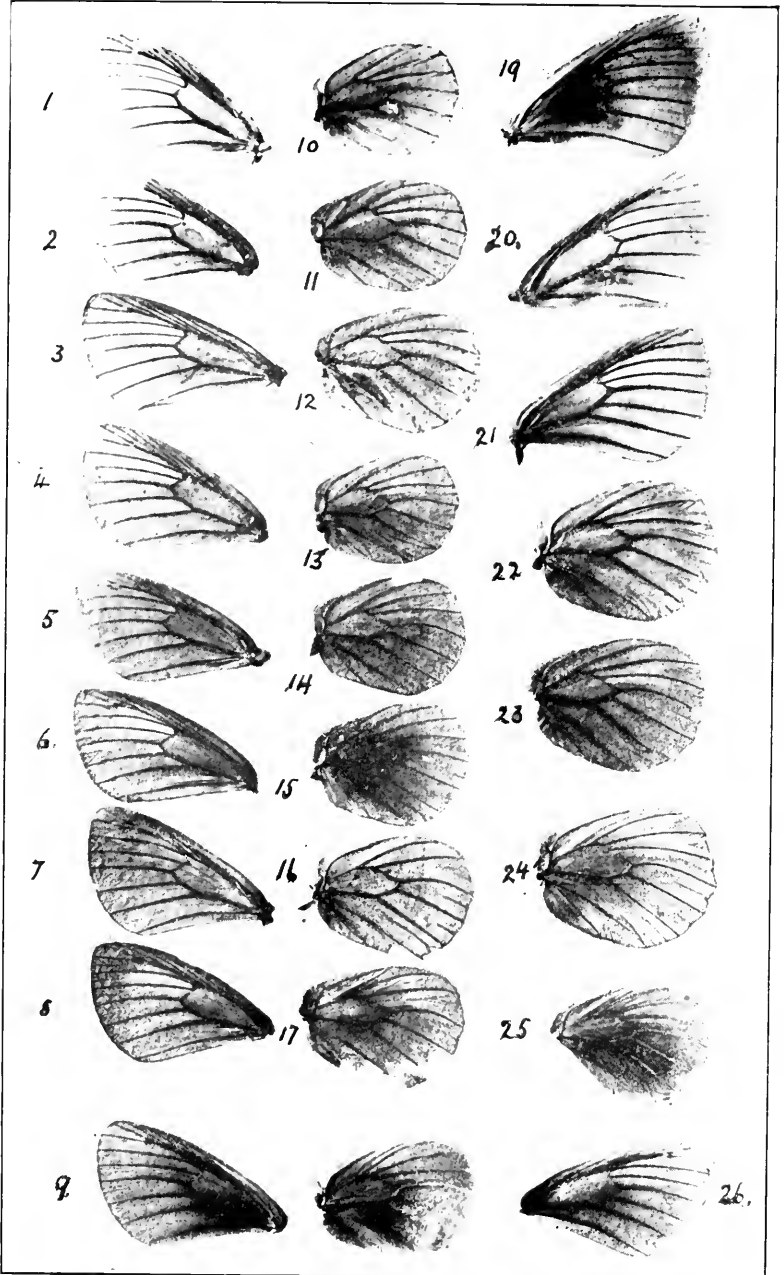


Photo. F. Erismann.

FIGS. 1-8 & 10-17 *E. MANTO*. FIGS. 19-24 *E. GAVARNIENSIS*.

FIGS. 9, 18, 25, 26, *E. GEME*.

**Erebia lefebvrei, Bdv., on Canigou.** (*With five plates.*)

By T. A. CHAPMAN, M.D., F.E.S.

Mr. Bethune-Baker has afforded me the opportunity of examining a number of specimens of *Erebia lefebvrei* taken by him on the Canigou in 1912. He remarked about them that it was practically impossible to distinguish most of these specimens from *E. melas* from Greece. Staudinger makes the same remark as to the form *astur* in his *Catalog.* (1901). To this I could only answer that I felt no reasonable doubt that they were *lefebvrei*, and that they could hardly possibly be *melas*, but must confess that I said this on the assumption that all *Erebia* of this facies in the Pyrenees were *E. lefebvrei*, that I had not, however, examined the Canigou form, and that they might conceivably be distinct, though almost certainly not *melas*. In the result of an examination of the ♂ appendages and of the neurulation, they agree absolutely with *E. lefebvrei* and differ, of course, as absolutely as it does from *E. melas*.

I presume the reason Mr. Bethune-Baker referred the matter to me was, that he has a sufficiency of other irons in the fire, as his authority on matters of anatomical detail is unapproachable.

I overhauled some of my specimens made some sixteen years ago, and examined also the appendages of some of the *lefebvrei* from the Canigou and also of *astur* from the Picos de Europa.

The appendages of *lefebvrei* ♂ present so much variation in the armature of the clasps, and Mr. Clark has made such excellent photographs of many of them, that I cannot refrain from presenting figures of some of these. (Plates VIII.-IX.) There is no doubt that many times the number would not show any two precisely alike. I have never met with an exact duplicate. I put with them photographs of the appendages of *E. scipio*, and of *E. pronœ*, which species make the nearest approach in this matter to *E. lefebvrei*.

*E. scipio* is very like *E. lefebvrei*, the shoulder of the clasp is less prominent in reality, but is more so in so far that the body above it is more slender. The head in *E. scipio* is rounded and surrounded by spines, in *E. lefebvrei* it has a terminal larger spine, after the manner so pronounced in *E. stygne*. *E. pronœ* is very similar, it has the terminal head spine like *E. lefebvrei* (and *stygne*), but the body and shoulder of the clasp are much lower; *E. neoridas* is almost identical. To return to the relation of *E. lefebvrei* to *E. melas*, I am tempted to quote the chapter on "Snakes in Ireland," and say there is none. In *melas* we have no *stygne*-like spine on the head of the clasp and there is no shoulder, it is represented by one very small spine, sometimes by a second, rarely by none, and then it is indistinguishable from *nerine*, which sometimes has, more usually is without, this spine. In the figure the more usual forms of the head are as in figs. 13 *melas*, 16 *nerine*, but *melas* fig. 14 is seen to have the spines on the head disposed precisely as in *nerine* fig. 16, Plate XI. *Nerine* is, in fact, not a distinct species, but a geographical race of *melas*, more probably *reversa*, but *melas* is the older name.

The neurulation in *Erebia* is tolerably uniform and there is nearly as much variation within the limits of one species as between distinct species. The difference between *lefebvrei* and *melas* is slight, and not constant. In the photographs on plate XII. it is not easy to say there

is any difference between the forewings of fig. 2 *lefebvrei*, and fig. 4 *melas*. These are in some degree exceptional. In *melas*, fig. 4 is a fairly usual example and agrees with fig. 5 in having veins 6, 7, and 10 well separate at their origins. In *lefebvrei*, fig. 2, it will be seen that though vein 10 is well separate, vein 6 is not. The most usual form in *lefebvrei* is shown in fig. 3, in which veins 7 and 10 originate almost together. But frequently they quite coalesce at their origins and vein 10 may arise from vein 6, even a considerable way along it as in fig. 1. In *melas* the origin of vein 10 is fairly constant as in the figures presented. In the hindwing there is no appreciable difference unless it be that, similarly to the forewing, veins 6 and 7 are rather closer together in *lefebvrei*.

The essential difference between the two species then is, that in *E. melas*, the forewing has veins 6, 7, and 10, well separate in origin from the cell, and varies little and rarely from that arrangement.

*E. lefebvrei* may be almost the same as *E. melas* but rarely, usually either vein 6 or vein 10 arises in common or almost in common with 7 or even arises out of that vein; it is more variable than *melas*.

## EXPLANATION OF PLATES.

Male appendages  $\times 16$ .

Plate 8.—Figs. 1, 2, 3, 4,	<i>E. lefebvrei</i> (Canigou).
Plate 9.—Fig. 5,	„ „ „
„ —Fig. 6,	„ „ „
„ —Figs. 7, 8,	„ „ (Gavarnie).
Plate 10.—Fig. 9,	„ „ „
„ —Fig. 10,	<i>E. lefebvrei</i> ab. <i>astur</i> (Picos de Europa).
„ —Fig. 11,	<i>E. scipio</i> (Larche).
„ —Fig. 12,	<i>E. pronos</i> .
Plate 11.—Fig. 13,	<i>E. melas</i> (Carniolia).
„ —Fig. 14,	„ „ (Gorizia).
„ —Fig. 15,	„ „ (Greece).
„ —Fig. 16,	<i>E. nerine</i> (Mendel).

## Neuration.

Plate 12.—Fig. 1,	<i>E. lefebvrei</i> (Canigou).
„ —Fig. 2,	„ „ (Gavarnie).
„ —Fig. 3,	„ „ (Canigou).
„ —Fig. 4,	<i>E. melas</i> (Herculesbad).
„ —Fig. 5,	„ „ „

A Revision of the Genus *Leptothorax*, Mayr., in the British Isles.

By W. C. CRAWLEY, B.A., F.E.S.

(Concluded from page 96.)

## MALES.

TABLE OF  $\sigma\sigma$ .

Antennæ 12-jointed. Mandibles without teeth .. .. .	<i>L. acervorum</i> , F.
Antennæ 13-jointed. Mandibles dentate .. .. .	1.
1. Mesonotum smooth and shining between the converging lines .. .. .	2.
Mesonotum finely rugose between the converging lines .. .. .	3.
2. Epinotum with tooth-like tubercles .. .. .	<i>L. tuberum</i> , F. subsp. <i>corticalis</i> , Sch.
Epinotum without tooth-like tubercles .. .. .	subsp. <i>nylanderi</i> , Foerst.
3. Joints 2-5 of funiculus as broad as long .. .. .	subsp. <i>interruptus</i> , Sch.
Joints 2-5 longer than broad .. .. .	4.
4. Epinotum with tooth-like tubercles .. .. .	subsp. <i>tuberum</i> ( <i>s.str.</i> ), F.
Epinotum without tooth-like tubercles .. .. .	5.
5. Pedicel very long and cylindrical .. .. .	subsp. <i>afinis</i> , Mayr.
Pedicel not quite so cylindrical; petiole slightly raised in centre .. .. .	subsp. <i>unifasciatus</i> , Ltr.

Antennæ twelve-jointed. Scape shorter than the second joint of funiculus, which is very long. The funiculus thickens slightly towards the end, but forms no club. Mandibles short, narrow, blunt at end, without teeth. Wings clear, radial cell open.

Thorax coarsely rugose. Pedicel and gaster smooth and shining. Whole body with long whitish hairs.

Black; legs dark brown, joints and tarsi paler.

L., 3.7mm.-4.5mm. . . . L. *acervorum*, (s.str.), Fabr.

Antennæ thirteen-jointed. Scape much longer than second joint of funiculus, which is as short as the others following. The last four joints form a narrow club. Mandibles broad at end, dentate. Antennæ sparsely clothed with hairs, legs almost without hairs. Wings clear, radial cell closed.

. . . . L. *tuberum*, Fabr.

Joints 2-5 of funiculus about twice as long as broad. Head finely rugose; mesonotum smooth and shining. The petiole viewed in profile somewhat raised in centre; post-petiole about as high as long. Epinotum without tooth-like tubercles.

Brown-black; mandibles, antennæ, legs, and extremity of gaster, yellow, more or less clear.

L. 2.5mm.-3.2mm. . . . Sub.-sp. *nylanderi*, Foerst.

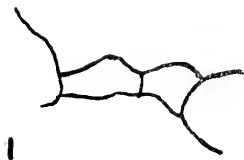
I have not been able to see a British ♂ of *nylanderi*, and so far as I know, one has never been taken in this country. The specimen in the Saunders Collection, in the British Museum, has the funiculus joints not so long as in *tuberum*, (s.str.), but I have followed Forel<sup>20</sup> and Emery in the description. Forel<sup>21</sup> says that the small *nylanderi* have

<sup>20</sup> *F. de la Suisse*, p. 88.

<sup>21</sup> *loc. cit.*, p. 89.

these joints almost as broad as long. I have not been able to see a ♂ of *corticalis*, nor even a description of it. In the Smith collection in the British Museum is a ♂ from Naples, labelled "*corticalis* var.," of which the following is a description:—

Joints 2-5 of funiculus much longer than broad. Head rugose; mesonotum smooth and shining between the converging lines; pedicel slightly rugose, and shaped as in *nylanderi*; gaster smooth and shining; epinotum with slight tooth-like tubercles. Too faded to judge of colour.



Pedicel of *L. nylanderii* ♂.

(Continental).

Joints 2-5 of funiculus longer than broad. Mandibles quadridentate. Head, mesonotum and pedicel, finely rugose. Gaster smooth and shining. Petiole even more elongate and cylindrical than in *tuberum*, (s.str.). Epinotum without tooth-like tubercles.

Brown-black; mandibles, antennæ, and legs clear pale yellow.

L. 2.5mm.-2.7mm. . . . Sub.-sp. *affinis*, Mayr.

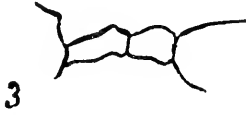
From 3 ♂♂ taken by Donisthorpe at Yvorne in 1912. I have been unable to find a description of this ♂.

Joints 2-5 of funiculus twice as long as broad. Mandibles quadridentate. Head, mesonotum and pedicel finely rugose. Gaster smooth and shining. Petiole viewed in profile slightly raised in centre and rounded on top, postpetiole slightly longer than high. Epinotum with two blunt tooth-like tubercles.

Brown-black; mandibles, antennæ, and legs paler.  
 L. 2.5mm.-3.2mm. . . . Sub-sp. *tubерum* (*s.str.*), Fabr.



Pedicel of *L. tubерum* (*s.str.*), ♂.  
 (Continental).



Pedicel of *L. tubерum* (*s.str.*), ♂.  
 (British).

Joints 2-5 of funiculus much longer than broad, but not so long as in the preceding. Mandibles quinquidentate. Head, thorax and pedicel finely rugose; gaster smooth and shining. Epinotum without tooth-like tubercles.

Brown-black; mandibles, antennæ, and legs paler.

L. 2.7mm. . . . Sub-sp. *tubерum*, (*s.str.*), Fabr. Var. passing to *interruptus*, Sch.

From two ♂ s from the Seaton colony.

Joints 2-5 of funiculus as broad as long. Mandibles quadridentate. Head, thorax, and pedicel finely rugose; mesonotum sometimes somewhat smooth in front. Gaster smooth and shining. Petiole viewed in profile rising from the anterior end to a high point, descending vertically, then continuing horizontally to its junction with postpetiole, which is higher than long. Top of petiole broad and flat. Epinotum with two blunt tooth-like tubercles.

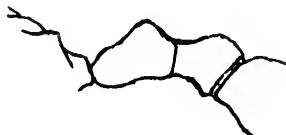
Brown-black; mandibles, antennæ, and legs paler.

L. 2.5mm. . . . Sub-sp., *interruptus*, Sch.

From ♂ s from the New Forest colony, and descriptions and drawings by Forel and Emery. There seem to be very few of these ♂ s in collections; Forel, when sending me a description of the pedicel, mentions that he has only one, and Emery possesses two, which came from Forel. The form of the pedicel distinguishes this ♂ from any of the others, and led me to consider the New Forest specimens a distinct sub-species and not the var. *tubero-affinis*, For.,



Pedicel of *L. interruptus* ♂.  
 (British).



Pedicel of *L. interruptus* ♂.  
 (Continental).

5

since the pedicel of *affinis* is even more elongate than in *tubерum*, (*s.str.*), and still further removed from the New Forest specimens. The descriptions and drawings from Forel and Emery show the pedicel of

the continental *interruptus* to be similar to that of the New Forest specimens, and the single *interruptus* ♂ in the Saunders collection in the British Museum (ex coll. Smith, from Schenck), has a similar pedicel. The short joints of the funiculus are also characteristic.

Joints 2-5 of funiculus longer than broad (not so long as in *tubermum*, (*s.str.*)). Mandibles quadridentate. Head, mesonotum, and pedicel finely rugose. Gaster smooth and shining. Pedicel as in *tubermum*, (*s.str.*). Epinotum without tooth-like tubercles.

Brown-black; mandibles, antennæ, and legs paler.

L. 2·5mm.-3·5mm. . . . Sub-sp. *unifasciatus*, Latr.

From a single ♂ from Bondroit, measuring 3·0mm. The other measurements are from Forel<sup>22</sup>. Schenck<sup>23</sup>, speaking of the pedicel, says, "Der stiel ist lang, die knoten dünn, besonders der erste, sehr verlängerte und fast walzenformig." This applies equally well to *tubermum*, (*s.str.*).

---

### **Erebia manto and E. gavarniensis. (With a plate.)**

By B. C. S. WARREN, F.E.S.

Owing to my absence from home for four months I have been unable to reply sooner to Dr. Chapman's criticism, in the February number of the Magazine, of my article on the above-mentioned species (*Ent. Rec.*, vol. xxv., p. 273).

Dr. Chapman contends that *gavarniensis* is only a geographical race of *manto*. There does not seem to me to be sufficient ground for this contention, so far as the present evidence is concerned.

Dr. Chapman now finds that there is nothing in the genitalia to distinguish the two insects, but that in both there is considerable variation on similar lines. This, by itself, could not be taken as conclusive proof, and especially not in this case, where, as Dr. Chapman tells us, the male appendages in *ligea* and *euryale* (species admittedly distinct from *manto*) show no further differences either.

With the various points of difference which I gave in the neuration of the two species, Dr. Chapman does not agree, so it will be necessary to consider these again. In the plate which Dr. Chapman used to illustrate the neuration, the specimens of *manto* are, in two cases, exactly the same size as those of *gavarniensis*, and the others only very slightly smaller. This is most unusual, as *manto* does not vary very greatly in size, such specimens being quite abnormal. I, therefore, give another plate made from specimens of average size. This average being taken not merely from the specimens in my own collection, but also from the large amount of material in the collection of the late Mr. Fison, of Charpigny.

A careful examination of a great number of specimens has shown that in its neuration *manto* varies much more than I thought it did, or, indeed, thought it possibly could. In one case I found nervure five missing on both hindwings (see Pl. XIII., figs. 16 and 17). The points mentioned below do not always occur, but as they were present in about five-sixths of the specimens examined, one can but take them as typical of the

<sup>22</sup> *loc. cit.*, p. 89.

<sup>23</sup> *Beschr. Nassau. Am.*, 1852, p. 103.

species. It is, of course, possible to produce individual specimens in which any one particular point is wanting, but in these cases two or three of the others are present. I have added fig. 8 to illustrate this, showing the rarer position of nervure 6, figs. 1 to 7, being typical. In this specimen the other points were all typical.

FOREWINGS.—(1) Curvature of the veins.—This I find varies too much in *manto* to be of any use. My note, however, referred to the forewings only, but as it was given under the heading "forewing," I did not think it necessary to state this again. Dr. Chapman took for his example a vein in the hindwings.

(2) Form of discoidal nervules, between nervures 4 and 6.—My point here was the shape of the end of the discoidal cell. The nervules being straighter in *gararniensis* gives this a flat appearance, in *manto* it is generally more curved. Here again, however, there is too much variation in *manto* to use this point.

(3) Sizes of discoidal cells.—Dr. Chapman appears to have misread my notes. He takes my point as "cell broader in *manto*," and continues, "My figures show cell narrower in *manto*." From this I gather that he thinks I am drawing a difference by comparing the actual size of the cell in one insect with that of the cell in the other. This, unless dealing with a species absolutely constant in size, would surely have been a most futile comparison. What I wrote of *gararniensis* was, "cell one-third as broad as the length," and of *manto*, "cell a little more than one-third as broad as the length." This, obviously, was not the same thing as to state that in width the cell measured more in *manto* than in *gararniensis*, but to show that in *manto* it was broader in proportion to its length than in *gararniensis*. The same applies to the length; and measurements from the specimens from which the photograph was made, and many others, give us the following results:—In *manto* length of cell slightly less than half that of the wing (as an average in the proportion of about eight-and-a-half to nineteen), and a little more than one-third as broad as the length (about three to eight-and-a-half). In *gararniensis* we get the cell almost exactly half the length of the wing (eleven to twenty-two), and slightly less than one-third as broad as the length (three-and-a-half to eleven). This shows somewhat more clearly what my previous notes were meant to state, that in the smaller insect the discoidal cell is slightly shorter and broader in proportion to the size of the wing than in the larger one.

(4) Proximity of nervures 6 and 8, joined in origin in *manto*.—Dr. Chapman remarks, "this is not the case." Figs. 1, 2, 3, 4, 5, 6 and 7 show most distinctly that it is.

HINDWINGS.—(5) Discoidal cell less sharply angled than in *manto*.—Dr. Chapman remarks, "I can see no difference." In *gararniensis* the disco-cellular nervules between nervures 4 and 6 form an absolutely straight un-angled line. In *manto* the junction of nervure 5 causes an angle, either inwards or outwards, as the case may be, which completely destroys the look of flatness which is so marked in *gararniensis*. Even in the case where nervure 5 is absent in *manto* the angle remains. Again, in *manto*, the angle in the median nervure, where nervure 2 rises, is decidedly more marked than in *gararniensis*. Measurements of the specimens from which the photograph was made show the angle in *manto* to vary from  $155^{\circ}$  to  $157^{\circ}$ , and in *gararniensis* from  $160^{\circ}$  to  $162^{\circ}$ .



(6) Nervures 6 and 7 rising closer together and ending further apart than in *manto*.—Here Dr. Chapman again misinterprets my notes, and makes it merely a question of whether the actual distance in one specimen between 6 and 7 is greater or less than the same distance in another. My object was to illustrate the position of nervure 6, which is differently placed in the two species. In *gavarniensis* it rises as nearly as possible half-way between 5 and 7, and ends five-eighths of the way from 7. In *manto* it rises always *more* than half-way from 7, and in the majority of cases two-thirds of the way between 5 and 7, and ends exactly half-way between the two.

(7) Nervure 5 further from 6 in *gavarniensis*.—Dr. Chapman again says he sees no difference, but the point has just been proved in showing the position of 6. Only one-third of the distance between 5 and 7 separates 5 from 6 in *manto*, while in *gavarniensis* they are half the distance apart. Reference to the plate shows these last two points very clearly.

I have added figs. 9, 18, 25, and 26 to show the neuration of *E. oeme*. In the genus *Erebia*, with so many very closely allied species, one does not expect to find very great differences in the neuration, but I was surprised to find that between *oeme* and *manto* there is almost none. Indeed, the only difference I am able to find is the position of nervure 6 in the hindwing. As five of my seven points remain unaffected by Dr. Chapman's criticism, it is evident that, on the neuration, *gavarniensis* has a stronger claim to separation from *manto* than has *oeme*.

The ground colour of the undersides of the males is next dealt with by Dr. Chapman. He states that specimens of the var. *caccilia*, in his possession, from the Lower Engadine, approach much nearer *gavarniensis* than type *manto*: and also that forms of *manto*, in this series, are darker than the usual type.

In the Fison collection there is a long series of *manto* from all over Switzerland. To mention some of the localities: Mollis, Ctn. Glarus; Dischma-tal; Val Rosegg; Gd. Mythen; Sefinental; Männlichen; Dent du Midi; Emaney; above Gryon; etc.—in all, about 130 specimens of the type and var. *caccilia*, and all sorts of intermediate vars.

Among the type ♂s there are, perhaps, a dozen specimens which have lost the mahogany suffusion in the basal half of the forewings. Of the var. *caccilia*, there are ten which agree exactly with my own, *i.e.*, the markings obsolete, and the mahogany colouring of the type unaltered; and six which have lost it, to a certain extent, in the basal area of the forewings. In the numerous intermediate forms there are several which show this partial absence of colouring in the forewings, and also slightly in the hindwings; but, out of the lot, there is not anything which could be said to approach *gavarniensis*, nor could I see any sign of intermediate specimens, which had lost a fair amount of markings, getting a darker ground colour. Of course, old specimens (or worn ones) may appear to have lost the colouring, this being particularly noticeable in faded specimens, but, in such cases, an examination with a lens always shows the colouring has been there. I have, of course, not seen Dr. Chapman's specimens, but conclude, from what he says, that they must be a still darker var. of *manto* than anything I have yet seen. When dealing with such an extraordinarily

variable species as *manto*, there is nothing strange in the occurrence of such specimens. Dr. Chapman does not mention any totally without the mahogany coloration, but there is no reason why they should not occur. If they do, however, they must be very rare, and I think the specimens from the above list of localities prove that the type form of coloration is the predominant one all over Switzerland. The fact of *manto* producing varieties in which certain areas of the wing are nearer the colour of *gararniensis*, and possibly, in very extreme cases, somewhat resembling it, is very poor ground for uniting the two; this habit of one species developing varieties, which more or less resemble another totally distinct species, is a common one in the genus *Crebia*, in many cases to a far more pronounced extent.

Dr. Chapman further notes of *gararniensis*: "I have a specimen, a ♂, with a rusty blotch and two black spots. On the under surface some rusty coloration is more frequent." Like most species in this genus, *gararniensis* shows a certain amount of minor variation, but, in a comparison of two species, these occasional aberrations are not of much importance. The statement about the coloration of the underside would be misleading to a person unacquainted with the species. The colour referred to is certainly more frequent on the under- than on the upperside, where it is extremely rare, but it only amounts to traces (and very slight ones at that) of the macular band. It does not affect the ground colour in any way.

The last few lines of Dr. Chapman's article read: "The chief difference between *manto* and *gararniensis* is that the latter is larger, or, rather, that many Swiss forms of *manto* are very much smaller (some being as large). Large size is, however, a characteristic of various species as we approach and enter the Spanish region."

It would be more correct to say *one* of the chief differences is the large size of *gararniensis*, nor can this size be merely put aside as owing to its habitat. It is well known that many species from the Pyrenees are very fine, and larger than their central European representatives; but, as far as my experience goes, there is no constancy about this increase in size. While some specimens are larger, one finds with them quite normal sized ones, in about equal numbers. Indeed, looking over the various series of Pyrenean butterflies in my collection, I find that at least half the specimens in each series are of the same size as the ordinary central European ones. This is not the case with *gararniensis*, its size being very constant.

There is another point of difference between the two which is worth commenting on, *viz.*, their habitats. Of *gararniensis* I write merely from my knowledge of the species at Gavarnie, where it is confined to an extremely limited area in the Val d'Ossoue. In other places, when it occurs, it may be more widely distributed (it could certainly not be less so), but, seeing that there is absolutely no reason why it should not spread, both up and down the Val d'Ossoue (if it is a species to which it is natural to do so), there does not seem to be much reason for supposing it would show very great difference in this respect in other localities. How very different from this is the case of *manto*. In districts where it occurs, nothing apparently checks its spread. All sorts of ground are equally acceptable to it, from the bare rocks of the high Alps (it has a range of altitude of at least 3,500ft.) to the grassy slopes, thousands of feet lower down. One day

last summer I found it on the rough banks by the path side, leading up to Lac Tanay, at a height of about 3,500ft. Further up it was abundant, on the banks of the little lake, flying in grassy patches among the fir trees, and in equal numbers, over a stretch of closely grazed grass, which was rendered almost swampy by a small stream flowing over it. This was just 4,600ft. up. Above the lake the path wound up through an open fir wood, and all the way *manto* was to be seen in hundreds. Somewhat below the wood, where numbers of peasants were cutting the grass up the slopes, it was abundant too. Above the wood there was no hay to cut, the long grass having given place to the short alpine pastures, yet here, too, *manto* swarmed in every direction, and continued in fair numbers almost to the very top of the Grammont, at nearly 7,000ft. There is nothing untypical of *manto* in this, one could give many other similar instances, nor is it a complete list of the different kinds of places inhabited by *manto*. To say the least of it then, does it not seem most unnatural that two insects of such totally different modes of existence should be one and the same species?

The result of all this, if briefly summarised, gives us the following: Evidence for considering *manto* and *gararniensis* one species:—

(1) Similarity of the genitalia.

(2) Varieties of *manto* exist, which have lost some of the typical mahogany colouring on the ♂ underside, in extreme cases somewhat resembling *gararniensis*.

Evidence for separating them:—

(1) Difference in the neuration, greater than that existing between *manto* and *oeme*.

(2) Ground colour of ♂ underside. Mahogany suffusion always present in type *manto*, and present to a greater or less extent in at least 95% of all varieties and aberrations. Never present in *gararniensis*.

(3) Size. Large size of *gararniensis* being constant.

(4) Habitats. Extremely varied in *manto*, with a great range in altitude. Very specialised in *gararniensis*.

From this I think it will be seen that there is no sufficient proof for regarding these two species as one, especially when it is remembered that both the points in favour of uniting them are to be found in other distinct species, the second one to a very much more marked extent.

I have used the name *gararniensis* throughout, merely for the sake of clearness, not from any wish to crowd another name into the existing mass, if there already is an available one.

#### EXPLANATION OF PLATE XIII.

Figs. 1, 2, 3, 4, 5, 6, 7, 8, and					
10, 11, 12, 13, 14, 15, 16, 17	..	..	..	..	<i>E. manto</i> .
Figs. 19, 20, 21, 22, 23, 24	..	..	..	..	<i>E. gararniensis</i> .
Figs. 9, 18, 25, 26	..	..	..	..	<i>E. oeme</i> .
Photograph by F. Erismann					Montreux.

### Lepidopterology.\*

This Fasciculus is "A propos des races géographiques occidentales de PARNASSIUS APOLLO," and contains 34 plates with more than a

\* *Études de Lépidoptérologie comparée*, par Charles Oberthür. Fasc. VIII.

hundred figures of *P. apollo*, executed with that beauty and finish that one has become so used to in these *Études* that one almost fails to notice how excellent it is. The text is introduced by some forty odd pages occupied with one of those charming excursions, partly historical, partly biographical, with which M. Oberthür sometimes favours us. Recalling how in vol. iv., in the dedication to his grandson, he expressed the spirit which animated his later works, he now tells us how 50 years ago he first captured *P. apollo* in the Cevennes, and thereon discussed this form with his grandfather, in comparison with those taken in Fribourg. The transition is easy to reminiscences not altogether entomological, and he proceeds to give his fifteen grandchildren the chief points in the traditions left by their forbears. He is certainly correct in believing that his readers will find the presentation of these memories of the family and the family profession, in a work that relates to entomologists almost as much as to entomology, neither irrelevant nor uninteresting.

The author's grandfather François Jacques Oberthür was born in Strasburg in 1793. He was an excellent artist, learned in human anatomy, eminent in miniature-painting and as an engraver on copper. At Fribourg, he directed artistic works for the publisher Herder, and there he devoted himself to Entomology. He often told his grandson of the chase of *P. apollo* in the mountains near Fribourg, and loved to relate to him the delights of collecting in the Black Forest. Did space permit it would be interesting to transfer to the *Ent. Record* much of the account of the invention of Lithography by Aloys Senefelder, and of the association with him of F. J. Oberthür. There is even a legend that an Oberthür was the friend of Gutenberg, who had no more devoted fellow-worker.

M. Oberthür exclaims that the most imperative and honourable duty of his descendants is to carry on the art of typographical and lithographic printing which their ancestors practised in company with such illustrious inventors. In this interesting relation we find M. Oberthür still displays strongly the poetic disposition, which was already evident in his report on the Excursion of the Entomological Society of France to the Cevennes in 1863 (*Ann. Soc. Ent. Fr.*, 1864), a report full of an ardent admiration of nature, as of scientific and business detail.

The discussion of the western forms of *Parnassius apollo* is very full. It appears that the race at Vernet-les-Bains is characterised by having a great diversity of forms, forms that are in other localities, local, distinctive and defined. In contrast with this polymorphic race of the Eastern Pyrenees, forms such as *escalerae*, *lozerae*, *melliculus* and *siciliae* have each a very constant and comparatively uniform facies. The discussion of the various western races is very complete, and the figures render the text most easy to appreciate. M. Oberthür finishes the narrative with a hope of some time dealing with the Eastern forms in similar fashion, but the very large mass of material, which he says is necessary to do this adequately, indefinitely postpones this further monument of scientific ardour.

Fasc. IX. (1st Partie) contains further figures of Phalaenites described by Guenée, two figures of varieties of *Argynnis pandora*, one a rather remarkable one, *lilicina*, Obthr. There are also six plates of the types of Lepidoptera of California described by Boisduval in 1852

and 1869 in the French and Belgian *Annales*. Except in one plate of "skippers," these are all Lycænids. M. Oberthür has hastened the appearance of these to assist several American entomologists who find difficulty in being sure of the correct nomenclature of various species. M. Oberthür very properly observes how much this emphasises the necessity for descriptions being accompanied by figures.

### New Species of Syntomidæ from Venezuela.

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

#### *EUCEREON MARA*, n.sp.

Palpi with basal joint yellow. Collar orange. Legs brown, with the inside of the femur buff. Patagia brownish with some yellowish pubescence. Forewing opalescent with blackish elongated spots. The veins pale yellowish. A large area of blackish around the discocellulars, but broken up by the veins. Three pale yellowish marks on the costa placed equidistantly. Outer margin with a series of elongated blackish spots preceded by minute spots between veins 3, 4, and 4, 5. Inner margin with an indistinct double row of blackish spots which are best defined from base to middle. Hindwing opalescent, with the veins showing brown near outer margin. Abdomen buff below, black above, with yellow spots at sides, uniting on segments 9, 10, 11. The last segment black. Exp., 40mm.

HABITAT.—Venezuela, Caracas.

Close to *E. setosa*, Sepp., but whiter.

#### *EUCEREON APICAFJAVA*, n.sp.

Palpi greyish-black. Legs with white patches on outside of femur. Two conspicuous yellow spots behind the eyes. Collar grey; patagia brownish-grey with a dark mark in the centre. Thorax whitish-grey. Abdomen dark blackish-grey, the last segment pale yellowish-orange. Forewing grey mottled; the veins all darkly scaled. Costa with a dark patch above centre of cell, a large blotch covering the discoidal area and reaching to the costa. A much indented apical dark band succeeded by a macular narrow greyish-white band, succeeded by a dark spot and finally a small greyish spot, which embraces the cilia. At tornus an irregular patch of dark scaling. Hindwing dark blackish-grey, slightly translucent in the central area. Underside of forewing dark blackish-brown with a whitish spot wholly within the cell, and a much broken whitish sub-apical band. Exp., 46mm.

HABITAT.—Venezuela, Caracas.

Close to *E. xanthura*, Schs.

#### *EUCEREON SERVATOR*, n.sp.

Palpi second joint brown at base, fawn colour above; third joint fawn colour. Head and thorax buff, patagia brown. Collar very narrowly red. Abdomen very dark brown, with segments 10, 11, vermilion red; segments 6, 7, 8, 9, with red scaling on sides only. Last segment dark brown, edged internally with red. Forewing pale brownish-buff, with a dark central longitudinal fascia from base to apex interrupted at veins 4 and 6. Inner margin pale brown. Outer margin with a series of linear dark marks in the interspaces between the veins. Hindwing pearly, semi-transparent. Abdomen below pale buff, except on last segment. Exp., 44mm.

HABITAT.—Venezuela, Caracas.

Close to *patrona*, Schs., but with hindwings wholly pearly.

#### *TRICHURA FUMIDA*, n.sp.

Head black, with a few dark green scales in front and behind the eyes. Thorax and patagia black, with some scanty green scaling. Legs black, except for a few green scales on the middle of the femur. Abdomen black. Forewing dark smoky

hyaline. The costa hyaline for two-thirds the length of cell, narrowly black thence to apex. Discoidal spot black, outer marginal band black, broader than costal band. Inner margin very narrowly black. Hindwing bluish hyaline with the apex broadly black, tapering rapidly and finishing at vein 2. Inner margin narrowly black. Exp., 34mm.

HABITAT.—Trinidad. St. Augustin, Nov. 13, 1913 (J. L. Guppy).

Close to *T. esmeralda*, Wlk., but without metallic abdominal spots, and smaller.

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## COLEOPTERA.

On April 2nd, 1913, my brother caught a specimen of *Ischnodes sanguinicollis*, and a few days later I caught another in the same situation, namely, a hollow in an old elm in our garden. We also found remains of a third and some Elaterid larvæ, but these may have been of some other species, since there were many elytra of other species found in the hole, together with owls' pellets. We looked again this year, but found nothing but a larva, which may or may not have been *Ischnodes*.—J. BATESON, The Manor House, Merton.

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## CURRENT NOTES AND SHORT NOTICES.

Mr. T. Bainbridge Fletcher has been appointed Imperial Entomologist at the Agricultural Research Institute at Pusa.—M.B.

Andre Petrovich Semenoff-Tian-Shansky, Hon. F.E.S., has been elected President of the Russian Entomological Society, in succession to his lamented father, whose obituary appears on page 127.—M.B.

In the *Ent. Month. Mag.* for March, Mr. G. C. Champion has commenced an account of an excursion to southern Tunisia, with notes on the Coleoptera, etc. As the Rev. F. D. Morice was also a member of the party, no doubt we shall have an account of the Hymenoptera of the districts visited. The outlying portions of the Palearctic area are gradually being explored biologically by our foremost enthusiasts in Entomology. In this connection we understand that Messrs. W. G. Sheldon and A. H. Jones have gone on a long tour to the seldom visited districts of southern Russia.

In the *Ent. News* for March is an article on North American Tinea, with descriptions of several new species, including an *Argyresthia*, by Annette F. Braun. Many naturalisations take place in the western continent, and, we presume, "imagoes" is one of them.

In the same periodical a somewhat "tall" story is reproduced. It is stated in the New York Zoological Society's Bulletin that a great many mound-building ants have established colonies near the end of the shooting range at Lawton, Okla., and that the ants had collected the stray shot with the tiny particles of granite to build their mounds. More than 50 pounds of shot have been taken from the mounds investigated.

Mr. A. A. Girault sends a communication to the *Ent. News* as to the use of Naphthaline as an insecticide. In a powdered state he applied it to both a kitten and an older cat which were badly infested with fleas, and successfully expelled the vermin. The treatment, however, slightly affected the cats, making them refuse their food for a day or two and be somewhat inactive. The powder was rubbed into the fur

and the vermin either went to the head, or dropped off in a comatose state on to paper, where they were readily seen and dealt with.

The South-Eastern Union of Scientific Societies will hold its Annual Congress at Bournemouth from June 10th to June 13th. It is to be hoped that when the full programme of papers is completed it will be found that Natural History will not be so far in the background as it has been at the last two or three Congresses. The first day, as usual, is the day of assembly and introduction to the town and district. On each of the other days there will be three alternative field meetings, botanical, geological and archaeological, in the afternoon. The *Conversazione* is intended to be a great feature and combined with it will be the exhibition of a large number of objects of local interest which are in private collections and not usually open to inspection. We hear that the whole of a very famous collection of British butterflies and moths belonging to a well-known Bournemouth resident, will be on view in one of the numerous rooms of the annexe. The Congress bids fair to be an unusually successful one.

In the *Entomologist* for March, Mr. W. G. Sheldon gives an account of the earlier stages of that local and beautiful Arctic butterfly *Colias hecla*, from material obtained by him on his trip to Porsanger Fiord, in 1912. In the same magazine Mr. J. W. H. Harrison has begun a series of articles on the species of *Poecilopsis*, a genus established by himself for *lapponaria* and its congeners. This is an account of a portion of the task Mr. Harrison has set himself, *viz.*, to revise the "omnibus" genus *Biston* in Staudinger's *Catalog*, which he says contains elements from no fewer than six distinct genera: *Biston*, Leach; *Lycia*, Hüb.; *Ithysia*, Hüb.; *Poecilopsis*, Harr.; *Apocheima*, H.S.; and *Microbiston*, Stgr.

Two further publications of the United States National Museum have recently come to hand. One, a *Contribution towards a Monograph of the Homopterous Insects of the Family Delphacidae of North and South America*, by David L. Crawford, from which we quote the following remarks, that are worth repeating, and should be borne in mind by all modern students of systemic entomology. "There is such a thing, too, as 'splitting hairs' when it comes to classification, that is, drawing the confining lines of generic groups and species so narrow that it precludes any variation, and results in numerous genera and species with the minutest and often absurd differences separating them." Many of our readers will, no doubt, endorse this statement fully. The second, *Type Species of the Genera of Ichneumon Flies*, by Henry L. Viereck, which will, no doubt, be indispensable to those working in that order. We note that twelve genera are introduced for the first time, and the type fixed, but without any diagnosis, and no reference is given in any of the twelve cases, in contradistinction to every other genus referred to. We cannot protest too much against the growing practice of attempting to establish genera by publishing a non-significant name.

In No. 4 of this year's *Bull. Soc. Ent. France*, Mr. J.-J. Kieffer describes two species of Myrmecophilous Hymenoptera, new to science, discovered by our colleague, Mr. H. Donisthorpe, *Aphanogmus myrmecobius*, from Weybridge, found with *Formica fusca*, and *Conostigmus formicarum*, from the New Forest and Nethy (wrongly spelt Netly) Bridge, with *Formica rufa*.

Parts III. and IV. of the *Ber. Ent. Zeit.*, the Transactions of the

Berlin Entomological Society, like almost every periodical for some years, from the central area of the continent of Europe, exhibits *Parnassius*-mania. Herr Felix Bryk describes *Parnassius mnemosyne* sub-sp. *ugrjumori* as new from Jelabuga in the Wiatka province of east-central Russia. At the same time he describes and names no less than five "forms" of the sub-species, mostly characterised by the aberrant disposition of the veins, viz., ab. *intercubitalis*, ab. *krulikowsky*, ab. *schulzei*, ab. *sergeji*, and ab. *symplecta*. In a black and white plate he figures the sub-species ♂ and ♀, the sub-species *craspedontis*, the only form hitherto known from European Russia, with ab. *incerta*, from the Caucasus, and ab. *karjala*. The figures of the forms with aberrant neuration are also given.

In the April number of the *Ent. Mitt.*, our colleague, Mr. G. T. Bethune-Baker, contributed notes on the various species of *Ruralidae*, from Formosa, and gives descriptions of several new species. Among the species noted from this far eastern island we find "a single specimen of typical *Celastrina argiolus* taken at Suisharyo in February."

The *Can. Ent.* for January contains descriptions of a number of new species of *Nepticula*, and notes on several others, natives of North America, by Annette F. Braun, Cincinnati. Several figures are given showing the characteristic mines of the species. In an article on the Synonymy of Florida Lepidoptera Messrs. W. Barnes and J. M. Dunnough "climb down" very considerably under "a grilling calculated to prevent less enthusiastic entomologists from ever again obtruding on the notice of the long-suffering entomological public," as they say. The castigation was at the hands of Prof. Dyar.

In the *Revue Mensuelle Namur* for December Baron de Crombrugge makes some interesting remarks on the life histories of *Argyrolepis* (*Phalonia*) *badiana* and *A. eucaua*, *Platyptilia gonodactyla*, *Stenoptilia pterodactyla* and *Coleophora racciniella*. The last a new species to the Belgian fauna.

Mr. H. Donisthorpe is engaged in writing a monograph of the British Ants. We understand that there will be full descriptions of all the genera and species, with separate tables of the distinguishing characters of males, females and workers. The original descriptions will be given, with a large number of references. Included will be a full account of the distribution of the genera and species, both in Britain and in the world. The habits of the various species, so far as is known, will be described at length, and any peculiarities of habitat and association. There will also be descriptions of the larvæ and pupæ, and the myrmecophiles of each species will be given. Another part of the work will describe the external structure of the insects with full details of the internal structure. Wherever possible, comparison will be made with the allies of each species on the continent of Europe and every use will be made of the work previously done, both in Europe and in America. The volume will be illustrated by plates giving figures of all the species and there will be numerous text figures of critical details in the structure, etc. Mr. Donisthorpe is also writing a second work dealing with the myrmecophiles specially.

It is announced that Mr. F. N. Pierce's second volume, "*The Genitalia of the British Geometridæ*," is in the hands of the printers, and that ere long we may expect it to be published. There will be some 1570 outline drawings of about 280 species, practically every



British species, and in this volume the female organs are illustrated as well as the male. The prospectus says that the author "has attempted to give a classification based entirely on the genitalia." This we think somewhat of a mistake. Authors who have made such an intensive investigation in one line of characters only, must of necessity have a bias sufficient to much overweigh their estimation of the taxonomic value of all other sets of characters. It would have been better to take, say, Prout's classification, as given in South's *Moths of the British Isles*, and merely to indicate where the inference from the study of the genitalia pointed to an apparent want of co-ordination with the remaining classificatory characters of the species usually associated. We have seen a large number of the drawings prepared for this work and we can only say that they are vastly superior to those of the previous volume. In all the detail work, drawings and microscopical preparations, the author has collaborated with our colleague, the Rev. C. R. N. Burrows, whose hearty, long-continued and laborious help has been unreservedly placed at his disposal. The study of the primary sexual characters has become so important of late that no student, however little he does, but must have a comprehensively illustrated work, such as this will be, for reference.

Not only does our colleague, Mr. J. R. le B. Tomlin, work deeply in study of British Coleoptera, but this year we find his name in the list of the Council of the Malacological Society of Great Britain.

The annual volume of the *R. Scuola Superiore d'Agricoltura in Portici* (Italy) has recently come to hand. It contains the record of the economic work carried on in connection with the Laboratorio di Zoclogia Generale Agraria in Portici by F. Silvestri, A. Borelli, J. J. Kieffer, G. Grandi, M. Bezzi, Count Turati, etc. Probably one of the most important articles is one by Prof. Sylvestri, "Description of a New Order of Insects," which order is named by him, ZORAPTERA. The new family and genus are diagnosed, and named *Zorotypidae* and *Zorotypus* respectively. This is the result of his study of three very small apterous insects. One *Zorotypus ceylonicus*, sent him by Mr. E. E. Green from Ceylon; another, *Z. javanicus*, from Mr. Jacobson, from Java; and the third, *Z. guineensis*, obtained by himself from the west coast of Africa. There is a capital figure of the last-named species, and many figures of details of the three species so far known. As regards the systematic position of this order Prof. Silvestri states, "I Zorapteri devono essere collocati vicino ai Blattodei e agli Isopteri."

The National Trust for Places of Historic Interest or Natural Beauty have now made arrangements for the appointment of a watcher for their property in Sedge Fen, Wicken, Cambridgeshire. Applications for permission to visit this property should be addressed to A. H. Evans, Esq., Secretary of the Local Committee, 9, Harvey Road, Cambridge, or to S. H. Hamer, Esq., Secretary of the National Trust, 25, Victoria Street, London, S.W.

In the recent numbers of the *Entomologist*, Mr. H. Rowland-Brown and the Rev. F. E. Lowe give an account of their holiday experiences among the Lepidoptera of France in 1912-13, the former in the Vercors, south of Grenoble, between the rivers Isère and Drôme, and in Allos and Larche, Basses-Alpes, and the latter in the mountains east of Marseilles, La Chaîne de Sainte Baume, Provence. Mr. Lowe met with *Polyommatus dolus* in some numbers, both of the type and

also of the form *vittata*, distinguished by a white streak on the underside of the hindwing. As some of the examples taken had this character but slightly developed, he names them ab. *intermedia*. To an aberrant ♀ specimen of *Melitaea didyma*, in which there is a "wide expanse of clear colour on the disk of all wings, devoid of the usual black markings. It is yellow, of the lightest *occidentalis* forms, . . . ." he gives the name ab. *magdalena*.

Prof. Cabeau, in the February number of the *Revue Mensuelle* of Namur, discusses the forms of *Limenitis populi*. He had noted that the coloured figures given by Seitz, Berge, and Spuler agreed with each other, and that they were in accord with the description given by Stichel in the first-mentioned work, but that the coloured figures given by the French authors, MM. Giraud, Berce, and Deyrolle, although agreeing with one another, were of quite a different form from that of the German authors. M. Cabeau proceeded to obtain specimens from Belgium, the North of France, and Dresden, and to make comparisons. He at once found that the form from the last-named locality was clearly separable from that obtained from the two other areas; in fact, the writer says that, placed side by side, there appears to be sufficient difference for them to be taken to be separate species. The German form is not so black, the markings on the wings are somewhat small, for the most part greyish and less conspicuous, while the underside is of a sombre shade and nearly uniform. The Belgian-French form, on the other hand, has white markings, which are well developed and stand out clearly on a deep black. Since the former was probably the form known to Linneus, and is more generally distributed in the North European area, while the latter has a range apparently restricted to Belgium and N. France, he suggests that the German form is the true *Limenitis populi*, and that the latter form should be known as var. *belgiensis*, as it is practically confined to the old Roman domain of the Belgi. M. Cabeau says that the form *bucorinensis* of Hormuzaki, from Roumania and Bukovina, is an analagous form with further increase of size and white markings, and with blue-tinted black on the underside.

Part IV. of the recently issued *Transactions of the Entomological Society of London for 1913*, contains "New or little known Heterocera from Madagascar" by Sir George Kenrick: "On the Hymenopterous genera *Trichogramma*, Westw., and *Pentarthron*, Riley," by R. C. L. Perkins; "*Pseudacraea erytus* sub-sp. *hobleyi*, Neave, its forms and its models on Bugalla Island, L. Victoria, with other members of the same combination," by Dr. G. D. H. Carpenter; "*Pseudacraea boisduvali*, Doubl., and its models, with especial reference to Bugalla Island," by Dr. G. D. H. Carpenter; "The inheritance of small variations in the pattern of *Papilio dardanus*, Brown," by Dr. G. D. H. Carpenter; "Notes on Central American Coleoptera," by G. C. Champion; "New S. American Butterflies," by W. F. H. Rosenberg; "The *Culicidae* of Australia, I." by F. H. Taylor. There are fifteen plates, two of which are coloured. In addition there are twenty pages of the Proceedings of the ordinary meetings.

In the *Canadian Entomologist* for March, Prof. F. M. Webster records another migratory band of *Anosia plexippus*, which passed over Fort Moultrie, Sullivan's Island, near Charleston, S. Carolina, on October 28th and 29th, 1913. They were going from north to south,

and as usual numerous individuals remained flying about after the main migratory swarm had passed. The three previous records which Mr. Webster has made were on September 21st, 1892, in and about Cleveland, Ohio, September 12th, 1902, at Urbana, Illinois, and September 12th, 1912, in Washington. He makes no suggestion as to the reason of the migration of 1913 being more than a month later than either of the three he had previously recorded.

In a recent separatum issued by the Smithsonian Institution, Washington, United States National Museum, Mr. William Schaus describes 136 new species of Noctuid moths from tropical America, and he also describes several new genera. As to where these species come in, and to what other species they are related, there is not the remotest indication. The descriptions are perfectly abstract, without the slightest indication of comparison with any previously existing species. The new genera are not differentiated from any existing genera, and throughout the whole of some 60 pages, not a suggestion of the previous existence of any species of the group is to be found. In the six lines of introduction the author states, "They have been carefully compared with the described species in the great European collections." Surely the facts in this "careful comparison" should have been given in full, and we go so far as to say that the descriptions are worse than useless, when all the, to us, most important part is left out. There should have been inserted clear indications to what species these new ones were related, to what group in a genus they could be placed, their special differential character or characters, and with the new genera, tables to show where they come in, to what existing genera they were related and what the group of characters were which justified the creation of the new genus. We question whether the publication can be made use of in the absence of the insects from which it was drawn up and the museum series among which they have been inserted.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 5th, 1913.*—Mr. A. P. Semenoff Tian-Shanski was elected an Honorary Fellow in the place of the late Prof. O. M. Reuter. The following gentlemen were elected Fellows of the Society:—Messrs. Hugh Warren Bedford, Church Felles, Horley; Harold S. Cheavin, F.R.M.S., F.N.P.S., Clematis House, Somerset Road, Huddersfield; Charles Alban William Duffield, Stowting Rectory, Hythe, and Wye College, Kent; W. Egmont Kirby, M.D., Hilden, 46, Sutton Court Road, Chiswick, W.; Louis Meaden, Melbourne, Dyke Road, Preston, Brighton; F. V. Bruce Miller, Livingston, N. Rhodesia; Alexander David Peacock, 137, Wingrove Gardens, and Armstrong College, Newcastle-on-Tyne; H. Ananthaswamy Rao, Curator of the Govt. Museum, Bangalore, India; Percival Nathan Whitley, New College, Oxford, and Brankwood, Halifax. TITLE OF THE SOCIETY.—The question of the change of title of the Society was opened for discussion from the chair, but the preponderance of feeling appeared to be somewhat against any change. WICKEN FEN.—The President brought before the meeting the necessity of forming a fund for the care of that portion of Wicken Fen left by the late Mr. G. H. Verrall to the National Trust, and at his request Mr. Rowland-Brown expressed his

readiness to act as Treasurer for any subscriptions given by Fellows of the Society. **THAIS RUMINA AS A PROTECTED SPECIES.**—Dr. G. B. Longstaff exhibited a series of 17 *Thais rumina*, Linn. (including a ♀ of the var. *canteneri*, Feld.), taken in March, 1913, at Ronda, in Andalusia, and called attention to characters suggestive of a distasteful butterfly. **PANORPA COGNATA, RAMB.**—Mr. W. J. Lucas exhibited three species of *Panorpa*, viz., a female of the scarce Scorpion-fly *Panorpa cognata*, *Panorpa germanica*, L., and *Panorpa communis*, L. **LEPIDOPTERA FROM DEVONSHIRE.**—Mr. H. Lupton exhibited a specimen of *Thalpocharis ostrina*, taken in the middle of June, 1913, about four miles from Ilfracombe. Also two specimens of *Dianthoecia luteago* var. *barrettii*, taken in the middle of the same month on the coast of N. Devon. **THE IMPORTANCE OF PRESERVING INSECTS FOUND IN COITÛ.**—Dr. G. D. H. Carpenter read notes in connection with his exhibit of *Epitoxa albicincta*, showing the importance of preserving insects taken *in coitû*, with a view to discovering how far they chose those specimens which had their own characteristics. **VARIOUS INSECTS MOSTLY FROM AFRICA.**—Dr. Carpenter also exhibited a case of miscellaneous insects and communicated notes upon them. **A VERY RARE ANT.**—Mr. Donisthorpe exhibited ♂s, winged ♀s and a deâlated ♀ and ♂s of *Solenopsis fugax*, Latr., taken at Blackgang, Isle of Wight, on August 26th, 1913. **ABERRATION OF PYRAMEIS INDICA.**—Mr. E. E. Green exhibited an aberrant example of *Pyrameis (Vanessa) indica*, Herbst, from Ceylon. He remarked that the aberration was apparently caused by a sudden change of temperature at the critical period of pupation. **CORYDALIS ORIENTALIS, McLach.**—Comm. J. J. Walker exhibited a ♂ specimen of the gigantic Neuropteran, *Corydalis orientalis*, McLach., taken by a native collector at Chuchow. **ABERRANT AND HYBRID HETEROCERA.**—Mr. L. W. Newinan exhibited:—(1) *Calymnia (Cosmia) trapezina*. A melanic ♀, a worn specimen taken at sugar in Bexley Woods. (2) *Zonosoma (Ephyra) annulata* and *Z. pendularia*: a long and very varied series of both species, showing extreme light, dark, and intermediate forms, and one very pink *Z. pendularia*. (3) A series of hybrid *Z. pendularia* ♀ × *annulata* ♂; specimens showing the markings of *pendularia* most pronounced and the coloration of *annulata* prominent. The following papers were read:—"New or little-known *Heterocera* from Madagascar," by Sir G. H. Kenrick, Bart., F.E.S. "The *Culicidae* of Australia," by Frank H. Taylor, F.E.S. "Descriptions of New Species of *Staphylinidae* from India," by Malcolm Cameron, M.B., R.N., F.E.S. "*Pseudacraea eurvytus* var. *hobleyi*, Neave, and its models on Bugalla Island, Lake Victoria, with other members of the same combination;" "*Pseudacraea boisduvali*, Doubl., and its models, with special reference to Bugalla Island;" "The inheritance of small variations in the pattern of *Papilio dardanus*, Brown," by G. D. H. Carpenter, B.A., M.D., F.E.S.

November 19th, 1913.—Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., President, in the chair. **WICKEN FEN.**—It was announced that the Council had decided to make an annual grant of two guineas towards the maintenance of Wicken Fen. The following gentlemen were elected Fellows of the Society:—Messrs. B. G. Adams, 15, Fernshaw Road, Chelsea; Barnard Ormiston Dickinson, B.A., 57, Castlenau, Barnes, S.W.; Alfred Oliver Rowden, 3, Archibald Road, Exeter; Oscar Whittaker, Ormidale, Ashlands, Ashton-upon-Mersey, Cheshire.

SPANISH RHOPALOCERA.—Mr. A. H. Jones exhibited specimens of both sexes of *Plebeius sephyrus* var. *hesperica* taken by him in June last at Albarracin. *P. sephyrus*, type and var. *lycidas*, were also exhibited for comparison. Mr. Jones exhibited also from Albarracin, in Spain, *Melitaea desfontainii* var. *boetica*, Rbr., the Spanish form of *M. desfontainii*, Godt. (an Algerian butterfly): both sexes were exhibited. AN ABNORMAL PAIRING.—Mr. E. E. Green exhibited two Pierid butterflies, of distinct genera, taken *in coitu* at Aripu, Ceylon, viz., *Appias libythea*, Fab., ♂, and *Teracolus limbatus*, Butl., ♀. VARIATION IN *HELICONIUS DORIS*, L.—Mr. W. J. Kaye exhibited a large and very variable series of *Heliconius doris*. MIMICRY (?) IN *EREBIAS*.—Dr. Chapman exhibited some *Erebas*, showing how several species varied in parallel directions in different localities when they flew together. The species dealt with were *E. melampus*, *E. pharte*, *E. ccto*, *E. manto* and *E. epiphron*. A considerable discussion followed. PIERIDS AND THEIR SCENT-SCALES.—Dr. F. A. Dixey exhibited a drawer containing specimens of the genus *Pieris*, with drawings of their scent-scales. THE METHOD BY WHICH FLEAS INFECT WITH PLAGUE.—Mr. A. Bacot exhibited slides showing the development of Plague Bacilli in the alimentary canal of the Flea, and the method of infection through the mouth, and read an important paper on that subject. A CURIOUS LARVAL HABIT.—Dr. K. Jordan exhibited some specimens of a lepidopterous larva discovered by the Rev. A. Miles Moss, F.E.S., who, when collecting near Parà, noticed a Saturniid caterpillar with black intersegmental bands and long branched spines, a species of *Automeris*, some of the black bands of which appeared to be swollen. To his amazement these swellings, when touched, quickly slid over the back of the caterpillar to the other side with the hurried motion of a Pylalid larva, and indeed turned out to be small lepidopterous larvæ as black and glossy as the bands of the *Automeris* caterpillar. The following papers were read:—"Revision of the Mexican and Central American *Malachiidae* and *Melyridae*, with descriptions of new species," by George Charles Champion, F.Z.S. "Four new genera and species of *Hymenoptera* from Australia," and "Three new species of Australian *Hymenoptera*," by A. A. Girault, communicated by A. M. Lea, F.E.S., Govt. Entomologist, South Australia.

December 3rd, 1913.—ELECTION OF A FELLOW.—Mr. Walter Ormiston, of Kalupahani, Haldumille, Ceylon, was elected a Fellow of the Society.—PRESENTATION TO THE LIBRARY.—Dr. G. B. Longstaff presented to the Society, on behalf of a number of subscribers, a copy of Hübner's "Exotische Schmetterlinge," original edition, being the copy selected by the late Mr. W. F. Kirby for Mr. Roland Trimen. ABERRATIONS OF *ABRAXAS GROSSULARIATA*.—Mr. G. T. Porritt exhibited two curious specimens of *Abraxas grossulariata*. In the first the forewings were asymmetrical in marking, and the left lower wing was wanting. In the other the right lower wing was also wanting, but in its case there was a rudiment of it visible. BUTTERFLIES FROM SAO PAULO, BRAZIL.—Miss Diana R. Wilson, who was present as a visitor, exhibited a collection of butterflies caught in Brazil this year, during the last week of January and the first week of February. MR. C. O. FARQUHARSON'S RECORD OF EROTYLID BEETLES IN CLAY CELLS.—Prof. Poulton exhibited eight examples of the Hymenopteron *Episcaphula interrupta*, Lac., found in one clay cell, and eleven examples found in

another, by Mr. C. O. Farquharson, B.Sc., at Moor Plantation, near Ibadan, S. Nigeria. MR. W. A. LAMBORNE'S OBSERVATIONS ON THE DRIVER ANTS (*Dorylus*) OF SOUTHERN NIGERIA.—Prof. Poulton read notes received from Mr. Lamborn and exhibited the material referred to. SOUTH AMERICAN PAPILIOS.—Dr. K. Jordan exhibited a series of species of the two groups of Papilios called by Hasse *Cosmodesmus* and *Pharmacophagus* respectively. THE ASSOCIATION OF THORICTUS AND MYRMECOCYSTUS.—Mr. Champion exhibited a specimen of *Thorictus parciseta*, Wasm., attached to the scape of the left antenna of a worker of an ant, *Myrmecocystus viaticus*, F. Mr. Donisthorpe observed that *Thorictus* was always associated with ants, and carried about by them in this manner. THREE INCIPIENT COLONIES OF ANTS BROUGHT UP BY UNAIDED ♀♀.—Mr. W. C. Crawley exhibited: (1) Three deilated ♀♀ of *L. niger*, L., taken in the Isle of Wight, July 1911. These, after rearing ♂♂s, fought until only one survived. (2) A ♀ of *Aphaenogaster subterranea*, Latr., taken August 1912, at Yvorne, with Prof. Forel, after marriage-flight, brought up two ♂♂ by September 1913. (3) Six ♀♀ of *L. flavus*, Fabr., taken after marriage-flight at Seaton, July 14th, 1912. They built a cell together and brought up ♂♂ by June 23rd, 1913. STALK-EYED FLIES.—Mr. O. E. Janson exhibited specimens of *Laglasia caloptera*, Bigot, one of the curious forms of Diptera with stalked eyes, from the Arfak Mountains, Dutch New Guinea. GONEPTERYX CLEOPATRA.—Capt. E. B. Purefoy exhibited two more specimens of *Gonepteryx cleopatra* with gynandromorphous colouring. NORTH AMERICAN BUTTERFLIES.—Mr. E. B. Ashby exhibited a number of Nearctic Butterflies. HELICONIUS ANDERIDA.—Mr. W. J. Kaye exhibited a very large series of specimens of *Heliconius anderida*, ranging into a number of forms which tended to become fairly definite subspecies in different geographical regions. SCENT APPARATUS OF AMAURIS EGIALEA.—Dr. H. Eltringham gave a preliminary account of the scent apparatus in *Amauris egialea* comparing the same with that of *A. niarius*, illustrated by drawings, and microphotographs of sections of the brush. The following paper was read—"New Species of South American Butterflies," by W. F. H. Rosenberg, F.E.S., and G. Talbot, F.E.S. Mr. Talbot made the following exhibits in connection with this paper:—(1) Sixteen new species of S. American Butterflies. (2) A black and brown mimetic combination from Yahuar Mayo, S.E. Peru, October and November, 9 species.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 13th.—ADDRESS.—Prof. W. Bateson, F.R.S., gave an address on the "Problem of Species which overlap Geographically," illustrating his remarks with numerous lantern slides. RACES OF *P. APOLLO*.—Mr. Curwen exhibited specimens of *Parnassius apollo* from Eclépens and the Laquinthal, mostly very large examples, and including var. *pseudonomion* from Eclépens. HYBRIDS OF *Z. ANNULATA* AND *Z. PENDULARIA*.—Mr. Newman, long and variable series of *Zonosoma annulata* and *Z. pendularia*, with many dark aberrations, and also a series of the hybrid between these two species, showing well the characters of both.

November 27th.—THE ANNUAL EXHIBITION OF VARIETIES, ETC.—ADDITIONS TO THE SOCIETY'S COLLECTIONS.—Mr. West (Greenwich), the Hon. Curator, fifteen cabinet drawers of the Society's reference collection of Lepidoptera, with which had been incorporated a portion

of the Dawson collection. A. THERSITES AND P. ICARUS AB. ICARINUS, AND A BLACK A. AGLAIA.—Dr. Chapman, a nearly black *Argynnis aglaia* from Le Lauteret, July 13th, 1913, and specimens of *Agriades thersites*, *Polyommatus icarus*, and var. *icarinus*, with diagrams to show the different alignment of spots. BURMESE MOTHS.—Mr. Edwards, a box of conspicuously coloured Heterocera from Burmah. P. HECATAEUS.—Mr. H. Moore, the rare *Papilio hecataeus* from the Solomon Islands. VARIETIES OF ORNITHOPTERA.—Mr. Schmassmann, a series of varieties in the ♂ of *Ornithoptera hecuba*, and a pair of the gorgeous *O. alexandrae* from New Guinea. MELANIC AND XANTHIC ABERRATIONS.—The Rev. G. Wheeler, examples of melanic and xanthic aberrations, including *Argynnis niobe* ab. *pelopia*, *Melitaea phoebe* ab., *M. varia* ab., *M. cinxia* ab., and *Melanargia galathea* ab. of the former, and *A. niobe* var. *eris*, *Callimorpha dominula* var. *persona*, etc., of the latter, and referred to many species in which yellow was produced in aberrational forms. THIRD BROOD OF C. ARGIOLUS AND ABERRATIONS OF A. CORIDON.—Mr. R. Adkin, a series of third brood *Clastrina argiolus*, and discussed the species as to its appearance during the present season. He also showed long series of *Agriades coridon*, including ab. *syngrapha*, ab. *semi-syngrapha*, and many other fine aberrations and series from many localities. BOARMIA ABERRATIONS AND MELANIC A. VIRGULARIA.—Mr. Baumann, a series of *Boarmia repandata* from several localities, including var. *solorensium* and var. *conversaria*, and specimens of the melanic form of *Acidalia virgularia*, which he was placing in the Society's collection. ABERRATIONS OF BRITISH LEPIDOPTERA.—Mr. Bright, a large number of striking aberrations of British Lepidoptera, including long series of undersides of *Agriades thetis* and *A. coridon*, a white aberration of *Argynnis paphia*, *Colias elusa* with wings richly shot with purple, a curious *Saturnia paronia* of female coloration with male antennae, etc. RACES OF C. TIPHON.—Mr. Grosvenor, his fine collection of *Coenonympha tiphon* and its local races. ITALIAN AND SWISS LYCENIDÆ.—Mr. Curwen, numerous *Lycaenidae* taken by him in Italy and Switzerland, and many aberrations of *Melitaea didyma*. HYBRID SPHINGES AND ABERRATIONS.—Mr. Newman, a varied series of recently-bred *Smerinthus ocellatus*: series of *Amorpha populi* from pale cream to almost black colour, with intermediate and rich pink forms; and a series of hybrid *ocellatus* ♂ × *populi* ♀, two being of the rare ♀ form. S. AMERICAN NYMPHALIDS.—Mr. A. Gibbs, a section of his collection of S. American Nymphalids, including many of the brilliant species in the genus *Perisama*. M. DESFONTAINII.—Mr. W. G. Sheldon, his long series of *Melitaea desfontainii*, taken by him at Albarracin this year, and a series of *M. aurinia* var. *iberica* from near Barcelona for comparison. AGRIADES VARIATION.—Mr. T. W. Hall, cabinet drawers of *Agriades coridon* and *A. thetis*, showing great aberration with very pronounced blue females, and some females curiously splashed with blue. PHOTOGRAPHS OF LIFE-HISTORIES.—Mr. Main, frames containing series of photographs of the life-histories of *Cicindela campestris* (tiger-beetle), *Chrysopa flava* (lace-wing fly), *Phyllotoma aceris* (jumping saw-fly), etc. VARIED BRED SERIES OF LEPIDOPTERA.—Mr. Tonge, a bred series of *Psilura monacha*, including the black form ab. *eremita*: a long series of *Tapinostola concolor*: etc. ASSIMILATION OF COLOUR IN SPECIES OF MELINÆA AND HELICONIUS.—Mr. W. J. Kaye, a case of 23 pairs of the S. American genera *Melinæa* and *Heliconius*,

found flying together and assimilating to each other in colour. ABERRATIONS OF BRITISH LEPIDOPTERA FROM IRELAND.—Commander Gwatkin-Williams, aberrations of British Lepidoptera from Ireland, including *Epinephele jurtina* with banded hindwings, ♀s, several *Cidaria*, which possibly may be *C. concinnata*, *Xanthorhoe montanata*, with band obsolete, confluent *Anthrocera trifolii*, *Euchloe cardamines*, ♀s, with ochreous hindwings, etc. DEBRIS FROM WASP EXCAVATIONS.—Mr. Chas. Oldham, two collections of small chalk stones that he had collected within a small radius of the openings of two wasps' nests, and which the wasps had been unable to carry to a greater distance. ABERRATIONS OF BRITISH LEPIDOPTERA.—Mr. A. W. Buckstone, for Mr. Archer, a bleached form of *Angerona prunaria*, ♂, from Oxshott; an almost black *Lithosia helvola (deplana)* from Wimbledon; and an *Acidalia* which was supposed to be a very aberrant form of *A. subsericata*. VARIATION IN MELLINIA OCELLARIS.—Mr. H. Worsley-Wood, numerous forms of *Mellinia ocellaris*, including ab. *lineago*, ab. *intermedia*, with *M. gilvago* for comparison; yellow *Brephos parthenias* from Wimbledon, and lead-coloured males of *Agriades formis* from Corfe. MELANIC ABERRATIONS.—Rev. J. Tarbat, black suffused forms of *Brenthis ephrosyne*, ab. *nigro-sparsata* of *Abraeas grossulariata* and a *Cidaria truncata*, with a broad banded forewing. HYBRIDS AND GYNANDROMORPHOUS SELENIA.—Mr. Haynes, a series of hybrid *Selenia tetralunaria* ♂ × *S. bilunaria* ♀, with a large preponderance of gynandromorphous specimens; melanic and ochreous varieties of *Ennomos quercinaria*, etc. VARIATION IN E. STYGNE.—Mr. H. J. Turner, a series of *Erebia stygne* from the continent, to show the extreme local variation in the Alps and Pyrenees. C. EDUSA IN 1913.—Messrs. Sharp and C. W. Colthrup, many *Colias edusa* from the south-eastern district representative of the species in 1913.

December 12th, 1913.—Mr. Tatchell, of Bournemouth, was elected a member.—THE ITHOMIINÆ.—Mr. W. J. Kaye read a paper, "The *Ithomiinæ*," and illustrated it with a fine selection of examples of the different groups of the sub-family. THE FURNITURE MITE.—Mr. Hall reported a case of the occurrence of the "furniture mite" and asked how the pest could be effectively dealt with. DIPTERA AND THE LATE SEASON.—Mr. Step, a box of Diptera, chiefly *Syrphidae*, taken at flowers of Michaelmas daisy in October and December. AN AUTUMN BRED N. PLANTAGINIS.—Mr. R. Adkin, a series of *Nemeophila plantaginis* bred from ova laid by a Grassmere female in July 1912. One larva fed up and pupated in September, and the imago came out on October 27th. The rest hibernated, several together, in the debris of the cage and emerged in due course the following June. M. OCELLARIS.—He also showed four *Mellinia ocellaris* presented to the Society by Mr. H. Worsley-Wood. A LOCAL FORM OF EREBIA CETO.—Mr. Curwen, a series of *Erebia ceto* near the form ab. *obscura*, from the Simplon Pass. VARIATION IN BRITISH LEPIDOPTERA.—Mr. Carr, a collection of Lepidoptera from Staffordshire and N. Wales, including very strongly marked forms of *Acidalia marginepunctata* and some nice banded examples of *Melanippe tristata*. REPORT.—Mr. Adkin read a Report of the Annual Conference of Delegates of Societies affiliated to the British Association.

January 8th.—NEW MEMBERS.—MESSRS. D. A. Gotch, of Northampton; A. Leeds, of Knebsworth; W. H. Jackson, of Wimble-



don; and T. H. Archer, of Southfields, were elected members. PAPER.—Mr. Hugh Main gave an interesting account of his holiday in Switzerland in 1913, entitled "The Brunig Road," and illustrated his address with a large number of lantern slides made mainly from his own photographs. THE FURNITURE MITE.—Mr. Step, a photograph by Mr. West (Ashtead) of the "furniture mite," *Glyciphagus cursor*.

January 22nd.—ANNUAL MEETING.—The Balance Sheet and Report of the Council were received and adopted, and the Officers and Council for the coming year were declared elected. ANNUAL ADDRESS.—The President read his Annual Address, and after giving an account of the present status of the Society, dealt at considerable length with some phases of his special study of the ova of Lepidoptera, particularly of wild-laid ova. NEW PRESIDENT.—The usual votes of thanks were accorded, and the new President, Mr. B. H. Smith, took the chair. TERATOLOGICAL L. PALLENS.—Mr. Newman exhibited a small specimen of *Leucania pallens* taken at sugar at Newark, with three well-developed antennæ, of which one was much thicker than usual, and towards the tip was bifid.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—January 19th, 1914.—LOCAL LIST.—A discussion upon "Varieties and Species recently added to the local list of Lepidoptera" was opened by Mr. W. Mansbridge. Novelties were confined almost entirely to the Micro-lepidoptera and to Variation. Twenty-six species new to Lancashire and Cheshire since the last published list were enumerated, one of them, *Scoparia rastra*, May, being new to science. The increasing tendency to melanism and the spread of melanic forms was commented upon, instances being *Boarmia repandata* becoming more frequent at Delamere, in its black form (var. *nigra*); *Pidonia atomaria*, from near Burnley and Chat Moss; and *Tortrix costana*, from Liverpool and Burnley. He also mentioned that the black forms of *Aplecta nebulosa* did not appear to be increasing in relative numbers at Delamere, on the contrary, in 1913 the percentage bred from wild larvæ was smaller than usual. CAPTURES OF RARE SPECIES.—Mr. S. P. Doudney exhibited a specimen of *Hippotion (Chaerocampa) celerio* captured at Prescott, and Mr. W. Mansbridge brought a specimen of *Catocala fraxini* having very dark, almost black, forewings, bred from a Sussex female.

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## (92) OBITUARY.

### Petr Petrovich Semenov-Tian-Shansky.

We regret to announce the death, on February 26th, 1914, last, of Petr Petrovich Semenov-Tian-Shansky, from pneumonia, after a very brief illness, in his 88th year. His numerous and important writings were devoted to geography, geology, botany, statistics, and art.

Semenov was born on the family estate Urusovo, in the Government of Riazan, in January, 1827. In 1849 he joined the Imperial Russian Geographical Society, which he served so faithfully for over half a century. It was in 1856 and 1857 that he explored the then scarcely-known mountain ranges of Altai and Tian-Shan. In the spring of 1858 he returned to Petersburg, having explored 23 passes, measured the altitude of 50 peaks, and brought back 300 rock, and over 1,000 botanical specimens. In honour of this great achievement the title Tian-Shansky was added to his family name.

His earnest desire to undertake a further expedition to these fascinating, and, in those days, mysterious lands, was never executed, for, in 1859, he was appointed a member of the committee entrusted by Alexander II., with the task of elaborating the scheme for the emancipation of the serfs, which culminated in the famous Ukaz, of February 19th, 1861. Collaboration in, and the editing of an immense work, *The Geographical Dictionary of the Russian Empire*, occupied his energies from 1860 till 1885. As long ago as 1864 he undertook his last expedition into the field, which resulted in a paper on the Devonian Shales of central Russia. In the same year he was appointed Director of the Central Statistical Committee, under the Ministry of the Interior, a post which he held till 1880. In 1872 he was elected President of the Permanent International Statistical Commission, and was appointed member of the Senate in 1887. He inspired the great Russian census of 1897, but took no part in working out the results, as he was appointed a member of the Imperial Council, so that he transferred his energies from science to legislation. In 1873 he succeeded Count von Lütke as Vice-President of the Imperial Russian Geographical Society,\* which entered under his auspices, upon the most brilliant phase of its history.

In spite of his numerous official occupations, he found time, in the evening of his days, to produce a great work under the title "Russia," in 22 volumes, a detailed monograph of the geography, geology, statistics, ethnography, economy and history of his beloved fatherland.

His own Geographical Society elected him Honorary Member in 1886, the Imperial Academy of Sciences in 1873. The Royal Geographical Society of London awarded him the Founder's Gold Medal in 1897, and the Gesellschaft für Erdkunde zu Berlin, in 1910, awarded him the Ritter-Medal, striking it, as a special compliment, in gold instead of silver. The Tzar conferred upon him a whole series of decorations, culminating in the First Degree of the Order of St. Vladimir, and the German Emperor gave the Order "Pour le Mérite," in recognition of his great services to science.

He had occupied his spare moments in forming a very rich collection of Palearctic Coleoptera, reputed to be the largest private collection in Europe. He had also accumulated an exceedingly fine collection of pictures, entirely of the Flemish and Dutch schools, of which he was acknowledged to be an unrivalled connoisseur. He rejected numerous tempting offers to sell them to collectors, dealers and museums from all parts of Europe, preferring to dispose of his works of art at a nominal price to the famous gallery of the Hermitage, so that it is preserved for the nation.

It is characteristic of this Grand Old Man of Russia that he worked up to the very day of that short sharp illness that proved fatal.

Those who had the privilege of his acquaintance and had enjoyed his hospitality could appreciate, as well as his encyclopædic knowledge and untiring energy, the kindness of heart, genial manner and constant cheerfulness, due to the unbounded optimism which was the keynote of his character.—M.B.

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\* The President, since the foundation of the Society, was the Grand Duke Constantine Nikolaievich.

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Plates VIII. and IX. will be issued with the June number.

Plates X., XI., XII. and XIII. are issued with this number.

Communications have been received or have been promised from Messrs. G. T. Bethune-Baker, G. Wheeler, R. S. Bagnall, C. W. Colthrup, A. Horne, F. W. Frohawk, Dr. Burr, H. J. Turner, C. P. Pickett, etc., with Reports of Societies and Reviews. Several more plates have been promised to illustrate articles.

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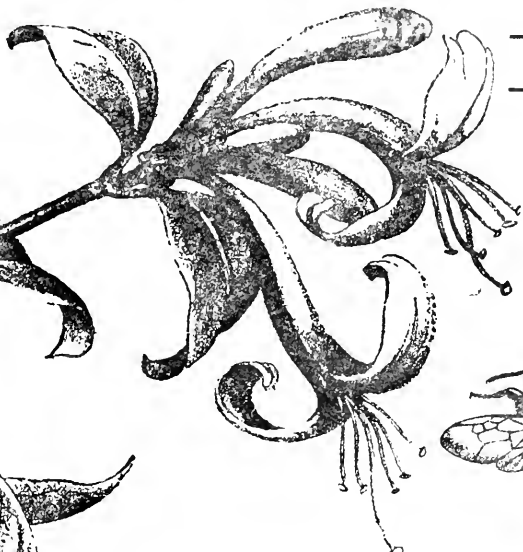
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## Butterflies in the Tyrol in 1911 and 1912.

By J. N. KEYNES, M.A., Sc.D., F.E.S.

I paid a visit to the Tyrol with my wife in the summer of 1911, and with my wife and son in the summer of 1912; and the following is a brief record of some of the butterflies taken in these two years. The dates at which the localities mentioned were visited were as follows:—Eggenthal, near Bozen (June 27th and 30th, 1911, June 30th and July 2nd, 1912); Sarnthal, near Bozen (June 28th, 1911); Trafoi (July 2nd to 6th, 1911); Suldén (July 7th to 11th, 1911); Karersee (July 3rd to 6th, 1912); Madonna di Campiglio (July 8th to 11th, 1912); Spondinig (July 12th, 1911); Mendel Pass (June 29th, and July 14th to 17th, 1911, July 12th to 15th, 1912); Brenner (July 18th to 21st, 1911, July 17th to 20th, 1912). In 1911 the weather was for the most part brilliant; in 1912 it was very broken. There was a corresponding contrast in the productiveness of the two seasons. The insects taken were fresh and in good condition unless mention is made to the contrary.

**HESPERIIDÆ.**—*Erynnis lavateræ*.—Exceptionally fine specimens both in the Eggenthal and in the Sarnthal.

*Hesperia andromedæ*.—One specimen at Brenner on July 17th, 1912, and a fine series at Trafoi in 1911. At Trafoi the insect was flying freely, but over a limited range only, at a height of about 7,500 feet.

*Adopæa lineola*.—Specimens taken in the Eggenthal are considerably larger than any we have met with elsewhere.

**LYCENIDÆ.**—*Chrysophanus hippothoë* var. *eurybia*.—This insect was very fresh at Madonna di Campiglio on July 11th, 1912, and our captures included some fine and very dark ♀s.

*Loweia alciphron* var. *gordius*.—Eggenthal and Sarnthal. We took only one ♀. The front wings of this specimen have wider black margins than in the case of specimens we have taken in Switzerland or the Pyrenees, and the hindwings are much more suffused with black. The ♂s are, on the average, finer than the Swiss specimens, but do not appear to have any distinctive peculiarities.

*L. dorilis* var. *subalpina*.—Brenner and Trafoi.

*Rumicia phlaeas*.—A specimen taken on the Mendel Pass on July 15th, 1912, having the copper colour much suffused with dark, and with very distinct tails, is presumably referable to the form *eleus*.

*Lycæna arion*.—A ♀ taken in the Eggenthal on June 30th, 1911, is one of the finest I have seen. Specimens taken at Brenner and Trafoi are of the form *obscura*.

*L. iolas*.—Two fine fresh specimens were taken in the Eggenthal on June 27th, 1911, and one in the Sarnthal on the following day. As usual this insect was remarkably rapid on the wing, and captures were difficult. No specimens were seen in the Eggenthal in 1912.

*Polyommatus amandus*.—♂s common in the Eggenthal and the Sarnthal and on the Mendel Pass. A remarkably fine race, the specimens being, on the average, very much larger than those taken in the Rhone Valley, and some quite as large as *L. iolas*. ♀s were scarce. Two specimens taken on the Mendel Pass on July 13th and 14th, 1912, had evidently only just emerged. These were of a glossy,

blue-black shade, and the usual description of the ♀ as brown would, in their case, certainly not apply. Judging, however, from one's ordinary captures, it would appear that the colour tones down to brown after quite a short flight.

*P. meleager*.—Eggenenthal and Sarnthal, ♂ s only.

*P. eros*.—Brenner, not common.

*Latorina orbitulus*.—Sulden, not common.

*Albulina pheretes*.—Sulden, Karersee, Brenner, including ab. ♀ *caeruleopunctata*. The specimens shew great variety in the number of eye-spots on the underside of the front wing.

*Scolitantides baton*.—One ♀ in good condition at Spondinig on July 12th, 1911.

*S. orion* ab. *nigra*.—One fine ♀ in the Sarnthal on June 28th, 1911.

*Vacciniina optilete*.—Fairly frequent at Brenner.

*Everes coretas*.—In the Eggenenthal, and on the Mendel Pass, in both cases worn.

*Nordmannia ilicis*.—In the Eggenenthal and the Sarnthal, worn.

*Klugia spini*.—On the Mendel Pass, July 12th, 1912, worn.

PAPILIONIDÆ.—*Papilio podalirius*.—Mendel Pass.

*Parnassius apollo*.—Fine dark ♀ s in the Sarnthal.

*Parnassius mnemosyne*.—Madonna di Campiglio, not common.

*Pieris napi* var. ♀ *bryoniae*.—An exceptionally fine specimen, with deep yellow ground colour, at Madonna di Campiglio.

*Pontia callidice*.—Sulden, Trafoi.

*Colias phicomone*.—Madonna di Campiglio.

NymphalidÆ.—*Argynnis adippe*.—Mendel Pass.

*Argynnis niobe* var. *eris*.—Eggenenthal.

*Brenthis thore*.—Two taken at Trafoi, on July 3rd, 1911, and one at Brenner, on July 19th, 1911; all rather worn. No others seen at Trafoi; one or two others at Brenner.

*B. daphne*.—Frequent in the Eggenenthal.

*B. pales* ab. ♀ *napaea*.—Some fine specimens of this form were taken at Brenner.

*Melitaea cynthia*.—Sulden and Brenner; not common at either place, and getting worn.

*M. aurinia*, var. *merope*.—Sulden, Brenner.

*Melitaea asteria*.—This species occurred in very fair numbers at Brenner. It was getting worn, but in the two years we secured a fine series of both ♂ s and ♀ s. It is an inconspicuous insect, not very easy to capture, and might at first be mistaken for a small moth.

*M. parthenie* var. *varia*.—Sulden.

*M. athalia*.—We took a fine variety of this species on the Mendel Pass, with a bright orange ground colour; the black markings are heavy, but there are wide central light bands on both wings.

*M. dictynna*.—Generally distributed, and varying considerably in size. On the Mendel Pass we took one specimen expanding only 30mm.

*Euvanessa antiopa*.—Eggenenthal, Mendel.

*Eugonia polychloros*.—Eggenenthal.

*Limenitis populi*.—We took this insect in excellent condition both in the Eggenenthal and on the Mendel Pass. One magnificent ♀ expands 84mm.



*L. camilla*.—Eggenthal, Mendel Pass.

*L. sibylla*.—Eggenthal, Mendel Pass.

*Neptis lucilla*.—We took a good series of this insect in the Eggenthal, in 1911. In the same locality and at the same date in 1912 it was scarce, and badly worn. On the Mendel Pass we took one good specimen on July 13th, 1912, and saw one or two others.

*Apatura iris*.—Eggenthal, scarce.

*Libythea celtis*.—This species was fairly common in the Eggenthal and the Sarntal, and on the Mendel Pass, and we took a fine series. The specimens are considerably larger than those we took at Herculesbad, which is the only other locality in which we have met with this insect. It is very constant in its markings, but we have one specimen in which the usual dark orange of the front wing is replaced by much lighter orange.

SATYRIDÆ.—*Pararge achine*.—Mendel Pass, with larger eye-spots than we have found elsewhere.

*Satyrus hermione*.—Mendel Pass, a very fine race.

*S. cordula*.—Spondinig. A rather small form, and very difficult to catch. In this respect a great contrast to the same species at Digne, where it is not easy to avoid catching more than one wants.

*Hipparchia briseis*.—Spondinig, specimens smaller and also darker than those taken in Hungary.

*H. semele*.—Mendel Pass, dark and very fine; difficult to catch.

*Oeneis aëlo*.—Sulden, Trafoi.

*Erebia ephron*.—Sulden, Brenner; generally rather worn. As usual, this species shews a good deal of variation. The eye-spots in the ♂s are not, as a rule, very conspicuous. A good many of the specimens are of the form *nelampus*, and in one or two, both bands and spots are quite obsolete. There is less variation in the ♀s.

*E. nelampus*.—Campiglio, Mendel, Brenner.

*E. pharte*.—Brenner. Rather worn.

*E. mnestra*.—Madonna di Campiglio.

*E. alecto*.—We took this species at Trafoi, Sulden, Karersee, and Madonna di Campiglio, and the resulting series is an extremely interesting one.

At Madonna di Campiglio the insect was scarce. The four specimens taken were ♂s in good condition, and all of the form *nicholli*, which closely resembles *E. melas* of Eastern Europe, and one of the varieties of the Pyrenean *E. lefebrei*. There is no trace of mahogany suffusion, but the white eye-spots in deep black rings are prominent (two close together on the front wing, and three, more removed from one another, on the hindwing).

At Karersee the species was more plentiful. Out of nineteen ♂s taken in good condition, sixteen are of the form *pluto*, without mahogany suffusion and with the apical eyes either absent or quite rudimentary. The remaining three ♂s and 2 ♀s are of the same form as at Campiglio, but with the white spots on the front wing only, and with the black rings hardly shewing up against the background of duller black.

From Trafoi and Sulden our series comprises more than fifty, after discarding poor specimens, and they include every variety of form. The majority are typical *alecto*, with eye-spots on mahogany bands, but even in these there is considerable variety. The mahogany band sometimes appears on the front wing only, and varies a good deal in

extent and vividness; some specimens have no eye-spots on the hind wing; the eye-spots are usually white in black rings, but in three specimens the white eye-spots appear without rings, and in others there is a black eye-spot only. In addition to these more or less typical forms, seven specimens are of the Swiss form *glacialis*, with mahogany bands but no eye-spots; there are two ab. *pluto* (as at Karersee); and two without mahogany, but with white spots in black rings, not, however, as prominent as at Campiglio. Of the five ♀s, three are typical, one with white eye-spots minus the black rings, and one of the form *glacialis*. Many of these butterflies are very beautiful, but the most striking are those taken at Madonna di Campiglio.

*E. manto*.—Swarming at Brenner. The specimens shew considerable variation; the eye-spots are sometimes absent on the upper-side; and in some cases the red-brown patches have also almost entirely disappeared, these specimens approaching closely to the Pyrenean form *caecilia*, = *gavarniensis*, Warren.

*E. ceto*.—This species was in very good condition on the Mendel Pass on June 29th, 1911, but was quite over a fortnight later.

*E. medusa* var. *hippomedusa*.—This insect was swarming at Karersee. In both sexes the specimens shew variation in the number of eyespots, both on the front and on the hindwing.

*E. nerine*.—In both years ♂s were very plentiful on the Mendel Pass in the middle of July. ♀s were not yet out in any numbers, though we took a few. In the large majority of specimens examined (and we captured far more than we kept) the tawny bands on the upperside are very conspicuous; but in a few instances they become inconspicuous and then on the upperside the insect bears a decided resemblance to the redder forms of *E. lefebrei*, though less ocellated. Most of these instances differ from the type in the underside of the hindwing also, the toothed band, which is very conspicuous in typical specimens, being entirely wanting. In 1911 my wife took an extreme form in which the insect is of an almost uniform black on the upper-side, but with white ocelli on all four wings. On the upperside this specimen closely resembles *E. melas*, the black form of *E. lefebrei*, and the form of *E. alecto* var. *nicholli*.

*E. euryale*.—Generally distributed. It is worth noting that while in 1911 this insect was swarming on the Mendel Pass in the middle of July, scarcely any were observed there at the same period in the following year.

*E. ligea*.—Mendel Pass.

*E. gorge*.—The type was taken at Brenner and Karersee, including in the latter locality a fine example of ab. *erinnys*, with no sign of apical eyes on the upperside. At Trafoi we took only var. *triopes*; and the same was the case at Sulden, except that amongst the ♀s taken there were two specimens of the type.

*E. tyndarus*.—Generally distributed, but specially in evidence at Sulden. One of the specimens taken at Brenner and one at Karersee approached closely to ab. *dromus* of the Pyrenees. At Sulden we took specimens of ab. *caecodromus*, both ♂ and ♀.

*E. lappona*.—Generally distributed.

## Synonymic Notes on the Ruralidæ.

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

During the preparation of my proposed Revision of the Palæarctic *Ruralidæ*, I have been coming to certain conclusions that are now clearly defined in my mind, so that it may be well to crystallise these processes in a short paper; at least so far as the European species are concerned.

The arrangement in Staudinger's *Catalog* is now so well-known, that I propose to follow it here for the sake of convenience. This use, however, does not mean that I accept its sequence as satisfactory.

The first genera mentioned there are *Rapala*, *Laecosopis*, *Satsuma* and *Niphanda*. None of these call for special remark, it being unnecessary to enter here into the relationship of *Satsuma* and *Incisalia*, Scudder.

In Staudinger's genus *Thecla*, Fab., considerable revision is necessary. The type of *Thecla* was fixed by Swainson, in 1821, as *betulae*, L., but this species had previously been selected by Barbut (1781) as the type of *Ruralis* and therefore *Thecla* falls before it, and is no longer available for use. Scudder, in his *Historical Sketch*, p. 280, selects *spini* as the type of *Thecla*, using these words, "*Betulae* cannot be taken as the type on account of the foundation, in 1816, of Dalman's *Zephyrus*, and consequently *spini* must be chosen." This selection is quite *ultra vires* in the face of that of Swainson, and it is very curious that apparently it never occurred to Scudder, that Swainson's action simply made *Thecla* fall as a synonym before *Zephyrus*, which also falls before *Ruralis*. Had it been a species he would have sunk it at once, and why he should adopt a different course of action with genera, it is difficult to understand. He unfortunately took this course not infrequently in that otherwise valuable memoir, and it is therefore necessary to guard against some of his conclusions.

Hübner's genus *Strymon* (1816) next appears on the scene. With the exception of *betulae* most of the species included in the author's original list, belong to the *Strymoninae*. Scudder, as the first reviser who names the type, selects the American species *titus*, *i.e.* *mopsus* of the original list, as the type, and this I am bound to accept. Tutt rules his action as *ultra vires* on account of a supposed restriction by Stephens; he says, in his *British Lepidoptera*, vol. viii., p. 314, "Restricted in 1835 by Stephens to *pruni*, *betulae*, *w-album* and *spini*, Scudder's action, therefore, in 1872, in fixing *titus* as the type is *ultra vires*. We would suggest *pruni* as the type." I much regret that I cannot follow my late friend's action in this matter. In no sense can I accept Stephens' action as a restriction, it was merely an ordinary usage without references, he was writing on British Insects only and simply names those that he thought occurred in these Islands. Stephens' use of the genus *Strymon* is in an Appendix to vol. iv., headed, "An Abstract of the Indigenous Lepidoptera, contained in the *Verzeichniss Bekanter Schmetterlinge*, Hübner." This heading alone quite prohibits any restriction. I therefore hold that Scudder's designation of *titus* as the type of *Strymon* must be adhered to.

*Neolycaena* was created by de Nicéville *Butt. Ind.*, iii., p. 64, in 1890, for *sinensis*, this species being named as the type. It is so closely allied to *Strymon* that it is difficult to differentiate it structurally. The wings, however, are quite a different shape, the male armature is different, though somewhat closely akin, whilst in the general pattern of the underside of the imago is found the easiest method of discriminating it. The three species belonging to the genus are *sinensis*, *tenystroemi*, and *rhymus* and they are easily separated by their pattern from the main body of the genus *Strymon*.

Tutt (*loc. cit.*) raised a number of genera for various species of *Strymon*; *Fixsenia*, type *herzi*, Fixs.; *Leechia*, type *thalia*, Leech, (altered by Tutt later on to *Strymonidia*); *Felderia*, type *eximia*; *Edwardisia*, type *w-album*, Knoch (afterwards altered by him to *Chattendenia*); *Klugia*, type *spini*, Schiff.; *Kollaria*, type *sassanides*; *Erschoffia*, type *lunulata*, Ersch.; *Bakeria*, type *ledeveri*, Bdv.; and *Nordmannia*, type *myrtale*, Klug. In the latter two cases there are no androconical patches, but in all the others androconia are present. I hold, however, that if a genus is to be raised it should be raised on characters applicable to both sexes. I have searched and searched in vain to try and find characters, structural characters, by which I could retain some of these genera, but I have completely failed, and I do not see any valid reason for encumbering our minds with all these names, several of which are for a single species, whilst in most of them no diagnoses were given. On the other hand, they all fall quite satisfactorily into the genus *Strymon*, Hb. This genus is then thoroughly homogeneous, and even including all the North American species, it is by no means unduly large. The male armatures all follow closely one type, the general facies of the various species follow closely similar lines, merely diverging from spots to stripes, whilst their structure is practically identical. Under these circumstances I propose to use the name *Strymon* to designate the genus of all the species classed by Staudinger, Leech, and others under *Thecla*. I should also mention that Strand gives new names, *viz.*, *Pseudothecla*, *Superfieddo*, *Thecliola*, and *Tuttiola* for *Erschoffia*, *Kollaria*, *Felderia*, and *Klugia*, all of which are pre-occupied. (*Entomol. Rundsch.*, 1910, p. 161.) These names will likewise have to fall to *Strymon*.

*Zephyrus*, Dalman, was raised in 1816 and the type fixed by its author as *betulae*, L., and *Thecla*, Fabricius, had its type fixed by Swainson, as already stated in 1821, as *betulae*.

*Ruralis*, L., had its type fixed by Barbut in 1781 as *betulae*: this, therefore, is the type.

*Aurotis*, Dalman, is given by its author as a sub-genus of *Zephyrus*, whilst Scudder, in 1875, fixed the type as *quercus*. *Quercus* is congeneric with *betulae*, so that the name falls before *Thecla*, *Zephyrus*, and *Ruralis*.

*Bithys*, Hb. (1816), had the type fixed by Scudder (*loc. cit.*) as *stryphon*. I do not agree with his reasoning, but he fixed the type and this must be accepted. Tutt's suggestion that *quercus* be the type is *ultra vires* on account of Scudder's double action, irrespective of which, as I have said before, Stephens' use cannot be accepted as a restriction.

The genus therefore stands thus:—

*Ruralis*, L., type *betulae*, L. (1781).

*Thecla*, Fab. (1807), *Zephyrus*, Dalman (1816), *Aurotis*, Dalman

(1816). *Ruralis* should therefore be used for all the species allied to *betula* and *quercus* including the beautiful Eastern green species classed under *Zephyrus* by de Nicéville, Leech, and other authors.

*Thestor*, Hb.—It is with real regret that I have to give up Hubner's genus for *ballus* and its congeners. I have no doubt it was described from that species. Hübner figured it well, and he knew its life-history.

*Tomares*, Rambur, was, however, created solely for *ballus*, on the strength of which Scudder named *protumnus* (*petalus*) as the type of *Thestor*, evidently by elimination. Lederer uses the name *Thestor* simply in the ordinary way in a limited faunistic paper, this, like that of Stephens', is no restriction. I regret, therefore, that in consideration of these facts I feel compelled to adopt *Tomares* in the place of *Thestor* as used generally.

*Heodes*, Dalman.—In raising this genus Dalman mentions only *virgaureae*. This, therefore becomes the type. Scudder cites *phlaeas* as the type, but he had evidently overlooked the fact that Dalman only mentions *virgaureae* in his generic synopsis.

*Chrysophanus*, Hb., had its type fixed by Scudder as *hippotoë* (*loc. cit.*). This species is absolutely congeneric with *virgaureae* and therefore falls before *Heodes*. The neuration, structure of legs, palpi, antennæ and eyes of both species are quite similar.

*Chrysoptera*, Zincken (1817).—Tutt cited *virgaureae* as the type of this genus, which therefore also falls before *Heodes*.

*Runicia*, Tutt, and *Lowia*, Tutt.—These genera were raised by the author for the reception of *phlaeas* and *dorilis*, respectively, I have examined carefully the species and cannot find a single character whereby to differentiate them from the genus *Heodes*, and I have no question in my mind that the names should be sunk to *Heodes*.

This leaves us with the genus *Heodes* for all the Palearctic coppers except one (*caspius*); *Chrysophanus*, *Chrysoptera*, *Runicia* and *Lowia*, sinking before it.

The case of *caspius* is peculiar. I had found the neuration differed from *Heodes*, this being recounted by Tutt in his vol. ix., p. 141, and we therefore agreed to class it with the *Strymoninae*. Subsequent examination of the male armature has proved to me that it cannot be retained with that group. The armature is entirely Heodine, the tegumen is quite peculiar, and, with the exception of *Heliophorus*, there is nothing like it—under these circumstances it must go back to the *Chrysophanidae*—this name is so well known that I think it would be wise to retain it for the family group. A new genus is required for it, the neuration being different, and I therefore propose to call it *Hyreanana*. The genus differs from *Heodes* in that veins 8 and 9 are absent, whilst in Dalman's genus only vein 9 is wanting. The type is *caspius*.

*Cigaritis*, *Hypolycaena*, and *Iolans* call for no remark in this paper, as I am dealing mainly with European genera.

*Lampides*, Hb.—This genus requires a little unravelling. It was created for a heterogenous group, among them being *aclianus* (*zethus*) and *boeticus*. It was used by Butler in 1869 for both the species

mentioned (*Cat. Fab. Lep.*, p. 162), and also by Newman in 1870 (*Brit. Butts.*, p. 117) for *boeticus*. Scudder next appears, and he acts definitely (*loc. cit.*, p. 201) as first reviser, citing *aelianus* as the type, this therefore must be accepted. Tutt apparently overlooked this in his work. Scudder, however, was in error in saying that "it cannot be employed for *boeticus*, as this became, in 1810, the type of *Polyommatus*." It had escaped his attention that the type of *Polyommatus* had been settled by Latreille himself in 1804 as *argus*=*icarus*, so that *boeticus* was really quite free.

*Lampides*, as used in Standinger's *Catalog*, is wholly heterotypical. *Boeticus* is the only species named that can belong to the genus. I am a little doubtful whether this species is congeneric with *aelianus*, the blasenschuppen being entirely diverse in *boeticus* from the whole of the *aelianus* group; but it may well be left in *Lampides* for the present.

*Syntarucus*, Butler.—The genus was raised solely for *telicanus*, Lang (*P.Z.S.*, 1900, p. 929). The male armature is quite different from its near allies, and the species must be accepted as the type. Tutt created the genus *Langia* for this species, which he afterwards altered to *Raywardia*, *Langia* being pre-occupied. Both, however, fall to Butler's genus.

*Tarucus*, Moore.—In his *Lep. Ceylon*, vol. I., 81 (1881) the author created this genus and cited *theophrastus*, Fab., as the type. *Balkanica* likewise belongs to it.

*Azanus*, Moore.—Created in the same publication as the previous genus (p. 79) with *ubaldus*, Cramer, as the type. We have three species to cite as belonging to it, *viz.*, *jesous*, Guér., *eleusis*, Demaison, and *ubaldus*: *thebana*, Stgr., is a synonym of this last.

*Cyclyrius*, Butler.—Butler raised this genus (*P.Z.S.*, 1896, p. 830) and named *webbianus* as the type.

*Chilales*, Moore.—Moore (*loc. cit.*, p. 76) created this with the type *laius*, Cramer. I have shewn (*Trans. Ent. Soc.*, 1913, p. 201) that *galba*, Ld., and *phiala*, Gr.-Gr., are best placed under this genus. We thus have therein, *galba*, *phiala*, and *trochylus*.

(To be continued.)

### Three Myrmecological Notes.

By HORACE DONISTHORPE, F.Z.S., F.E.S.

#### I. A GYNANDROMORPH OF *MONOMORIUM FLORICOLA*, JERD.

*Head black, thorax and gaster shining black-brown, legs pale yellow, except the greater portion of the femora, which is brown. Petiole and post-petiole light brown. Antennae dirty yellow, with apex and base a little darker.*

*Head* ♂, striate and rugose; eyes and ocelli large; left antenna ♂, 13-jointed, scape short, not as long as the first three joints of funiculus; funiculus with apical joints a little broader, but not forming a club; right antenna ♀, 12-jointed, scape long (twisted in this specimen), first joint of funiculus long, the following joints between the first and the club, short and transverse; club three-jointed, as long as the rest of the funiculus, its last joint as long as the preceding two together. *Thorax* ♀ in shape, narrow, with mesonotum long, the left side exhibits the fissures where the wings were attached, the right side intact. (It must be remembered that in this species the females are always ergatoid, being without wings, the left side is therefore ♂ in this particular.) *Pedicel, gaster, and legs* ♀.

*Long*, 3mm.

My friend, Mr. E. Ernest Green, on his return from Ceylon, gave me a number of tubes with ants in spirit, and one of these contained a colony of *Monomorium floricola*, comprising some ♀♀, a few ♂♂, a very large number of ♂♀, larvæ and pupæ. In this colony I found the above-described curious gynandromorph.

In 1903 Wheeler described six gynandromorphous ants, and reviewed the previously recorded cases, seventeen in number [*Bull. Amer. Mus., N. H.*, **19**, 653-683, 11 figs. (1903)], and in January 1914 he again reviews the additional cases that have been described since his former paper. He remarks, "although many thousand ants have since passed through my hands, I have failed to find any additional cases. Other observers, however, have been more fortunate, and have described seven within the past decade" [*Amer. Nat.*, **48**, 49-56 (1914).]

These seven additional cases—three of which were British specimens described by me—together with the one now described, will bring the total of the number of cases which have been recorded up to thirty-one.

## II. ILYOBATES BENNETTI, N.S., A SPECIES OF COLEOPTERA NEW TO SCIENCE.

*Brownish-red, elytra, apex of abdomen and base of segments, antennae, palpi and legs yellowish, pubescence yellow.*

*Head* coarsely punctured; *antennae* with first joint thick, thicker than in *nigricollis*, second joint shorter, joints four to ten transverse, eleventh longer than broad, but shorter than in *nigricollis*; *maxillary palpi* with second joint very little longer than first, considerably thickened towards apex, the whole being thicker and shorter than in *nigricollis*; *labial palpi* thicker and considerably shorter than in *nigricollis*. *Thorax* as coarsely punctured as head, transverse, not much narrower than elytra, shorter than in *nigricollis*, with sides less rounded, and posterior angles sharper and more prominent. *Elytra* less coarsely punctured than head and thorax, about as broad as long, shorter and less coarsely punctured than in *nigricollis*, with humeral angles more prominent and less rounded, pubescence shorter and closer. *Abdomen* above duller, punctuation closer, at the base of the first four visible segments coarser and closer.

*Underside* duller, punctuation coarser and closer, pubescence shorter and closer. *Posterior femora* somewhat bowed behind middle.

*Long*, 3mm.

This specimen was captured by my friend, Mr. W. H. Bennett, at Hastings, who took it with *Lasius fuliginosus* in Bexhill High Wood in 1907, and I have named it after the captor.

At the time he thought it must be a new species, and, having sent it on to me, I agreed with him, and forwarded it to Father Wasmann, who also expressed the same opinion. It was then sent to another authority on the continent, who stated it was only a small specimen of *I. nigricollis*, Pk., and there the matter rested. Bennett, now having kindly presented the specimen to me, I determined to study it more closely, and, on finding so many marked differences between this specimen and specimens of *nigricollis*, I feel justified in describing it as a new species. As it is such a small specimen, the comparisons with *nigricollis* are, of course, in proportion to its size. The most striking features are the thicker and shorter palpi, which may, perhaps, suggest modification to suit a myrmecophilous life.

## III. ATEMELES EMARGINATUS, Pk., VAR. NIGRICOLLIS, KRAATZ. [NATURG. INS. DEUTSCHL., **2**, 117, (1858).]

Two specimens of this variety, which is new to Britain, were

captured by Mr. Wallace-Kew, in a nest of *Myrmica laevinodis*, Nyl., var. *ruginodo-laevinodis*, For., under a large stone at Countisbury near Lynmouth in Devonshire, in October 1912, who kindly presented them to me. Father Wasmann determines them as this variety; the specimens are very large, measuring 5mm. in length.

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### Notes on the identity of the Dermaptera described by Thunberg.

By MALCOLM BURR, D.Sc., F.L.S., F.Z.S., F.E.S.

In the *Nova Acta Regiae Societatis Scientiarum upsaliensis*, vol. ix., p. 52, 1827, Carl Peter Thunberg described a few Dermaptera, under the title *Coleoptera capensia*. The descriptions are exceedingly brief, and it is by no means clear to what species they are to be referred.

Being unable to go to Upsala to see the original specimens, I wrote to Professor A. Wiren, who exceedingly kindly sent me all the earwigs of Thunberg that are in the Museum.

I was at once disappointed to see no South African specimens in the box; indeed, only two of the specimens appear to be referred to, and these are two of Fabricius' species.

Thunberg refers to them in the following terms:—

*F. flexuosa*: forfice flexuosa, elytris biguttatis. *Forficula flexuosa*, Fabr., *Entom. Syst.*, i., 2, p. 5.

*F. dentata*: forfice basi dentata arcuata, fusca, thoracis marginibus pedibusque pallidis.

*Forficula dentata*: Fabric., *Entom. Syst.*, i., 2, p. 5.

The specimen labelled "*flexuosa*" is an ordinary macrolabious specimen of *Forficula auricularia*, L. The elytra are rather pale, but scarcely "*biguttatis*;" it cannot be the *flexuosa* of Fabricius, which de Bormans suggested is *Psalis percheron*: probably he was right, as Fabricius' description agrees very well with *P. percheron*, and this specimen came from Cayenne.

The specimen labelled "*dentata*" has lost the abdomen and forceps, but there is no mistaking the extremely characteristic head, pronotum, elytra and wings of a male *Auchenomus javanus*, Borm. This must surely be a misidentification on the part of Thunberg. Fabricius' *dentata* is certainly synonymous with *F. auricularia*; the description and the type, which is in the Banksian collection in the British Museum, leave no doubt that this long-established synonymy is perfectly correct, and Thunberg's specimen merely misidentified.

From the absence of any African material, it would seem that the types must be lost, probably by Thunberg himself, after his return from Africa in 1775, but before the publication of the paper in 1825, as it does not seem likely that any should be lost since he presented his material to the Upsala Museum. Very probably the two Fabrician species are included in the "*Coleoptera capensia*" in genuine error by Thunberg, who may be pardoned a certain forgetfulness after a lapse of half-a-century. But it means that we are thrown back to guesswork in attempting to identify his three species.

I offer the following suggestions on the assumption that he was dealing with common African species:—

— *F. marginalis*: fusca, thoracis margine postico pedibusque pallidis; forfice



recta, mutica. Paulo major *F. minori*, tota picea seu fusco-rufescens, margine thoracis postico et imprimis pedibus pallidis, glabra. Forfex recta, inermis.

The above description fits in very well with the creature usually referred to as *Labia marginalis*, Thunberg, with which *L. ochropus*, Stål, is usually identified; thus, as a matter of fact, three distinct species have been confused; the West African one I have separated under the name *L. ovenii*, and the Abyssinian and East African one is also distinct, but has not yet been described. On the assumption that Thunberg's specimen was South African, it is worth retaining his name for the South and Central African form.

Stål's description is as follows:—

*F. ochropus*: nigropicea: antennis articulis subelongatis, flavotestaceis, apicem versus fusciscentibus; elytris fuscipiceis; alis, forcipe pedibusque flaviscentibus: forcipe parva, subcurvata.

This agrees perfectly well with my South African specimens, and I feel that de Bormans was right in considering *marginalis* of Thunberg and *ochropus* of Stål as identical.

*F. fasciata*: picea, antennis albo-annulatis. Quadruplo major *F. minori*, tota picea seu fusco-rufa, glabra, antennis cingulo albo ut in ichneumonibus. Forfex recta, inermis. In elytrorum apice lineola alba obsoleta.

I am convinced that this is *Nala lividipes*, Duf. I have seen specimens, notably from the Kalabari Desert, which are quite four times as big as *Labia minor*, and there is often a very narrow, pale transverse band across the wing-scales just beyond the tip of the elytra; I possess specimens from the French Congo with the antennæ ringed with white. Thunberg's name has a year's priority over *lividipes*, Dufour (1828) and I am accordingly reluctantly obliged to relegate Dufour's name *lividipes* to synonymy and establish *Nala fasciata*, Thunb., as the correct title of this much-named species.

*F. capensis*: flava abdominis apice nigro; forcice arcuata, mutica. Duplo minor *F. auricularia*, tota glabra, flava, apice abdominis supra nigro seu piceo. Forfex valde arcuata, inermis.

The description of this corresponds very well with *Diaperasticus erythrocephalus*, Oliv., and I do not think there is much doubt as to identity. Fortunately, the accepted name is the older one.

De Bormans makes no suggestion about either of the two latter cases.

#### SUMMARY.

*Forficula flexuosa*, Thunberg, is not *F. flexuosa*, Fabr., but a misidentified macrolabious *F. auricularia*, L.

*Forficula dentata*, Thunberg, is not *F. dentata*, Fabr., but a misidentified *Auchenomus javanus*, Borm.

*Forficula marginalis*, Thunberg, stands, *F. ochropus*, Stål, being synonymous.

*Forficula fasciata*, Thunberg, replaces the name *lividipes* of Dufour, and the correct name of the species is therefore *Nala fasciata*, Thunberg.

*Forficula capensis*, Thunberg, is a synonym of *Diaperasticus erythrocephalus*, Oliv.

[Since going to Press, I have received, through the kindness of Professor Y. Sjöstedt, of Stockholm, and his artist, Mr. A. Ekblom, an excellent water-coloured drawing of Stål's type of *L. ochropus*, which shows beyond all doubt that it is identical with the South African species in my own collection, which I have determined as this species.—M.B.]

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### Tachycines asynamorus, Adelung, instead of Diestrammena marmorata, Haan.

By MALCOLM BURR, D.Sc., F.E.S.

In a recent article (*Ent. Rec.*, xxv., p. 228, 1913), I recorded the occurrence of this curious Stenopelmatid, at St. Leonards, and in the *Entomologist* for May, 1914 (p. 145), Mr. Lucas also records it from Ipswich, and gives a good figure.

Its occurrence in a hothouse at Lille is noted by Chopard (*Bull. Soc. Ent. Fr.*, 1913, p. 284), but in a supplementary note (*op. cit.*, No. 1913) he corrects the determination, considering that it is the closely related *D. unicolor*, Bor., and then again a third time he is obliged to come back to it (*op. cit.*, 1914, p. 122), with the final opinion that it is identical with a new monomorphic genus discriminated from *Diestrammena* by Adelung (*Ann. Mus. Zool. Ac. Imp. Sci. St. Petersburg*, vii., 1902, p. 56 *et seq.*) under the name *Tachycines*. This genus is closely related to *Diestrammena*, differing in the armature of the posterior tibiæ. Chopard suggests that the German and British specimens may also be referable to Adelung's species.

*Tachycines* differs from *Troglyphilus* in the long mobile spines of the anterior and intermediate femora, and from *Diestrammena* and its allies in the unequal spines on the upperside of the posterior tibiæ, somewhat stouter body and rather rounded subgenital plate of the female, this plate being, according to Brunner, pointed and triangular.

Adelung's specimens were found in imported plants in a palm-house in St. Petersburg, the owner of which considered that they had come with some bark with orchid-roots from Colombia.

I have given away most of my St. Leonards specimens, retaining, unfortunately, only a single male. This has the characteristic armature of the posterior tibiæ described and figured by Adelung: the spines lie very flat and are compressed, and arranged in groups of 3-7; in each group each succeeding spine is a little longer than the preceding one, each group ending in a decidedly bigger spine; there are a few of the larger spines irregularly disposed.

I possess some of Brunner's cotypes of *Diestrammena unicolor* from Burma, which do not show this arrangement.

I am, therefore, convinced that the St. Leonards specimens, indeed probably all the European captures, are to be referred not to *Diestrammena marmorata*, Haan, but to *Tachycines asynamorus*, Adelung.

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## SCIENTIFIC NOTES AND OBSERVATIONS.

NEWSPAPER ENTOMOLOGY.—A most extraordinary letter was published in the *Daily Chronicle* of May 9th, which, if genuine, is probably unique as an illustration of crass ignorance, misapplied energy, aberrance of observation and assumption of scientific knowledge. This lucubration is contributed to the columns usually devoted to gardening. Although it will take up a considerable amount of our valuable space, we feel that all entomologists should know that much still remains to be done to make the "man in the street" see a thing when he sees it.

"Convinced in previous years that lady-bugs or lady-birds or May-bugs are the procreators of blight and responsible for all its ravages, I have in the last few days been closely watching on black currant bushes:—1. Arrival of the lady-bugs. 2. 'Mating' of the lady-bugs. 3. Deposit of larvæ on scene of No. 2. 4. Some five days later, hatching of the green aphid. 5. appearance of the black blight. 6. General blighting of the leaves of the black currant bushes. (Note.—The lady-bug is the first of every parasite to appear on freshly-opened leaves after the winter season.)

"The ocular evidence shows that the May-bug or lady-bird is the mother of 'blight.' I have preserved leaves from bushes showing the phases in the generation of aphid or blight. The black currant bushes have served as an early nursery of the blight; the next stage will be the blight on to beans, poppies, sweet peas, etc.

"At the seashore, where 'blight' abounds on decaying seaweed, the lady-bug is also found at work, but it is of a yellower colour, just as seashore poppies are yellower than the field poppies, and probably by reason of the salt.

"Up to the present, 'lady-birds' have been supposed to 'eat up the blight,' whilst they are merely 'couving' it, and the hundreds of thousands of pounds' damage done annually by 'blight' has unquestionably been aided by those who foster, rather than seeking to extirpate, the lady-bug.

"This question concerns the well-being of farmers more than pigeons, pheasants, rabbits, or even the ravages of the common sparrow. May I ask if the Board of Agriculture occupies its energies in disseminating literature on the means to destroy the lady-bird, May-bug or hannelton, in place of the ineffectual and costly processes for dealing with its product?

"Also, what is the best means to employ at the present stage, when the 'blight' is already hatched, and the lady-bugs are still busy propagating it on trees serving as a nursery for the aphid?

"If, in the interests of agriculture and gardening, you thought it desirable to forward this letter to the Board of Agriculture, you would be quite at liberty to do so, and perhaps render a service to the community."

In his appended remarks the gardening editor takes a very middle course and pleads for further investigation. Subsequently several well-known practical entomologists have sent crushing remarks on the "observations" of the original writer, of which I hear privately that only the mildest parts were published. Still the sample of brain-work (!) is too good to be lost.—H.J.T.

NATURAL COMBINED COLONIES OF ANTS.

1. Incipient colony of *Formica sanguinea* and *Formica fusca*.

At Weybridge on July 3rd, 1913, I found a nest of these two species in a stump. The numbers of the two species were about equal, indicating the formation of the colony by a young *sanguinea* queen having been accepted by a colony of *fusca*, since normal colonies, where the *fusca* slaves are obtained by slave raids, contain very few *fusca* in proportion to *sanguinea*. That the colony was incipient was shown by the small size of the *sanguinea* ♀♀ and their dark colour, the smallest specimens measuring 4.5mm. and the largest 5.8mm., as against the normal size of 6.9mm. By the end of July all the pupæ I could obtain had hatched out, 35 being *sanguinea* and 34 *fusca*. This raises an interesting question, and points to the probability of there being a *fusca* queen in the nest, since the colony was so small that it was unlikely a slave raid could have taken place that year, and the larvæ of neither species live through the winter. Unfortunately the situation of the nest rendered it impossible to dig it up completely so as to settle this point. Very few such colonies have been found in a natural state, though many have been obtained in artificial nests.

Forel has recently (*Ann. Soc. Ent. Belg.*, lvii., 1913) proposed two new subgenera, *Raptiformica* for the *sanguinea* group, and *Serviformica* for the *fusca* group.

2. Natural combined colony of *Lasius niger* and *Lasius umbratus*.

On May 28th of this year I found a large mound-nest of these two species, in about equal numbers. The ants were on perfectly friendly terms, running about together and saluting each other. Close by was another mound-nest belonging to the same colony. The *umbratus* ♀s were uniformly small, just as they have been in my captive colonies, mostly smaller than the *niger*. The measurements were for the *umbratus* 3.5mm and for the *niger* (all of whom were large ♀s) 3.8mm. to 4.0mm. In old established colonies *umbratus* ♀s average 4.0mm. to 4.5mm. *Lasius umbratus* regularly founds its colonies by a young ♀ being accepted by a *L. niger* colony, *L. mixtus* in a similar way with *L. alienus*, and *L. fuliginosus* with *L. umbratus*.—W. C. CRAWLEY (B.A., F.E.S.).

3. Incipient colony of *F. sanguinea-fusca*.

On May 1st, 1914, an incipient colony was found in a sandy bank at Woking, and consisted of one queen (*sanguinea*), 60-80 ♀s, and three *fusca* slaves. The nest was not a deep one, the galleries only descending to the depth of one foot. That the colony was incipient was shown by the extremely small size of the ♀s, many of them being smaller than the *fusca* slaves, with pale thoraces and dark heads.—D. W. PINKNEY.

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## NOTES ON COLLECTING, Etc.

*COLIAS EDUSA*.—I received a living ♀ of *Colias edusa* from Brockenhurst, on May 16th, and hope that this means another *edusa*-year.—L. W. NEWMAN, F.E.S., Bexley, Kent.

*POLYOMMATUS (AGRIADES) THETIS*.—During the Field Meeting of the South London Entomological Society, on May 23rd, *Polyommatus thetis* was met with in some numbers in its usual haunts on the North Downs, near Ranmore Common. A number of *Hamearis lucina* were also captured, and one or two early specimens of the Burnet, *Anthrocera trifolii*. *Polyommatus icarus* was well out, and some of the ♀s taken

were very blue, and others had the peculiar pale blue irregular suffusions.—HY. J. TURNER.

HABIT OF *TINEA RUSTICELLA*.—It may be worth recording that I have bred some fifteen of this Tineid from a "pellet," or "casting," mainly consisting of fur and bones, which I took early this month (May 1914) from the nest of a Little Owl (*Athene noctua*) at Hardwick, near this town.—P. A. BUXTON, F.E.S., Cambridge.

COLLECTING IN THE SPRING OF 1914.—After the many complaints one heard of the dearth of butterflies last year, it is a real pleasure to be able to record their extreme abundance this spring. So, at least, I found them last week in Surrey. One is rarely privileged in England to see nearly a third of the British species on the wing in a single day, still less so in the middle of May, yet such was my pleasant experience, when, on the 15th, I saw no less than nineteen species on the wing. The warm spell at the end of April brought things along wonderfully, and I heard of *Leptosia (Leucophasia) sinapis*, and other spring butterflies, being taken by some young friends of mine as early as April 29th.

The locality was a remote spot in western Surrey, and, being anxious to see this little butterfly on the wing in one of the home counties, I seized the first opportunity of following it up.

The cold spell intervening, the first suitable day arrived on May 15th, and I started off for a long day at six in the morning. The pleasure of a real "butterfly" day never grows stale, and this one, enhanced by the glory of the spring flowers, was a day of days. August *Gonepteryx rhamni*, in dozens in the New Forest glades, make a fine show, but not to be compared with *G. rhamni* in equal numbers, among the young birches and bluebells, as on this day. They are ragged, it is true, but their raggedness is not apparent on the wing, nor even settling unless closely examined. *Euchloë cardamines* was in evidence directly I alighted from the station for my long tramp to the *sinapis* locality. I must have seen many hundreds during the day, including the usual small proportion of females, but they were quite put in the shade in point of numbers by *Brenthis euphrosyne*, when I passed through some of the woodland clearings.

They were in such numbers that over some of the bugle patches one could frequently have netted half-a-dozen at a stroke. *Pararge megaera* occurred along the roads, and *P. egeria* sparingly in the woods, while *Hesperia malvae* and *Nisoniades (Thanaos) tages* were everywhere. The three common Pierids were, of course, well in evidence, *P. napi* being the commonest and *P. rapae* scarcest. *Celastrina argiolus*, *Runicia phlaeas*, and *Coenonympha pamphilus* occurred sparingly, and a single *Hamearis (Nemeobius) lucina* was netted in a woodland glade. At intervals odd hibernated Vanessids were seen, *Aglais urticae*, *V. io*, and *Eugonia polychloros* all occurring, and in one corner of a meadow *Callophrys rubi* were skipping about the small birches and blackthorns, and well-nigh impossible to follow.

As I neared my destination the sky clouded over, and for half-an-hour very few butterflies were seen. At last, however, as the sun broke through again, I netted my first *L. sinapis*, and this was quickly followed by others. They occurred all day over an area of a mile or more, flying feebly and rarely resting. They were nowhere common, but occurred in all the clearings I explored in the immediate neighbourhood, and probably had a fairly considerable range. In all I

must have seen some three dozen, and I netted a short series of the best, although nearly all were quite fresh. Everything is wonderfully forward, and some of the *B. euphrosyne* showed considerable signs of wear, having evidently been out for some time. I was intent this day on butterflies and flowers, and only pursued such moths as forced themselves on my attention. Foremost of these was *Eulype (Melanippe) hastata*, just out and easy to catch, as it flew lower than usual.

I netted eighteen beauties, and could have taken many more. They were so plentiful that I twice had two and once three in my net at once. *Minoa euphorbiata* was also in evidence in one clearing, and many common "waves" and "carpets" were well out, already including a quantity of *Melanippe montanata*.

One *Drepana hamula* and one *Spilosoma mendica* came to the net, and one worn *Lobophora carpinata* and a fine fresh *Melanthia albicillata* taken from tree trunks. Even *Hypocrita (Euchelia) jacobaeae* was already out, and flew up as I walked through a meadow.

*L. sinapis* was still flying at half-past four, when I left the locality for my long walk back, and *B. cardamines* was on the wing for some time longer by the roadsides.

I have purposely refrained from being too explicit as to the locality, as *sinapis* is a butterfly so poorly equipped by nature for self-preservation, that a few industrious workers could soon clear it out. It is a great pleasure to see it again so near home, and to find that it still has at least one comparative stronghold in the S.E. counties.

The abundance and forwardness of Spring lepidoptera is borne out by the re-appearance after many years of *E. cardamines* and the quantities of *Celastrina argiolus* in our Highgate gardens. *Heliaca tenebrata* has occurred in numbers on the Highgate Golf Course, little more than five miles from Charing Cross, and yesterday at Sandwich, while following competitors in the Amateur Golf Championship, the insect life on the course was most striking.

The most abundant species were *Coenonympha pamphilus*, *Aspilates citraria*, *Mesotype (lineolata)* and *Crambus chrysonuchellus*, the latter three frequently worrying the players on the putting greens, when addressing the ball. The nettles round the Golf house were eaten to shreds by *Aglais urticae* larvæ and altogether the signs of the times point to a great butterfly year in store for us.—RUSSELL JAMES, 3, Bloomfield Road, Highgate. May 22nd, 1914.

## CURRENT NOTES AND SHORT NOTICES.

Mr. J. Edwards, Colesborne, Cheltenham, will be grateful to Entomologists who have collected Coleoptera or Hemiptera in Norfolk during the past five years for particulars of their captures for present publication.

On January 26th, of this year there died at Moulin, in his 70th year, Joseph Ernest Olivier, Editor of the *Revue Scientifique du Bourbonnais et du Centre de la France*, which he founded in 1888. He was a distinguished specialist of *Lampyridae*, and well-known to his English colleagues, especially to those whose acquaintances he made at the Congresses of Brussels and Oxford. He was the grandson of the famous A. G. Olivier, of the *Encyclopédie méthodique*.

One of the last of the strenuous band of recorders of the local fauna of Hastings during the latter part of the nineteenth century has just passed away in the death of the genial rector of Guestling, the Rev. E. N. Blomfield. 'Tis nearly a quarter of a century since, in company with Mr. A. Ford, we spent a very happy day at the rectory and listened to reminiscences of hunting days, and saw specimens of local interest, including *Euvanessa antiopa*, taken in his own parish by his own hands. Active to the last, he kept up his correspondence with workers of many orders, and was ever ready to impart to others his knowledge of aught that was local. Even after he had reached his eightieth year he was more than once present at the Verrall supper in London, and seemed to have changed but little since the time when we first met him in his beautiful home near Hastings.

We have received as a separatum an account of a trip made in May and June, 1913, to Albarracin, Central Spain, by Mr. W. G. Sheldon, who, in company with Mr. A. H. Jones, spent some six weeks there. The author paid particular attention to the variation of the Rhopalocera, and has diagnosed and named the following new forms. A number of *Aglais urticae* were bred and found to be a large race with average wing expanse of 60mm., comparable in richness of ground colour to var. *ichnusa* of Corsica, with a very wide band on the hindwings, and almost total suppression of pale patches in the tawny bands on the forewings. To this the name var. *teruelensis* is given. *Erebia epistygne* was not uncommon locally and was smaller than the French race, averaging only 46mm. in expanse of wing, and having a narrow, dark anal border to the forewing and lighter tip, while the ocelli on all the wings are well emphasised. The undersides are grey rather than brown. This Spanish form Mr. Sheldon calls var. *virithus*. A very strongly marked form of *Epinephele lycaon*, with ocelli on the forewings much enlarged with black shading, especially the lower one, is named ab. *boopis*. These three new forms are very clearly portrayed on the plate which accompanies the letterpress. A fine series of the beautiful *Melitaea desfontainii* was obtained, as well as many other choice and local species and forms.

Mr. H. H. Brindley, of St. John's College, Cambridge, is still continuing his investigations into the bionomics of *Forficula auricularia*. Two articles have recently appeared in the *Proceedings of the Cambridge Philosophical Society*, "The Proportions of the Sexes of *Forficula auricularia* in the Scilly Islands," and "Notes on the Breeding of *Forficula auricularia*." In the former paper the author says that "The present study of the earwigs of the Scilly Isles, as a whole, does no more than bring to light the facts recited, but they suggest that the group is a favourable and easily accessible locality for a full investigation as to sex-inheritance, influence of parasites and of environmental conditions." The latter paper gives an account of the rearing of the species, for the first time in captivity, from the egg to maturity.

In the *Scottish Naturalist* for March, Mr. Wm. Evans has commenced an article, which will no doubt be of much interest and usefulness, on the "Lepidoptera (Moths) and other insects at Scottish Lighthouses, chiefly in the Forth area." The writer has paid a very kindly tribute to our late editor, Mr. J. W. Tutt, from whose "able

articles" on "The Migration and Dispersal of Insects," he has made considerable extracts in his introductory chapter.

We have received from Herr Harry Federley, of Helsingfors, Finland, two articles published by him some time ago in the *Acta Societatis pro Fauna et Flora Fennica*. The first on "The Colour of some Lepidopterous Cocoons and the Similarity to their Environment." The larvæ experimented with were those of species in the genera *Saturnia*, *Cerura* and *Dicranura*. One result of the experiments was to prove that if the atmosphere surrounding the cocoons were kept dry, the cocoons would be colourless either in the dark or when fully exposed to the light, and that the brown coloration was brought out by dampness at any time, either during the manufacture of the silk for the cocoon or even some years later. The second article discussed "The Northern Races of *Dicranula vinula*," with figures of var. *fennica*, a paler form than the type and characteristic of S. Finland, and of var. *phantoma*, a much darker blackish form, characteristic of N. Finland. Much enlarged figures of the structure and arrangement of the scales of these forms with those of the type were also given. The numerous aberrations were at the same time referred to.

The *Irish Naturalist*, as a rule, contains but little entomology. The March number, however, includes a considerable contribution towards a record of "Irish *Ichnemonidae*," by the Rev. W. T. Johnson, and also an account, by G. W. Nicholson, M.A., M.D., F.E.S., of the coleoptera taken by him in September at Cloverhill, Co. Cavan, and at Balrath, Co. Meath.

Several lovers of nature in Yorkshire have during the last two or three years taken up the study of the Arachnida, and *The Naturalist* has at times contained reports of their observations. In the March number Mr. Falconer, of Huddersfield, contributes a long list of spiders which he has observed, with notes on their occurrence and habits. The author says that up to the present time 314 species have been recorded from the county, a number only exceeded by Dorset, the home of the great arachnologist, Pickard-Cambridge.

The volume of *British Lepidoptera*, left unfinished at the death of our late Editor, is rapidly nearing completion at the hands of Mr. Wheeler, and the Index is in a forward state, practically ready for the printer. Most of the plates are also either completed or in hand. Unfortunately, the MS. relating to *Hamearis lucina* was not sufficiently complete to indicate the author's views, and hence that species has not been dealt with. Nevertheless, the matter relating to the other species has been enough to ensure a volume of about the average size of the previous volumes, and, thanks to the strenuous work of Mr. Wheeler, is not a whit less interesting and useful than they are.

Still the craze for registering and naming the forms and aberrations of the *Parnassius* species goes on. In the March number of the *Entomologische Mitteilungen* Herr Felix Byrk discusses the variation in *Parnassius bremeri*, and illustrating with figures several new aberrations which he describes.

Two separata from the *Proceedings of the Second Entomological Congress*, 1912, lie before us. One, by Dr. Chapman, deals with "Some Experiments on the Regeneration of the Legs of *Liparis dispar*, L." and is illustrated by ten plates. The object in the first instance was to determine which joints in the larval legs corresponded



to those of the imago. It was found that complete regeneration of parts did not occur until after several moults. Unless a very radical removal of the leg be made, regeneration of the whole leg always takes place after four or five moults. If the amputation be by clean incision, regeneration takes a simple and straightforward course; if crushing takes place, various supplementary portions occur, and often duplication of parts. The second paper is one by the Rev. G. Wheeler, "Suggestions for securing Simplification and Permanency in Nomenclature." This article should be read by every one who thinks he has an opinion on Nomenclature, or who wishes to discuss this vexed question. The pros and cons of priority are discussed with the worst instances of its effects, Meigen's paper on Diptera, Linneus 10th versus 12th editions, the notorious *argus* var. *aegeon* case, etc. Many instances are given of the incidence of so-called "rules" on the permanence and fluctuation of the signification of generic names. A considerable section is devoted to the question, what is a name?, to Orthography and to emendation. [We cannot refrain from adding a further example of Orthography, the alteration of *nickerlii* (named in honour of Dr. Nickerl) to *niccerli*, when it becomes absolutely unrecognisable.] After a few words on Authorities and Availability, the author makes two suggestions (1) That no name discovered in an earlier publication be considered available if it displace one in unchallenged use for more than twenty-five years previously, (2) That a generic name shall not be held available in a different, but only in its recognised sense, or a restricted or extended use of the same. Mr. Wheeler then discusses what should be the duties of the International Committee and finally makes some remarks on varietal and aberrational names and on the nomenclature of parallel variation, which we might possibly reprint with great benefit to our readers who have not the opportunity of perusing the arguments in the original paper.

After a considerable interval another part, 18, of the *Lepidopterorum Catalogus* has been issued. It deals with the *Sphingidae*: sub-fam. *Ambulicinae*, *Sesiinae*, and is by Prof. H. Wagner. As regards completeness this part appears, if one may judge by the number of references given to *Mimas tiliæ* (nearly seven pages), to be quite up to standard. Aberrations and variations, as well as hybrids, are included. Nearly ten pages are given to the references to *Amorpha populi*.

In the *Ent. Mo. Mag.* for April Mr. E. A. Newbery announces an addition to the British Coleoptera in the species *Philydrus halophilus*, four specimens of which were taken by Mr. Claude Morley near Bawdsey, Essex, in April, 1904; Mr. D. Sharp adds *P. fuscipennis* which he had differentiated from *P. melanocephalus* from many localities; and Messrs. J. C. F. and H. F. Fryer add *Anthicus bifasciatus*, which they found in considerable numbers in old manure heaps near Chatteris, Cambs.

In the *Entomological News* for April there is an appreciative notice of the late Dr. Geo. Wm. Peckham, of Milwaukee, who passed away on June 18th, 1914, at the age of 68. In conjunction with his wife he wrote many articles and several books of their researches into the Biology of Wasps and Spiders, which are quite classical not only for their scientific accuracy and originality, but also for their scholarly and literary character.

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## SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.—ANNUAL MEETING.—*January 21st, 1914.*—No other names having been received in addition to those proposed by the Council as Officers and Council for the ensuing year, the latter were declared by the President to be elected. Mr. R. W. Lloyd, one of the Auditors, read the Auditors' Report, which was adopted on the motion of Mr. H. E. Page, seconded by Mr. J. Platt Barrett. The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. R. S. Standen, seconded by Mr. R. W. Lloyd. The President then delivered an Address, after which Prof. Poulton moved a Vote of Thanks to him, coupled with the request that he would allow the Address to be printed as a part of the Society's Proceedings; this was seconded by Mr. W. J. Lucas and carried by acclamation. The President returned thanks and Mr. O. E. Janson then proposed a Vote of Thanks to the other Officers for their services during the past year; this was seconded by Mr. T. F. S. Hoar and carried, the Treasurer and the two Secretaries returning thanks in a few words.

*February 4th.*—ELECTION OF FELLOWS.—Miss Maude Lina West Cleghorn, 57, Ballygunge Circular Road, Calcutta, and Mr. William John Forsham, M.R.C.S., L.R.C.P., The Villa, Bubwith, Selby, Yorks, were elected Fellows of the Society. PRODENIA LITTORALIS BRED IN ENGLAND.—Mr. B. H. Smith exhibited specimens of *Prodenia littoralis* bred from larvæ found feeding on bananas at Weymouth. A SPECIES OF PROTURA AND A NEW ORDER OF INSECTS.—Mr. C. B. Williams exhibited a specimen of the Genus *Acerentomon* of the Order *Protura* taken from moss in the New Forest, Hampshire. He also drew the attention of the Society to the new Order *Zoraptera* just described by Silvestri. ANT LARVÆ AS SEWING-MACHINES.—Mr. Donisthorpe exhibited specimens of the ants *Oecophylla smaragdina*, F., from Ceylon, and *O. rivescens*, F., from North Queensland. These ants use their larvæ to spin threads and fasten the leaves of their nests together. ALGERIAN DIPTERA.—Prof. Poulton exhibited a collection of Diptera and other insects associated with them, made by Dr. Adalbert Seitz, F.E.S. The specimens were chiefly taken at Batna (about 1,300 metres) in July, 1913. A PIERINE MIMIC OF A DANAIID.—Prof. Poulton also exhibited specimens of the Pierid *Neophasia terlooti*, and pointed out its mimetic resemblance to a Danaine. The following papers were read:—"On the egg laying of *Trichiosoma*," by T. A. Chapman, M.D., F.Z.S., F.E.S. "A remarkable new Genus and Species of Odonata of the Legion *Podagrion*, Sél., from N. Queensland," by Kenneth J. Morton, F.E.S. "Lepidoptera-Heterocera from S.E. Brazil," by E. Dukinfield-Jones, F.Z.S., F.E.S. "The Myrmecophilous *Aphides* of Britain," by Prof. F. V. Theobald, M.A., F.E.S.

*March 4th.*—Messrs. Wm. J. von Monté Pendlebury, Broadlands, Shrewsbury, and Keble College, Oxford; Robert Veitch, 7, Queen's Crescent, Edinburgh, and Francis Cardew Woodforde, B.A., Market Drayton, Salop, were elected Fellows of the Society. POLYMORPHISM IN ANTS.—Mr. H. Donisthorpe and Mr. W. C. Crawley exhibited a number of polymorphic forms in ants, illustrated by a chart, and read notes. GYNANDROMORPHIC ERIOGASTER LANESTRIS.—Mr. H. Main exhibited a gynandromorphic specimen of *Eriogaster lanestrus*, right side ♀, left

side ♂, bred last year at Eastbourne by Mr. E. P. Sharp. RARE GOLIATH-BEETLES.—Mr. O. E. Janson exhibited a specimen which he believed to be the female of *Goliathus wisei*, Heath, hitherto unknown, also specimens of *G. kirki*, Gray, in which the white markings were very perfectly preserved. BRITISH EUDECTUS AND OEDEMERA VIRESCENS.—Mr. Champion exhibited on behalf of Mr. E. W. Morse, of Leeds, the second British specimen of the genus *Eudectus*, probably a variety of *E. whitei*, Sharp, from Ingleborough, Yorks, and a pair of *Oedemera virescens*, L., from Symonds Yat, Hereford. SUGGESTED PROTECTIVE VALUE OF THE COCOON OF LYONETIA CLERKELLA, L.—Dr. F. A. Dixey exhibited, at the desire of Mr. J. C. Hawkshaw, F.E.S., a cocoon of *Lyonetia clerkella*, L., spun up on a cherry leaf. Mr. Hawkshaw suggested that the fine silken web attached to the leaf on each side of the supporting strands and guy lines, by means of which the cocoon is slung up like a hammock, served as a protection against ants. LIVING LARVÆ AND IMAGINES OF AGRIADES THERSITES.—Dr. T. A. Chapman exhibited a ♂ and ♀ imago of *Agriades thersites*, alive, bred from the egg; also two last-stage larvæ. DICHOTOMY OF ANTERIOR LIMB IN A COCCID.—Mr. E. Ernest Green exhibited a Coccid with double anterior limb, and read notes. LASIOCAMPA ILICIFOLIA.—Mr. L. W. Newman exhibited a fine ♀ *Lasiocampa ilicifolia* taken on the wing at Cannock Chase by Mr. G. B. Oliver on May 25th, 1913. Mr. Newman stated that the larvæ in captivity took readily to aspen. A VARIETAL FORM OF CIDARIA SUFFUMATA.—Mr. A. W. Mera exhibited two specimens of *Cidaria suffumata*, of an unusual form, from East Devon, received from Rev. J. W. Metcalfe, who takes this form in damp woods and finds it not entirely confined to one wood. A SURPRISING FAMILY OF HYPOLINNAS (EURALIA) DUBIA, BEAUV., AND ANTHEDON, DEL., FROM NATAL.—Prof. Poulton stated that he had just received, from Mr. E. E. Platt, of Durban, the male and female parents—both of the *wahlbergi* form—caught *in coitu*, with their large family of about 200 *mima* and *wahlbergi* in about equal numbers. The following paper was read:—"A Revision of the Central American *Chauliognathinae* (Fam. *Telephoridae*), based on the Genital Armature of the Males," by G. C. Champion, A.L.S., F.Z.S., F.E.S.

April 1st.—Mrs. Maria Ernestina Walsh, Soekaboemi, Java; Messrs. J. P. Ramakrishna Aiyar, B.A., F.Z.S., The Agricultural College, Coimbatore, South India; Eugène Bendefitter, 11 Rue St. Jaques, Le Mans, France; Rev. Prebendary Edward Grose Hodge, The Vicarage, Paddington; A. J. T. Janse, 1st Street, Gezina, Pretoria, S. Africa; Charles Nicholson, 35 The Avenue, Hale End, Chingford, N.E.; Frederic de la Mare Norris, B.Sc., The Agricultural Department, Kuala Lumpur, Malay States, were elected Fellows of the Society. A POINT IN MIMICRY.—Dr. T. A. Chapman exhibited some specimens of the genus *Curetis* from the Tring Museum, and read notes on a point of mimicry. PIERINES FROM WESTERN CHINA.—Dr. F. A. Dixey exhibited specimens of *Pierinae* from Western China, with drawings of their scent-scales, and remarked on them. NEW AND RARE PAPILIOS.—Mr. O. E. Janson exhibited both sexes of a new *Papilio* belonging to the *gambrius* group, and apparently most nearly allied to *P. ormeus*, Guér., also the rare *Papilio gabrielis*, Roths., both recently received from the Admiralty Islands. AN ANT'S NEST AND A MYRMECOPHILOUS BEETLE.—Mr. Donisthorpe exhibited a small nest of the ant *Cremastogaster schenki*, Forel, from Madagascar, fastened on the stem

of a tree. Also a small beetle, *Semiclaviger sikorae*, Wassmann, which came out of this nest, and is a guest of *C. schenki*. PROTURA.—Mr. C. B. Williams exhibited specimens of *Acerentulus*, of the order Protura, taken, by means of a Berlese Funnel, in soil at Wimbledon, Surrey. REMARKABLE ABERRATIONS OF RHOPALOCERA.—Mr. E. B. Ashby exhibited a ♀ of *Dryas pandora*, with darkly suffused underside hind-wing, very near the ab. *lilacina*, Obth., from La Granja; also an aberration of *Melitaea athalia*, from Hinterzarten, belonging to the *eos* group of aberrations of this species. The following papers were read:—"Descriptions of South American Micro-lepidoptera," by E. Meyrick, B.A., F.R.S., F.E.S.; "A revision of the Tipulid Genus *Styringomyia*," by F. W. Edwards, F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—February 12th.—NEW MEMBERS.—Mr. B. Williams of E. Finchley, and Prof. Meldola, F.R.S., were elected members. NATURE RESERVES.—Mr. H. Rowland-Brown discussed the matter of Nature Reserves, and appealed for further financial aid, and suggestions for the care of these areas. PAPER.—Rev. G. Wheeler read a paper on "The Genus *Melitaea*," and exhibited many European species. AMERICAN SPECIES OF MELITÆA.—Mr. A. E. Gibbs, his collection of the American species of the genus *Melitaea* with species of the allied genus *Phyciodes*. EUROPEAN MELITÆA.—Mr. Curwen, series of most European species of *Melitaea*. SICILIAN MELITÆA.—Mr. J. Platt Barrett, series of Sicilian *M. athalia* and *M. didyma*. PHYCIODES.—Mr. Edwards, species of *Phyciodes* and *Coatlantona* from S. and Cent. America.

February 26th.—SPECIAL EXHIBITION OF LANTERN SLIDES BY MEMBERS.—Dr. Chapman, illustrating mistletoe growing on Scotch Fir in the Dauphiny Alps. Mr. Tonge, various details of lepidopterous life-histories. Mr. C. B. Williams, organisms obtained by using the Berlese apparatus, and details of *Contiopteryx* and *Aleyrodos*, etc. Mr. West, Rotifers, Cyclops, various species of *Collembola*, etc. Mr. Dennis, illustrating various British Galls. Mr. Colthrup, illustrating the resting position of lepidopterous imagines, and of nesting sites of some shore-birds, and read a paper on his experiences in photographing the latter. A PLEXIPPUS BRED IN BRITAIN.—Mr. Frohawk exhibited a series of *Auosia plexippus*, bred from ova laid by a ♀ sent alive to this country. A GYNANDROMORPH OF E. LANESTRIS.—Mr. Main, for Mr. Sharp of Eastbourne, a bred gynandromorph of *Eriogaster lanestris*, left side ♂, right side ♀. SYNTOMID MIMICRY.—Mr. W. J. Kaye, the Syntomid *Diptilon halterate*, which is readily taken for a species of Diptera.

March 12th.—NEW MEMBERS.—Mr. J. C. Fryer, Northumberland Avenue. HELICONIUS SPECIES.—Mr. W. J. Kaye exhibited two quite distinct species of *Heliconius*, *H. hydara* and *H. amaryllis* var. *euryades* of almost exactly the same facies, with the microscopic slides of the genitalia. G. ILICIFOLIA CAPTURED.—Mr. Newman, *Gastropacha ilicifolia* ♀ taken at Cannock Chase, May 25th, 1913, by Mr. G. B. Oliver. N. AMERICAN HORNET.—Mr. Tonge, nest of the N. American Hornet, *Vespa maculata* from Massachusetts with several imagines. ALEURODES.—Mr. Step, photographs of *Aleurodes* (*Aleyrodidae*) a family allied to the *Coccidae* and gave notes on the habits of the insects. MICROSCOPICAL EXHIBITS.—Dr. Chapman, the androconia of *Agriades thersites*, spring-brood, large, much like those of *P. escheri*, summer-

brood, much like those of *P. icarus*. Mr. West, imagines of *Aleurodes* (*Aleyrodidae*). Mr. Adkin, armatures of *Ptycholoma lecheana*, cocoon structure of *Anthrocera filipendulae* and *Saturnia pavonia*. Mr. C. B. Williams, British species of the order *Protura*. Mr. Coxhead, galls, with larvæ and pupæ, of *Cecidomyia saliciperda*. Mr. Ashdown, small brilliant and metallic species of Coleoptera and Hemiptera, including *Hispa atra*, larva of *Jalla dumosa*, etc., with the Swiss *Ceuthorrhynchus horridus*. Mr. Noad Clark, androconial scales of *P. brassicae*, *Diatoms*, *Desmids*, and botanical structures.

March 26th.—EXOTICS.—Mr. Edwards exhibited a large Coleopteron, *Archon centaurus*, found dead at Blackheath, and also a number of Lepidoptera from Burmah, including *Chalcosia venosa* and *C. zetica*. SPECIAL EXHIBIT OF *COLIAS EDUSA*.—Mr. Tonge, a long series of *Colias edusa* taken near Reigate in 1877-8, the years of great abundance. Mr. H. J. Turner, *C. edusa* from Dawlish, etc., including ♀ var. *helice* and bred examples of intermediate coloration. Mr. A. E. Gibbs, *C. edusa* with local forms from many European localities, with allied species from the Eastern Palæarctic area and from the Nearctic region. Mr. R. Adkin, a large number of *C. edusa* including many specimens of intermediate coloration. Mr. Joy, a very long series of bred specimens of *C. edusa*, all of large size, many ♀s with small or no spots in the marginal bands. Mr. Dunster, *C. edusa* taken along the S. Coast of England during the past three years. Mr. Frohawk, very long series of *C. edusa* and ♀ var. *helice* showing almost complete gradation in ground from pure white to rich orange, including the rare shades of lemon colour and aberrations with black suffusion to the discoidal (forewing), with black hindwings, with drab marginal borders, and a ♀ measuring 67mm. Mr. R. Adkin, a long series of British *C. edusa* and read a paper entitled "*Colias edusa in Britain*" dealing in turn with Nomenclature, History in Britain, the Theory of its Occurrence, Probable Lines of Migration and Immigration, Local Habits, Variation and Aberration, Reasons of Irregular Abundance beyond the confines of its area of Natural Distribution, etc. A considerable discussion took place.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—February 16th, 1914.—This meeting was a joint one with the Manchester, Entomological Society, who were invited to tea by the Council. A large number of exhibitions were made, including the following, viz.:—AMAZON INSECTS.—A small collection of insects from the Amazons by Mr. C. H. Walker. Prof. Newstead and Mr. Watson, of Manchester, made remarks upon this exhibit, describing the habits and life-history of the more note-worthy species. MELANIC *P. GAMMA* AND VARIED SERIES OF OTHER SPECIES.—Mr. V. Coryton, of Manchester, exhibited a fine melanic specimen of *Plusia gamma* as well as a bronzy form, and the typical insect for comparison, also *Trochilium crabroniformis*, *Nola cucullatella*, *Eupithecia fraxinata*, and a short series of *Peronea variegana*, all from the Brooklands district of Cheshire. EARLY E. LICHENEA LARVÆ.—Mr. R. Tait, Junr., full-fed larvæ of *Epunda lichenea* found in the open in N. Wales, on January 10th, many then found had already pupated, he also made some remarks upon the early date. VARIETIES OF *A. GROSSULARIATA*.—Mr. B. H. Crabtree showed varieties of *Abraxas grossulariata* as follows, viz.:—*lacticolor-radiata*, *lacticolor-cuneata*, *iochalcea*, *flavo-palliat*a, and *flavo-*

*palliat-cuneata*. FORCING OF *E. ATOMARIA*.—Mr. W. Mansbridge, a long series of *Ematurga (Fidonia) atomaria*, from the Burnley district, bred by forcing in a warm room in January, including many dark forms; also a series of *Odontopera bidentata* var. *nigra* which emerged in January, in a cold room. *C. RETICULATA*.—Dr. P. F. Tinne, a series of *Cidaria reticulata*, from Windermere. LOCAL FORMS OF BRITISH BUTTERFLIES.—Mr. R. Wilding *Satyrus semele*, English and Irish forms, *Pieris napi* from Ireland, Kent, and the coast sand-hills, also *Melitaea aurinia (artemis)* from Ireland. DRAWINGS OF GEOMETRID ARMATURES.—Mr. F. N. Pierce had on view the drawings for his forthcoming work "The Genitalia of the British Geometers," as well as preparations under the microscope.

## REVIEWS AND NOTICES OF BOOKS.

COMMON BRITISH BEETLES.—By Rev. Chas. A. Hall, F.R.M.S. Published by Adam and Chas. Black, Soho Square, London, W. Price 1s. 6d. 88 pp.—8 plates in colour+15 in black and white photographs.

This professedly elementary treatise is well conceived, and should be in the hands of every intelligent lad in our secondary and public schools who is interested in Nature Study, and whose special bent is the study of beetles.

The author (circumscribed as he is by space and price) has done his work well. The information is sound, forming a sure foundation, and is of such a character as to lead the student to a more advanced field. Moreover, the book is not intended to encourage collecting as the "be all and end all." Whilst a chapter on "Collection and Preservation" is rightly included, the reader is told that "Collecting is necessary, but should always be regarded as subsidiary to observation." . . . "The species of coleopterist most desirable to-day, and in all time, is the observer of beetles in their natural haunts, and one who has ingenuity and patience enough to devise ways and means of keeping them in confinement through all their stages, so that accurate records of life-histories may be obtained."

Chapters are written on "The structure of Beetles," "Some remarkable beetles," "Some British Beetles described," and the Sub-Orders:—Adephaga, Clavicornia, Lamellicornia, Serricornia, Phytophaga, Heteromera, Rhyncophora, are briefly dealt with.

The publishers also deserve a generous meed of praise for the excellence of the volume, and for their liberality in the matter of plates which are calculated to be of great assistance.—H.E.P.

LEPIDOPTERA OF THE PANAMA ZONE.—1. *New Genera and Species of Microlepidoptera from Panama*, by August Busck, 67 pp. (2) *Report on the Lepidoptera of the Smithsonian Biological Survey of the Panama Canal Zone*, by Harrison G. Dyar, 212 pp. Wherever the influence of the United States extends there the Smithsonian Institute sends its trained emissaries to investigate everything of human interest. Most of the species were collected by Prof. Busck who went out especially to collect "Micros" and took "Macros" only as a side issue. Hence the larger lepidoptera are poorly represented and much of the material is new. Practically all the new species are introduced with notes showing differentiation from existing species.—H.J.T.

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Communications have been received or have been promised from Messrs. G. T. Bethune-Baker, G. Wheeler, R. S. Bagnall, C. W. Colthrup, A. Horne, F. W. Frohawk, Dr. Burr, H. J. Turner, R. Verity, E. A. Cockayne, P. A. Buxton, etc., with Reports of Societies and Reviews. Several more plates have been promised to illustrate articles.

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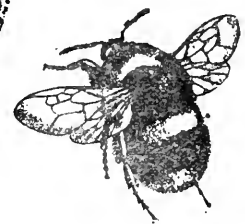
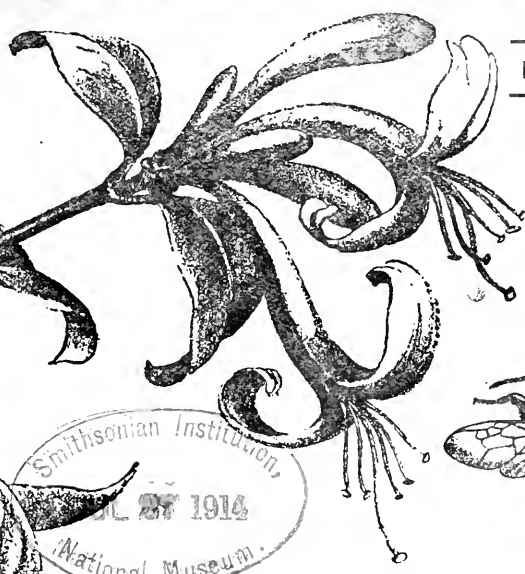
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## VOL. VI.

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## Late Summer in Norway.

By P. A. and D. A. J. BUXTON.

### I.—LESJE.

The insects with which the first part of this paper deals were taken about the Romsdal-Gudbrandsdal watershed between July 25th and August 1st, 1913. This is really much too late in the season for collecting in Norway. The locality was also given a passing visit at the end of August. The watershed is formed, not of a ridge, but by a lake (Lesjeskogens Vand), at about 2,000ft. Pine forest rises from this level to about 2,700ft., filling the whole country below that level, except for a few hay-fields round the farms, and a number of bogs and meres, mainly consisting of sphagnum, moss and cotton-grass. The actual pine forest is not interesting, "reindeer-moss" forming almost the only undergrowth. Above the pines, birch trees (*Betula alba*) extend to 3,000ft. This zone is much more open, and there is an undergrowth of blaeberry (*Vaccinium myrtillus*) supplemented by other plants of the same genus, with *Pyrola* spp., *Trientalis europaea*, *Cornus suecica*, etc.

In damp places the birch trees and their undergrowth extend downwards as low as "lake level" (2,000ft.). Above tree-line, which is sharply defined, the birch is replaced by a creeping ally, *Betula nana*. A dwarf willow, some two inches high, is found with many Ericaceous and Vacciniaceous plants, such as are described below for the higher zones in the Surendal.

About fourteen species of butterflies were still flying at the end of July. Except where otherwise stated it is to be presumed that the species occurred near Lesjevoerk (2,000ft.). *Colias palaeno* var. *lapponica* was taken round the edges of a bog; males were fresh, females had not appeared. One stray specimen was taken above tree-line. Judging from the British Museum series, 2-3,000ft. is normal for this insect in Scandinavia. A specimen in poor condition turned up at Mølmen on August 29th. There was some variation in depth of ground colour and in amount of dark markings. *Brenthis selene* and *B. euphrosyne* were rather going over by July 25th. *B. pales* var. *arsilache* and *B. pales* were in good condition; the former from 2,000ft. to beyond tree line, the latter attaining an altitude of nearly 4,000ft. The distinctness of the two forms was not grasped at the time, but probably their ranges overlap, and some specimens can hardly be assigned to one or the other form. A form of *Argynnis niobe* var. *eris* ♂s was common enough and fairly fresh, in some hay-fields. The Norse form is small, dull, and lacking in red on the upperside, and also on the forewing underside. *A. aglaja* also occurred. *Coeronympha pamphilus* was always in poor condition. *Erebia ligea* was freshly out. It seldom reached birch-line, but was common on sunny days, flitting over dandelions and hawkweeds in glades and paths. This species, also *C. pamphilus* and *Plebeius argyrognomon*, frequently sham death on being boxed, lying motionless on their sides for many seconds. *Aglais urticae* was not rare; one *Polygonia c-album* was taken at Horgheim, in lower Romsdal, on August 28th. *Chrysophanus hippothoe* var. *stieberi*, Gerh., seemed uncommon. It was fond of basking on yellow alpine composite flowers at about 3,500ft. *Polyommatus icarus* was in poor condition

and not common at lake level. *Plebeius argyrognomon* (= *argus*, auctt.) was abundant in both sexes at the end of July and also a month later, when the species was in poor condition. It was not by any means freshly out in July. It occurred to one of us that Norwegian lepidoptera perhaps remain longer on the wing than British ones. The suggestion is only put forward tentatively, but perhaps merits the attention of the wise and prudent. Anyhow, *P. argyrognomon* reached at least 3,500ft. It was very variable, but we are not in a position to discuss the series. *Urbicola comma*, one ♂, fresh, July 25th. In general the Norwegian form is var. *catena*, a most inconstant form, generally very dark. This particular specimen is paler than any Scandinavian specimen in the British Museum, and really looks quite British.

Of the moths, *Anthocera exulans* var. *canadis* was worn by July 25th (3,500ft.). This varietal name appears to be designed for the benefit of Scandinavian specimens in worn condition. *Plusia interrogationis* and *Agroperina lateritia*, Hufn., both occurred. The latter occurred at Gaasbu (or Gautsbud) at 3,000ft. also at Lesjevoerk. It was not completely over by August 25th when some came to sugar at Lesje. *Acidalia fumata* were worn by July 25th, *Pygmaena (Eucaterpa) fusca* was locally abundant just above tree-line; on July 25th, etc., the specimens were mostly fresh. The flight is "Geometrid," close to the ground and not very fast. Considering its colour the species is easily seen. *Carsia paludata* var. *inbutata* was fresh in July. The moth seemed to haunt willow, though its food-plant is *Vaccinium*. One sunny morning we watched a ♀ settle on various blossoms without resting in any special position or attempting to orientate herself. Towards midday she took up a position on a willow twig, moved her wings up and down a little and finally assumed the regular Deltoid posture with antennæ tucked under the forewing costa. *Coremia munitata* was taken at 3,000ft. in worn condition. *Entephria (Larentia) caesiata* was abundant in the forests, especially in the more open parts. *Cidaria truncata* (♂s) were common enough and fresh at the end of July (with this contrast *C. immanata* on the Sura in mid-August). *Cidaria testata* (♂s) was beginning to emerge at the same time. *C. populata* (♂s) was also abundant. At Lillehammer, on September 2nd, we took *Pieris napi* and *Emmelesia albulata*. The following HYMENOPTERA, which the Rev. F. D. Morice has kindly determined, were taken near Lesje:—*Rhodogaster punctulata*, *Vespa vulgaris*, *Halictus calceatus* var. *albipes*, *Odynerus trifasciatus*, *Bombus lucorum*, *B. jonellus*, and *B. agrorum*.

Mr. K. J. Morton has been good enough to name a few NEUROPTERA, etc. TRICHOPTERA, *Limnophilus vittatus*, F., *Neureclipsis bimaculata*, L., *Ithyacophila nubila*, Zett.; ODONATA, *Agrion concinnum*, Johanson, *Leucorrhinia rubicunda*, L.; PLECOPTERA, *Chloroperla grammatica*, Scop., *C. griseipennis*, Pict., *Isopteryx burmiesteri*, Pict., *Amphinemura cinerica*, Olivier, *A. standfussi*, Ris., *Leuctra digitata*, Kempny; EPHEMERIDAE, *Leptophlebia respertina*, L., *Siphurus lacustris*, Eaton (Gaasbu).

Dr. Malcolm Burr has helped us with a few ORTHOPTERA. The most interesting species is *Podisma frigidum*, Boheman, an alpine and arctic flightless species occurring from about 3,000ft. upwards as far as the ground was suitable. The species was abundant in small

boggy hollows on the hills wherever the ground was very damp; often living on nearly naked peat sparsely clad with *Eriophorum* and *Sphagnum*. Both sexes were abundant and paired at the end of July; and the same was true at the end of August. At the latter date the country was much more dried up, and the insect was dispersed even over the driest slopes. The colours are variable and sometimes most beautiful. The insect may be washed with yellow or bright green, or the elytra and top of head and thorax may be magenta, or the whole colour dark and almost inky. *Omocestus viridulus* (♂s), *Mecostethus grossus*, L., *Gomphocerus maculatus*, Thunb., (♀), *Stauroderus bicolor*, Charp. (nymph) also occurred, and one specimen of the cockroach *Ectobia lapponica*, L., was taken at 3,000ft.

## II.—SURENDAL.

From August 5th to August 26th we were in Surendal, about ten miles from the fjord. The flat bottom of the valley is here sometimes as much as a mile broad, and mostly under cultivation. A poor crop of hay is taken off most of this, but there are generally a few patches of potatoes and a good deal of bearded wheat. The valley is well sprinkled with farms and cottages, but these have no gardens. The river is largely fringed with alders, and these and birches grow here and there in patches among the fields. The sides of the valley are quite steep for the first few hundred feet. Alders soon give way to pines: these go over the first crest of the higher ground, and cover the country rather less thickly as the slope becomes more moderate. There are still some at 1,500 ft., but they no longer form a wood after about 700 ft. in most places. Alders grow at a height of several hundred feet in sheltered places.

Above the pines, and sometimes among them, there are often groups of birches. The ground under the pines and birches is covered with such plants as one would find in similar places in Scotland. *Vaccinium myrtillus* completely covers large areas; *V. uliginosum* is less common. There is also a good deal of *Arctostaphylos* and *Cornus suecica*, and in the more exposed places, *Erica tetralix*, and *Calluna vulgaris*, while *Andromeda*, *Linnaea*, *Trientalis*, *Pyrola*, *Polypodium*, etc., grow in suitable corners.

There are damp spots on most of the hills, where the usual bog-plants grow, e.g., several species of *Drosera*, *Pinguicula vulgaris*, and a great deal of *Narthecium ossifragum*. However, as a whole the hills were surprisingly dry. *Betula alba* is succeeded on higher ground by *B. nana*, and this grows to the top of most of the hills in the immediate neighbourhood of Moen, the place at which we stayed. It does not reach to the top of Hönstadknyken, which rises to 3,600ft. on the south side of the valley. On the north side the hills do not rise above 1,800ft. *Loiseleuria procumbens*, *Menziesia caerulea* and *Veronica alpina*, and similar Alpine plants grow right to the tops. There were small patches of snow still lying in sheltered places on the higher hills. The weather during the first week was cold and very wet. During June and July it had been exceptionally dry and hot. The second and third weeks were much warmer, and it seldom rained. When the sun was out it was almost unpleasantly hot.

We sugared only in the valley, and there not very frequently. Alders by the side of the rivers, and pines and birches half-a-mile

away, where the ground began to rise and the undergrowth was composed of bilberries, seemed to produce the same species. *Aplecta occulta* was fairly abundant, but none of the specimens were in good condition. The same applies to *Agrotis angur* on August 12th. Perhaps they had emerged before the wet weather, during which we did not sugar. One *A. caudelarum* came to sugar on the 16th (we caught another at light on the 11th). *Dyschoricta* (*Orthosia*) *suspecta* var. *grisea* and var. *nigrescens* occurred on August 12th: also *Xanthia fulvago* var. *flarescens*, and var. *cerago* on August 16th. *Noctua baja* was one of the commonest moths, some clay-coloured, others rufous, others dark red. *Amphipyra tragopogonis* and *Xylophasia monoglypha* also occurred sparingly in typical forms. *Hydroecia micarea* occurred at sugar and also at light on August 20th; *Xanthia lutea* (*flavago*), *Agroperina lateritia*, Hufn., and one *Calocampa solidaginis* came to sugar on August 20th, and one *Charaxas graminis* to light on August 16th. (For *Hydroecia erinaeusis*, vide *Ent. Rec.*, vol. xxv., p. 283.)

Butterflies were not common in the valley. One *Erebia ligea*, one *Argynnis aglaia* (♀, worn to shreds, August 22nd) a few *Aglais urticae* (not var. *polaris*) and *Pieris brassicae* (♀, August 23rd) were all that we saw. We also took the following moths at rest, *Xanthia lutea* (*flavago*), *Cabera pusaria* (one ♂), *Melanydris* (*Larentia*) *didymata* (one ♂) on August 16th, *Mesoleuca* (*Melanthia*) *bicolorata* (one) on August 5th, and *Epione apiciaria* on August 19th.

On the *Vaccinium* under the pines up the sides of the valley were quantities of larvæ of *Orygia antiqua*. Some had already pupated, while others were still quite small. Females emerged at the end of August, males were on the wing a week or two earlier. As was to be expected, they were somewhat darker than examples from the south of England, especially a small one that emerged on September 1st. We found two larvæ about 1,000ft up, but they were far commoner much lower. *Cidaria immanata* rested in large numbers on the pine trunks in these lower woods. There were still some specimens in fine condition on August 23rd, but most were worn by then. *Eutephria* (*Larentia*) *caesiata* was also very abundant. On the whole it was over earlier than *C. immanata*. *Lygria* (*Cidaria*) *populata* was perhaps commoner than either of these, resting in the *Vaccinium* during the day. Females were very scarce till the third week in August, and even then not as common as the males had been. In most cases the ground colour was pale straw-colour, with the darker markings sometimes very much reduced, sometimes covering the forewings almost entirely. A few, mostly ♂s, were suffused all over with a vinous or reddish-grey tint, which greatly obscured the usual markings and left the wings nearly unicolorous (ab. *musauaria*). One specimen is almost the form Linné described as *dotata* (L. B. Prout *in litt.*). *L. (C.) testata* was much less common; two ♂s appeared on August 11th. None of the forms of *C. immanata* were at all striking, though there was a great deal of variation along the usual lines. *C. miata*, one ♂ on August 20th. *Mesoleuca* (*Melanthia*) *bicolorata* also occurred in the woods, where alders grew, perhaps up to 1,000ft. The specimens varied but little. Most belonged to ab. *parvula* (= *rubiginata*); a few had no traces of the central band on the inner margin of the forewings; none had this band complete and none approached var. *fumosa*. *Hydriomena*

*furcata* was fairly common, generally in poor condition. One specimen seemed to be fairly typical, but most were very dark, one wholly so (var. *infuscata*.) *Eupithecia sobrinata* occurred very locally, perhaps because junipers were rather scarce. It was exceedingly abundant, but rather worn, in one small glen on the south side of the valley on August 21st. Most of the specimens were rather dark.

*Erebia ligea* occurred up to about 1,000 feet, in openings where the trees became scattered and the undergrowth Ericaceous. In the latter spots *Plebeius argyroquomom* was sometimes exceedingly common. Both sexes could be picked off rushes, etc., if the weather were dull. The females appear to be more noticeably suffused with blue of various shades than those taken at Lesje, in July.

A ♀ *Polyommatus icarus* of normal size, taken on August 16th, was dull brown above without any blue scaling; the orange crescents were reduced on the hindwing, absent on the forewing. On the underside the hindwing was normal with four basal spots. The forewing had no basal spots, while the post-median row was complete (seven spots). It was, however, remarkable in that the anterior five spots of the row were displaced inwards, and so arranged as to form a segment of a circle around the discal spot. The other two spots of the post-median row were normally placed, though one was most accurately set over the other, thus making a colon mark such as is often seen in *Aricia medon* (*astrarche*). The displacement of the five anterior spots rather recalls *Agriades thetis*. We can find no similar specimen in the late Dr. Gerald Hodgson's collection at Cambridge. There is a slight blue scaling beneath on the bases of all four wings, otherwise the specimen might almost be taken for *A. medon* (*astrarche*). *Argynnis aglaia* was apparently local. It was getting worn by August 11th and 15th. We failed to distinguish *Breuthis pales* and var. *arsilache* till we returned, but probably the former occurred only above tree-line; neither seemed to occur below 700 or 800 feet. We obtained one specimen of *Polygonia c-album*, about 2,000ft. up.

Besides these butterflies on the moors above the woods, there are still the Geometers that were common lower down; e.g., *Eutephria* (*Larentia*) *caesiata*, resting on the rocks (mostly over by August 25th, but we got a dark one in good condition on that date). *Hydriomena furcata* (a ♀, at 2,000 feet, August 25th). *Carsia paludata* and *Thamnomoma brunneata* were restricted to this ground. The former, in spite of our high latitude, was still var. *imbutata*. Females were still out on August 25th, but no longer fresh. It was not a scarce species, and easily dislodged from its resting places. *T. brunneata* was already going over when we first met with it on August 11th. However, it was still about on August 26th. *Saturnia paronia* we only obtained once, on August 8th (two larvæ, one of which has since emerged and is a typical ♀). On August 9th we found a larva of *Callophrys rubi* on *Vaccinium uliginosum*; it pupated on August 17th and emerged this spring. A larva of *Spilosoma lubricipeda* (August 18th) and larvæ of small Geometers on scabious have pupated, but not yet emerged. The larvæ of *Iodis putata* (*lactearia*) were abundant on *Vaccinium* (especially *V. uliginosum*); several emerged this spring. Two *Pygaera pigra* have also emerged from larvæ collected on willow; also one specimen of *Mamestra thalassina*, and one specimen of *Eupithecia satyrata* (larva on *Leontodon*). We must thank the Rev. G.

Wheeler and Mr. L. B. Prout for giving us assistance with various determinations.

Very few insects of other orders were collected. The ruby-wasp, *Chrysis ignita* (♀s) was not rare. The following Ants were taken: *Myrmica ruginodis*, *M. scabrinodis*, *Lasius niger*, *Formica rufibarbis*, *F. pratensis*, and *Camponotus herculeanus*.

The grasshopper *Podisma frigidum* occurred sparingly. Miles of suitable ground were explored, but the species was rare in contrast to its abundance above Lesje. *Omocestus viridulus*, *Mecostethus grossus*, *Gomphoceros maculatus*, and *Stauroderus bicolor* (♂, ♀, and nymph), were also taken. We took the following Caddis-flies: *Limnophilus stigma*, Curt., *L. auricula*, Curt., *Halesus radiatus*, Curt., *Ithyacophila nubila*, Zett., and *Philopotamus montanus*, Donovan. Also, among the Odonata: *Aeschna coerulea*, Ström. (common), and *A. juncea*, L. Among the PERLIDÆ: *Leuctra digitata*, Kempny; and among the May-flies: *Cloëon simile*, Eaton.

### ***Erebia manto* var. *gavarniensis*.**

By T. A. CHAPMAN, M.D.

One or two correspondents seem to think I ought to make some reply to Mr. Warren's paper on p. 109 of this volume; though for my own part, having nothing to alter in what I have already said (p. 35), I hardly see the necessity.

Mr. Warren notes that I deal with *manto* and *caecilia* of nearly equal sizes; this ought to have prevented his point (3) in which he apparently accuses me of the error that he thinks I had imputed to him. This I certainly did not do, as I supposed his observations were properly made and accurately recorded. As regards (5) angulation of cell in hindwing, I think the figures on Pl. III. fully justify my saying there is no such difference. (6) Here again Mr. Warren forgets that I was comparing specimens of almost identical size. (7) Falls under the same remark.

Now I do not for one moment suppose that Mr. Warren does not report precisely the facts that his specimens show, but I should like him to admit that I do the same.

I think our divergence arises from Mr. Warren making his observations on *manto* from an area in Switzerland, where practically all the races are small. I have *manto* of larger size than average *caecilia*: several of my specimens of the latter expand 44mm. only (I have no very small ones), whilst my *manto* average little less than this; I have a good many of 44mm. and several up to 46mm. in expanse, and have one specimen as small as 34mm. My largest specimens are from Innsbruck, St. Anton, and Chamonix. I also saw a large form near Cogne.

Now there was one point as to which my facts were not impartially gathered. In order to easier comparison, I selected specimens for examination of the neuration as nearly of the same size in the two forms as might be. In doing so I had no other intention than easy comparability, but I think the result, as far as the questions of neuration go, is to show that in comparing *manto* and *caecilia*, Mr. Warren was comparing small *manto* with larger, and, as it happens, found a fair average difference, I was comparing large *manto* with



large *manto*, and so found practically no difference. If this is so, it follows that the neurational differences found by Mr. Warren between *manto* and *caecilia* rather prove them to be the same species than distinct. Mr. Warren's small *manto* differ on the average from my large *manto* precisely as they differ from *caecilia*, with which my large *manto* agree. The differences, therefore, that he detects would, if of specific weight, divide Alpine *manto* into two species, one co-specific with *caecilia* from the Pyrenees.

There appears to arise from this discussion one point of very considerable interest, which it will no doubt require a good deal of further investigation to elucidate and confirm. This is, that, so far as concerns the neuration in *Erebia manto* and presumably in other species, the range of variation in large specimens and races differs from that in the smaller ones in such a way that certain deviations from mean value are more frequent in larger specimens, others in the smaller, so that it is even possible to assert, as Mr. Warren does, that the differences between the large and small forms is of specific value.

The difference in vertical range between the two forms is, so far as we know, considerable. That of *manto* is great, but *caecilia* between Caunterets and Gavarnie, has a range of about 1,500ft., and it must be remembered that we do not know much of its actual range. As to the restriction in each locality, we also know little of *caecilia*, the Caunterets locality is of some area, and *manto* can also inhabit rather restricted areas.

As to their being distinct species, this is largely a matter of personal equation. In many species, forms, much more distinct than these, are held to be geographical varieties. I take these to be so also, the difference between them suggest to me that they would prove to be quite syngamic, if the matter could be put to the test. As the application of such a test is highly improbable it remains as open to Mr. Warren to take one view of the probable result, as for me to take the other.

As to names, my opinion can claim no weight, but I think that *caecilia* and the names discussed by Mr. Rowland-Brown, *morio* and *petrosus*, are unsuitable as being applicable rather to aberrations than to a racial variety, and if *constans*, Eiffinger, fails on account of the misapprehension under which it arose, though a name is a name no matter how it came to be applied, then *gavarniensis*, Warren, is the valid varietal name.

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### Synonymic Notes on the Ruralidæ.

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

(Concluded from page 136.)

This brings us to Standinger's "omnibus" genus *Lycæna*, Fab., in which great subdivision is imperatively necessary. Continuing for convenience's sake the order of Standinger's *Catalog*, the first elimination that is necessary is the *argiades* group, and with them will go the *sebrus-minimus* section, but not *semiarqus*. These form the *Erebidæ*.

*Erebes*, Hb., type *argiades*.—I place in this genus all the *argiades* group including (for the present) the brown Eastern section comprising the *fischeri* and *ruthus* allies, for which Tutt has proposed the name *Tongcia*, type *fischeri*, and I must include *Binghamia*, type

*parrhasius*; I have yet to discover wherein these differ from *Ereves*. With *Bothria chennellii* I need not deal in this paper.

*Cupido*, Schrank.—Tutt is quite correct in his history of Kirby's selection of *minimus* as the type. Kirby himself confirmed it to me, and admitted it might have been better not to have selected the species named, and he also recognised that, having once selected the type, he had no power to alter it; this, he said, he did not consider at the time of his suggested revision. Scudder's action in selecting *arion* as the type, after Kirby had already selected *minimus*, is *ultra vires*. In this genus must also be included *sebrus*, B., *lorquini*, H.S., *buddhista*, Alph., *staulingeri*, Chr., *alaina*, Stgr., *gisela* and *prosecusa*.

The next elimination is *argus*, L., and all its allies.

*Plebeius*, L.—The type was fixed by Kirby as *argus*, L., and with it must go all the well-known allies, including the *lycidas* group, the *sierersi* group, the genera *Aricia*, *Albulina*, and *Latiiorina*. Tutt suggested these three genera respectively for *astrarche* and its allies, *pheretes* and its allies, and *orbitulus* with its allies. The neurulation is similar, the male armature is similar, and I do not see how they can stand. *Optilote* comes next, for which Tutt has created the genus *Vacciniina*. I cannot differentiate between this and *Polyommatus*, and I will refer to it again under that genus. The synonymy will therefore be:—*Plebeius*, L., type *argus*, L. *Albulina*, Tutt, *Aricia*, Tutt, *Latiiorina*, Tutt., sink before it.

The next group is *panayaea*, H.S., *cytis*, Chr., *panaeigides*, Stgr., *anisophtalma*, Koll., and *anthracias*, Chr. Leaving out of consideration for a moment *panayaea* and *panaeigides*, the other species form a very distinct group by themselves, and with *baton*, Berg., *abencerragus*, Pier., *panoptes*, Hbn., and *panope*, Ev., are fairly distinct in their superficial facies from others. The male armature and the neurulation also bear out the pattern, and I propose for this little assemblage the generic name of *Turania*, with *cytis* as the type; the neurulation of veins 7 and 8 is peculiar, and the cell is different in shape, being very long and fairly broad, whilst the veins arise from the cell well before the apex. A fuller diagnosis will be given elsewhere. It will be said that *baton*, *abencerragus* and *panoptes* are not very similar, superficially, to the *cytis* group. This is true to a certain extent, but the two latter are somewhat akin in their pattern to *cytis*, and they form an excellent "transit" through *baton* to *Scolitantides orion*, which is their nearest ally, whilst the male armature points to this very definitely.

*Scolitantides*, Hb.—Hubner created this genus for what we now know as *orion*, Pall., and *baton*, Berg. Kirby fixed the type in 1896 as *orion* (*battus*, Hb.). I place in it, at least temporarily, in addition to the type, *bavius*, Ev., *lantyi*, Obth., *dirina*, Fixs., *panayaea*, H.S., *panaeigides*, Stgr., and *argali*, Elwes. The male armature of these species is very closely similar, whilst that of *baton*, which I eliminate from here and place in *Turania*, is not similar, but is close to that of *cytis*. It would be well to say also that *panaeigides* is not a variety of *cytis* but of *panayaea*; the male organs prove this.

This is a very interesting and complicated little group (the two last genera dealt with) and must have a closer relationship than their superficial facies would lead one to suppose. They are also very nearly allied to the genus *Lycæna*, with *arion*, Hübn., as its type. The whole of this section, including the allies of the N. American *Glauco-*

*psyche lygdamus* needs yet further investigation, and it is possible that this grouping may require some modification when I have completed my observations on all the species on both sides of the Atlantic; at present the differentiation of the genera is fine.

*Zizeeria lysimon*, Hb.—I quite agree with Dr. Chapman's conclusions on the *lysimon* group and would add that *karsandra* must be added to the Levant fauna, as I have it from Lower Egypt and from Algeria.

The next species to be considered in Staudinger's *Catalog* are *chrysopsis* and *omphissa*, and as these belong to the section of which *Polyommatus icarus*; Rott., is the type, it will be well to briefly review that genus and the whole group.

The type of Latreille's genus *Polyommatus* was fixed by himself in 1804, as *argus*, i.e., *icarus*, Rott., and by way of confirmation was again mentioned by the same author with a reference to Hübner's figures 292-294. This fixation should certainly be adhered to.

*Cyaniris*, Dalman, was raised for *argianus* (*semiargus*). This is congeneric with *icarus*; Scudders' indication of *argiolus* as the type is therefore "*ultra vires*."

*Nomiades*, Hb., had the type fixed by Scudder in 1875 as *semiargus*, the name therefore falls before *Cyaniris* and *Polyommatus*.

*Agriades*, Hubner.—Tutt fixed the type (*loc. cit.*) as *coridon*, but this was *ultra vires* in the face of Scudders' previous fixation of *orbitulus*. I have shown previously that Stephens' use is in no way a restriction, and the same applies likewise to Kirby's use in 1858. The name must fall to *Plebeius*, but I mention it here as Tutt's citation has caused it to be very generally used in England for the *coridon* and *damon* sections of the family, and in view of Scudder's action this is not justified.

*Agrodiaetus*, Hb.—Scudder fixed the type in 1875 as *damon*, the name therefore falls before *Polyommatus*.

The question that has already been put to me by more than one person is "why separate *Plebeius* and *Polyommatus*?" My reasons are because the two sections form two very natural groups if their pattern only is considered, but in addition to this their male armature is recognisable at a glance, the tegumen is easily separable, the ædæagus is distinctly different, and the general form of the clasps is so likewise, being very much more slender and longer, with a deeply cleft non-dentate division of the apex in *Polyommatus*; in addition to this the eyes of nearly all of them are hairy, a character I cannot ignore as some of my friends would do, especially when it is a general character, as it is here. There are a very few species with glabrous eyes among them, but all their other characters are decidedly Polyommatine, these, I have put, therefore, here, as it is their more natural position. They connect up *Plebeius* with this genus.

I place in the genus the whole of the *icarus*, *coridon* and *damon* allies, *semiargus* and *persephatta* with their allies (apart, of course, from the *Cupido* group), the *erschoffi* section; *donzelii* does not belong to these but belongs to the genus *Plebeius*. The *anteros-candalus* section are best placed in *Polyommatus*, as also are *amandus*, *myrrha*, *meleager*, *amor*, *venus*, and *sarta*. The *loewii* group should also be placed here, likewise *psylorita* and *eumedon*. In the latter the alliance to *icarus* is evident in the pattern and also in the genitalia generally, though the ædæagus is between *Plebeius* and *Polyommatus*.

For *optilete* Tutt raised the genus *Vacciniina*, a species, as Dr. Chapman has pointed out, having no honey gland in the larva, in pattern, perhaps, more allied, though somewhat isolated, to the *argus* group, but the male armature is decidedly *Polyommatus*, and I think it is, therefore, better placed here than with *argus*. I cannot find any structural character in the imago whereby I am able to retain my friend's genus for this species.

The genera, therefore, stand thus:—*Polyommatus*, Latreille; type *icarus*, Rott. *Cyaniris*, Dalman, *Nomiades*, Hb., *Agriades*, Hb. (Tutt.), *Agrodiactus*, Hb., and *Vacciniina*, Tutt, sink before it.

*Iolas*, Ochs., *gigantea*, Gr-Gr., *caligena*, Leech, and *astraea*, Frr., form another very natural small group connecting up the *Turania-Scolitantides* section through *Glaucopsyche cyllarus* with *Lycaena arion*. It will, I believe, require a new genus, for which I propose the name *Iolana*, with *iolas* as the type. The genus has hairy eyes, the genitalia are very distinct with a broad, deeply cleft tegumen, excessively broad and large clasps, with the fore apex strongly dentate and somewhat hooked at the upper apex, with a long, formidable spike on the upper margin, falling inwards. The aedeagus is straight and broad, of moderate length, slightly and evenly tapering to the apex. In *Iolana*, in addition to the type species, *gigantea*, *caligena*, and *astraea* should be placed.

The *cyllarus* section is the next group to be considered and it should certainly be placed in Scudder's genus *Glaucopsyche*, which he created for some North American species, *lygdamus* being the type. In this genus *cyllarus* and *lycormas* should be placed, as also *charybdis* and *melanops*, the last being transitional between this genus and *Scolitantides*.

The *arion* group follows on. In the genus *Lycaena* the type of which was fixed by Thon, in 1838, as *arion*, Scudder (*loc. cit.* p. 209), says, "no restriction of this group within the blues having been effected, the genus may be confined to *endymion* and *coridon* of the species mentioned by Fabricius, with *endymion* as the type." That author was apparently unacquainted with Latreille's action, who definitely took out all species from the genus except the untailed blues, and I notice he makes no reference to Latreille in his bibliography of the genus; in the face of Thon's fixation Scudder's action is *ultra vires*. In this genus I would place besides the type, *alcon*, *euphemus*, *arionides*, *arcas*, and *polyphemus*.

In *Phenaxaris*, Doh., will go *atroguttata*, Obth., and *daitozana*, Wileman. Chapman created the genus *Artopoetes* for *pryeri*, which at present remains its only species.

In *Lycaenopsis*, Felder, Dr. Chapman has placed all the *argiolus* section, which in the east is a considerable one. Felder created this genus for *haraldus* (*ananga*), this therefore is the type, and if *ananga* is congeneric with *argiolus*, Tutt's genus *Celastrina* must certainly fall before it. Dr. Chapman (*P.Z.S.*, 1909, p. 419) says:—

"Mr. Prout tells me that notwithstanding Felder gave the name *Lycaenopsis* to express his opinion that *haraldus* was not congeneric with anything else, the rules at present accepted make *Lycaenopsis* the generic name of *Cyaniris* (Scudder)." This definitely implies that if *haraldus* is not congeneric with *argiolus*, the generic name *Lycaenopsis*

must be attached to *argiolus* and not to *haraldus*. Now I must say that I wholly dissent from this opinion. It is contrary to every rule I know.

Dr. Chapman's treatise on the group is a masterly piece of work and most valuable, but at present I am not convinced that *haraldus* and *argiolus* are congeneric. Unfortunately I only possess a single specimen of *haraldus* and I have failed as yet to be able to get more. I want a series, inasmuch as the male armature of the one specimen I have, leaves me with a strong element of doubt as to their generic oneness—hence my reason for having hitherto used *Celastrina* to denote the *argiolus* section. I think, however, I ought not to have done it as it is incumbent on me perhaps to disprove my good friend's able statement of the case rather than refuse to accept his reasoning without any objection being given. I would, therefore, temporarily accept the genus *Lycaenopsis* for *Cyaniris*, Auct., and would sink Tutt's *Celastrina* to it.

I give these more or less detailed conclusions in response to a request from our Editorial Secretary. I cannot say that my investigations are nearly completed as yet, but except where I have mentioned special cases in the foregoing notes, my views are not likely to be materially changed, at least in so far as the Palearctic fauna is concerned.

As I have already stated there is no sequence of genera in these notes, that is a matter that must be left for a larger work than is here practicable.

For easy reference I will briefly tabulate the genera grouping the species together, without, however, giving a detailed list, which would be out of place here.

I shall place under:—

*Strymon*, Hb.—*w-album*, Knoch, *pruni*, L., and all their allies, *titus*, and most of the usual pattern hairstreaks of North America.

*Neolycaena*, de N.—*sineusis*, Alph., *tenystroemi*, Ersch., *rhyminus*, Ev.

*Ruralis*, L.—*betulae*, L., and its allies, *quercus*, L., and its allies, *smaragdina*, Brem., and *duma*, Hew., with their allies.

*Chaetoprocta*, de N.—*odata*, Hew. (type), *atilia*, Brem., *enthea*, Jans., and *butleri*, Fenton.

*Tomares*, Rambur.—*ballus*, D., and all the species hitherto placed under *Thestor*.

*Heodes*, Dalman.—*virgaureae*, and all the coppers except *caspius*.

*Hyrcanana*, B.B.—*caspius*, Ld.

*Cigaritis*, B.—I propose no change with this genus.

*Lampides*, Hb.—*alianns*, F., and its allies together (temporarily at least) with *boeticus*, L.

*Syntarucus*, Butler.—*telicanus*, Lang.

*Tarucus*, Moore.—*theophrastus*, *balcanica*, etc.

*Acanus*, Moore.—*ubaldus*, Cram. (*tibana*, Stgr.), *jesous*, *eleusis*, Demaison.

*Cyclurius*, Butler.—*webbianus*, Brullé.

*Chilades*, Moore.—*lanius*, Cram., *phiala*, Gr-Gr., *galba*, Ld., *trochilus*, Frr.

*Ereves*, Hb.—*argiades* and its allies, with (temporarily at least) *fischeri*, Ev., and *venthus*, Leech, with their allies.

*Cupido*, Schrank.—*minimus*, Fuess., and *sebrus*, B., with their allies, *buddhista*, Alph., *staudingeri*, Chr., *alaina*, Stgr., *prosecusa*, Ersch., and their allies.

*Plebeius*, L.—*argus*, L., with its numerous allies, including the *sieversi*, Chr., the *lycidas*, Trapp., the *orbitulus*, Prun., the *pheretes*, Hb., and the *melon* (*astrache*, Bgstr.), groups.

*Polymmatius*, Latreille.—*icarus*, Rott., and its many allies, including *enmedon*, Esp., *coridon*, and its group, *damon*, Schiff., with its group, *meleager*, Esch., *semiargus*, and their allies, *candalus*, H.S., *psylorita*, Frr., *alcedo*, Chr., *superba*, Stgr., *amandus*, Schm., around each of which a few species group themselves. I also include *optilete*, Knoch, in this genus.

*Zizeeria*, Chapman.—*lysimon*, Hb., and *karsandra*, Moore.

*Turania*, B-B.—*cytis*, Chr., *anisophtalma*, Koll., *anthracias*, Chr., *baton*, Berg., *abencerragus*, Pier., *panoptes*, Hb., and *panope*, Ev.

*Scolitantides*, Hb.—*orion*, Pall., *barinus*, Ev., *lantyi*, Obth., *dirina*, Fixs., *panayaea*, H.S., *panayaeides*, Stgr., and *argali*, Elwes.

*Iolana*, B-B.—*iolas*, O., *gigantea*, Gr-Gr., *caligena*, Leech, and *astraea*, Frr.

*Glaucopsyche*, Scudder.—*cyllarus*, Rott., *lycormas*, Butl., *charybdis*, Stgr., and *melanops*, B., are the only Palæartic species that I place in this genus as yet; *melanops* being transitional between the two genera.

*Lycaena*, F.—*arion*, L., *alcon*, F., *euphemus*, Hb., *arionides*, Stgr., *arcas*, Rott., and *polyphemus*.

*Artopoetes*, Chapman, contains the single species *pryeri*, Murray.

*Phengaris*, Doh.—*atroguttata*, Obth., and *laitozana*, Wileman.

*Lycaenopsis*, Felder.—This genus, or may be hereafter *Celastrina*, will stand for the whole of the *argiolus* group, including the far Eastern as also the American species. I would, however, say that I think it probable, from a further examination of both pattern and armature, that *Celastrina* may yet be taken for the *argiolus* group, while *Lycaenopsis* will remain for the type *ananga* together with a small number of species that are at present placed in *Candalides*.

**Note:**—LYCENIDÆ VERSUS RURALIDÆ.—The question of altering the thoroughly established family name of *Lycaenidæ* is one that needs careful consideration. The name is quite legitimate, is known all over the world, and it might cause unnecessary trouble in many cases if it were altered.

I should like to obtain a consensus of opinion on it.—G.T.B.B.

## Protective Resemblance.

By C. W. COLTHRUP.

(Concluded from Vol. XXV., page 300.)

The Rev. A. T. Stiff, writing in the November, 1912, number of the *Entomologist's Record*, in giving various instances of birds attacking insects when flying, admits that this has no bearing on "protective resemblance," and I am afraid it does not carry us very far with "mimicry," but as records of the fact of birds attacking they are very useful.

With regard to the Blue Tits feeding their young on *Tortrix viridana* and the Meadow Pipits feeding the young cuckoo on *Maleny-*

*dris didymata*, it would appear also that, notwithstanding the fact of their colours matching their surroundings so well, the resemblance was not "protective" as they were so easily found. It is not certain, however, that the *M. didymata* were taken at rest, as Mr. Stiff says "they generally drop when disturbed," as they would be by a searching bird, and movement would be fatal.

With regard to the large brown lizards and the blue-bottle fly, I imagine that the green and grey, and the vivid green lizards would have been equally successful in the same situation, provided they kept motionless.

With regard to the clean cut gaps often found in the same position in the wing on both sides of butterflies, Mr. W. J. Kaye, in his Presidential Address to the South London Natural History Society, on January 25th, 1912, says, "specimens with a single notch, that is only one wing notched, are no proof that the injury was not self-inflicted, by the insect flying through rough scrub or what not. But specimens with notches in both forewings or both hindwings, which coincide when the wings are folded, cannot be a self-inflicted injury, as it must have been done while the insect was settled." I think nobody can doubt this.

I imagine, however, that if a bird seized a butterfly at rest it would have little chance of getting away, and if it did the result would be a rough tear. Unfortunately few collectors think of keeping chipped specimens, especially if they are common species, and I am afraid I must also plead guilty, but have often released specimens with pieces of the wing membrane hanging. *Colias edusa* ♀s, however, are not so readily released, and I have in my collection a specimen with a notch in the same position in both hindwings, on one wing, however, the piece of wing membrane is still hanging. Now I submit that this could not be the work of a bird or other enemy, otherwise both pieces would have been taken. What I suggest is that the sharp edge of a grass blade, or something similar, in windy weather makes an incision in the wings. When the insect flies the pieces of membrane flap backward and forward and are eventually severed.

The Rev. G. Wheeler (*Ent. Record*, vol. xxv., p. 190) says, "It is well known that the darkest forms of many grey moths of widely different genera are now by far the commonest in and around London, and that the area in which this takes place is enlarging itself almost annually. Is it seriously contended that this is to be accounted for as might seem on the surface to be the case, by Müllerian mimicry, instead of being *one of the most obvious and easily understood instances of the working of natural selection by means of protective resemblance?*"

Mr. Wheeler does not say what is the agency that does the selecting, but I presume he has in mind the attacks by birds. He does not mention any species in particular, but I have in mind one or two species—*Triana psi*, *Apatela aceris*, and *Hemerophila abruptaria*, all of which I have had under observation for some years in East Dulwich. All the specimens of *A. psi* are melanic, and rest on dark lime trunks and yellow brick walls. On the former they are quite easily seen, but on the latter are most difficult to detect, owing to the chequered surface of the bricks. If this melanism is brought about by "protective" resemblance as he suggests, how is it that *A. aceris* keeps its pale grey colour notwithstanding that it rests in the same situations?

I made an interesting observation at Eastbourne last year. Outside the house where I stayed was a row of lime trees, and on arriving home to lunch one day I was surprised to see a male House Sparrow going over a tree trunk like a Tree Creeper, clinging to it and using its spread tail as a support. It gathered a number of small insects in its beak, stopped to eat them, and then went on with the searching. I made an examination of the tree trunk and found the insects consisted of gnats and black aphides. It allowed my wife and myself to stand within three feet of it, so there was no mistaking what it was doing. Now I submit that if this bird could see such small insects, he would not be likely to pass over a moth whether it were *T. psi*, *A. aceris*, or any other.

I should like to mention that in East Dulwich, although the larvæ of *T. psi* are fairly plentiful, quite 75% every year are stung by a dipterous parasite, each larva yielding two, three, or four fly pupæ. Why does not "protective resemblance" or "warning colouration" operate here? It is just as well that they do not, otherwise we should probably have the trees stripped of leaves. I may also mention that the lime trunks in Eastbourne, on which *T. psi* rests, are as dark as those in East Dulwich, yet in the former place, the moth is pale. Melanism is brought about in various ways, moisture may be the cause in some districts, but I should not call Dulwich a damp place, nor the rabbit holes in the New Forest—the habitat of melanic *Gnophos obscurata*. I have a series of *Enatarya (Fidonia) atomaria* from a number of localities. A row of males sent me by Dr. Cockayne from marshy ground in Berkshire are bright pale yellow, a series of males from the Downs of Kent are a deep rich yellow, and all are large specimens. The Downs are often enveloped in clouds and "Scotch" mist falls, when in the adjacent lowland country everything is quite dry. On the contrary a series taken on dry heaths in Surrey and Hampshire are quite melanic and small. The latter I attribute to dry and non-succulent foodplant.

Take another species—*Pachygastris (Bombyx) trifolii*. Specimens taken at Eastbourne are as dark as those from the New Forest and Lancashire, with only an occasional pale specimen, whereas in an exactly identical locality not many miles away, near Romney Marsh, the specimens are quite pale, and I have only seen one dark specimen from there. It is obvious that neither the weeding out of birds, nor moisture can have been the cause here, otherwise one would expect a similar result.

With regard to *H. abruptaria*, in Dulwich, I have not come across melanic specimens, but I believe in North London they are fairly common. This species has been established in London for many years, and is one of the best examples quoted in connection with "protective" resemblance—so like a splinter of wood on a fence or tree trunk. Why then the necessity to depart from the type form to a darker, especially as London is less smoky than it was ten or twenty years ago? I do not believe that attacks by birds have anything to do with these colour variations. If birds search for insects their eyes are sharp enough to see all, pale or dark specimens, and no weeding out goes on. No doubt melanism is brought about in various ways, and I am strongly of opinion that inbreeding is one of the causes, and it appears to me that large towns would provide the opportunity, where



trees and other foodplants are constantly being destroyed in the spread of large building, with here and there an isolated tree left, where a year or two of inbreeding would be sufficient to start a dark race.

Mr. Newman of Bexley, by inbreeding *Eunomos angularia*, succeeded in producing in the third generation, 25% melanic specimens. By inbreeding and selection the Rev. G. H. Raynor has succeeded in breeding melanic and other interesting forms of *Abraaxas grossulariata*, but I have seen most of these forms bred from wild Lancashire larvæ, collected in the neighbourhood of a large town. How has this been brought about? I suggest either inbreeding in nature, or else they are the result of inbreeding carried on by the late C. S. Gregson and others some years ago in their quest for varieties, who not knowing Mendel's Law, turned out the typical examples which laid ova that produced varieties in the following season. If the latter is the true solution then it is interesting as showing that once the varieties are started they will recur after so long a time.

In *British Noctuae and Varieties*, vol. i., p. 17, the late Mr. Tutt, in speaking of *Acronicta alni* says, "It would appear, from a brood that Dr. Chapman reared, during the summer of 1890, that the dark forms of this species are probably connected with a change of constitution (disease?)" and then quotes Dr. Chapman (*Ent. Record*, vol. i., p. 271-2) who writes, "I have bred *alni* for several years. . . . The curious point, however, in the case of *alni* is, that in previous years hardly a specimen departed, even in a slight degree, from the normal type, whilst this year, about a third of the specimens differ, more or less, either in the suffusion of the pale areas with darker scales, or in variation of the stigmata, generally in the direction of disappearance of the orbicular one."

Inbreeding, however, does not always produce melanism. By inbreeding *Amorpha populi* I obtained, by a pairing of typical grey specimens, a most variable series, including pink, fawn, fawn with the usual markings nearly obliterated, violet, etc., specimens.

*Diauthoecia carpophaga* at Eastbourne and Folkestone, more or less on the chalk, are pure white or pale fawn and large specimens, whereas at Croydon, also on the chalk they are ochreous, and the two series seen side by side are quite distinct. If the weeding-out by birds had anything to do with it, one would expect the same result in all three places. Specimens from Lancashire are smaller and termed melanic. If, however, we compare them side by side with their sister species, *D. capsicola*, from Eastbourne, we find the colour is much about the same, yet the latter is not usually referred to as melanic. *D. capsicola* has practically the same habit and habitat at Eastbourne and elsewhere in the south as *D. carpophaga*. If the birds had weeded out the dark *D. carpophaga*, why have they not also weeded out the dark *D. capsicola* and "natural selection by means of protective resemblance," produced pale forms. I do not think that "protective resemblance," will solve these colour problems.

Why is it that *D. carpophaga* and *D. conspersa* are so variable, and *D. irregularis*, *D. albimacula*, *D. cucubali*, *D. capsicola*, and *D. capso-phila* so constant?

Why is it that *D. caesia* and *H. serena* vary much on the Continent and so little in England?

Why is *Luperina testacea* so variable and *L. cespitis* so constant?

It is worthy of note that melanic specimens are *often* smaller than typical specimens. It has been so with the majority of *T. psi*, *E. atomaria*, and *Amphidasis betularia* that I have taken, and with *H. abruptaria* that I have seen, and has always suggested to me some physical weakness. The melanic form of the Common Snipe, known as Sabine's Snipe is also smaller than the type. I remember once sending some *Callimorpha dominula* larvæ to a friend who fed them on a non-succulent foodplant, and generally neglected them, with the result that he only bred one small specimen, a lovely aberration with nearly black hindwings, whereas I reared 84 specimens out of 87 larvæ, full-sized and monotonously typical, the larvæ being fed on succulent foodplant. In an editorial in the *Entomologist's Record* for July-August, 1913, some extracts are given from a paper by H. B. Weiss in the *Canadian Entomologist* on "Protective Resemblance" and "apperceptual expectancy." There may or may not be something in the latter, that remains to be proved, but I fail to see how night-flying moths could benefit by it. My observations in the field led me to believe that the chief object of Butterflies and Moths is to seek shelter from the elements, I have watched both make quite a number of trials before settling down in a comfortable and sheltered position. If "apperceptual expectancy," can be proved by observations in the field the theory of weeding-out by birds causing "cryptic" resemblance would be demolished.

The case for "protective resemblance" in the above article is given away, however, in the centre of the quotation—"Many trained observers, and, in fact, numerous birds, are able to overcome this expectancy, and as a result, discriminate such insects from their surroundings, although such discrimination may be due in part to an ability to perceive them." Quite so, and exit "Protective" resemblance.

With regard to the editorial *Ent. Record*, November, 1913, Vol. xxv., p. 285, on Prof. Poulton's lecture at the South London Natural History Society on "Mimicry in the Nymphalines of North America," I was fortunate in being present at this most interesting lecture, but must confess I saw nothing to convince me with regard to the hypothesis of mimicry that "there was something it." As an exposition of the probable evolution of the pattern of Nymphaline butterflies' wing-markings, and the probability that the Danaines had been evolved along the same lines, thus giving an instance of parallel variation, it was most interesting.

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### Life-history of *Lycæna sephyrus* var. *uhryki*.

By F. W. FROHAWK, M.B.O.U., F.E.S.

(Concluded from page 17.)

On March 12th, 1914, two larvæ awakened from hibernation and were placed on a young tender shoot of *Astragalus*, upon which they remained quietly resting for several days owing to the dull cold weather that prevailed during the following week. On the 20th they started feeding, when two more larvæ emerged from their hibernacula and were followed by others during the next two or three days. They fed on both the young developing leaves, and tender shoots, by boring into the latter. One of these was riddled with holes just below the

expanding crown. When feeding on the leaves, only the cuticle of one side is eaten, so that a thin membrane is left on the other. Just before the third moult the larva measures 3·2mm. long.

The first larva moulted the third time on April 12th, just a month after quitting its hibernaculum.

The cast skin is not eaten after moulting, and so far this species shows no signs of cannibalism. After the third moult the larva eats completely through the leaves.

Nine days after the third moult it measures 7·0mm. long.

The head is shining black. The ground colour of the body is light green, with a whitish stripe along each side of the dorsal furrow and another along the lateral ridge bordered on each side by pinkish or dull lilac; on the side are two rows of pale olive oblique stripes. The surface is densely sprinkled with white serrated hairs of different lengths, each rising from a tubular blackish base.

The honey-gland on the tenth segment is surrounded with lenticles and very short curved hairs. Just below and behind the spiracle on the eleventh segment is a pale retractile tubercle.

In this stage they seem especially fond of feeding on the compact shoots of unexpanded leaves, into which they eat the way and feed on the whole of the interior. The fourth moult occurred on April 28th.

After the fourth and last moult, fully grown, when about 340 days old, the larva measures, while crawling, 15·0mm. in length.

It is of the usual *Lycæna*-shape, with a slight medio-dorsal furrow, the sides sloping, and a dilated lateral ridge. The head is black and shining, and is hidden under the hood-like anterior segment while resting. The 2nd to 9th segments, inclusive, are humped dorsally, and the last three posterior ones are compressed. The honey gland and tubercles are similar to the previous stage only somewhat more developed, and the minute hairs surrounding the former are straight instead of curved. The spiracles are whitish. The surface of the body is scattered over with minute lenticles and densely covered with hairs, all extremely short, excepting those bordering the dorsal furrow and along the lateral ridge, which are moderately well-developed and form a fringe round the larva. The dorsal hairs are likewise fairly long; all are white and serrated. The ground colour is a whitish-green medio-dorsal stripe and a double row of oblique stripes along the side, and a lateral lilac-pink stripe intersected by a white line. The ventral surface, enclosing the claspers, is whitish-green, the eggs are ochreous green. Previous to pupation the larva assumes a pale ochreous hue.

The first larva pupated on May 20th, followed by others pupating at intervals during the following month.

The pupa measures 10·5mm. long. The head and prothorax are uniformly rounded, the meso-thorax is swollen and rounded, it is sunken at the meta-thorax and first abdominal segment, the abdomen is slightly swollen in the middle, bluntly attenuated, and the anal segment is rounded and without any cremastral hooks. The ventral surface is very slightly undulating in outline.

At first the pupa is of similar colouring to the larva but translucent. It very gradually assumes a rather more opaque appearance.

When eleven days old it is of a light green colour, with a darker olive-green medio-dorsal stripe, extending along the abdomen and bordered by a pale greenish line followed by a broader dull pinkish stripe, a series of rather oblique pinkish markings and a darker spot above each spiracle, also a dull pink lateral stripe. The spiracles are whitish. The head and meso-thorax are slightly pinkish. The eye lunule is dark brown. The wings remain translucent, tinged with pale ochreous, and show the whitish neuration of both pairs of wings.

The whole surface is covered with very fine raised reticulations, which are white on the wings and central surface of the abdomen, and brown over the rest of the pupa. Excepting the wings, the surface is sprinkled with minute brown lenticles and numerous tiny white bristles with brown disc-like bases. The larval honey-gland shows as a small central brownish scar and a very small detached abrasion at each end.

When about eighteen days old, the eyes begin to deepen in colour, and the wings gradually assume an opaque-yellowish hue which very gradually becomes quite opaque and of a deep cream colour, and the thorax brown; the abdomen by slow degrees turns duller, and the wings deepen into leaden-grey, and finally show the colouring of the imago.

The pupa having no cremastral hooks is unattached to anything, it rests on the surface of the ground surrounded by strands of silk forming a very slight cocoon-like structure, spun to fallen leaves or other suitable objects which partly form a covering. The anal segment remains embedded in the cast larval skin, the hairs of which as well as those of the pupa become entangled in the silk.

A larva which pupated on May 28th produced a male imago on June 26th, and another which pupated on May 29th produced a female butterfly on June 27th, the pupal state lasting for twenty-nine days.

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### Note in Answer to Dr. Jordan's, Mr. Bethune-Baker's and the Rev. G. Wheeler's Observations on my "Revision of the Linnean Types of Palearctic Rhopalocera."

By ROGER VERITY, M.D., F.E.S.

Having read Dr. Jordan's note concerning my paper on the Linnean types of Palearctic Rhopalocera, I wish to thank him first of all for the special interest he has taken in it and for his kind judgment. On the other hand I must frankly state that I am unable to follow some of his arguments. Thus, why should the specimens left to us by Linneus, with the documentary evidence of labels in his own handwriting, be denied the status of "types?" Should this conclusion be accepted, all the ancient collections left to us by the pioneers of modern nomenclature would have to be dealt with in the same way, none of those naturalists having ever pinned on their specimens a label with the word "type," as is now the custom. It seems to me there is every reason to believe, on the contrary, that in those days in which such scanty material was available, and descriptions were generally made from one or two specimens only, the specimens left to us were, in most instances, the only ones the author had ever seen, thus resulting types *par excellence*.

Dealing with such minute creatures as insects, it is highly improbable that Linneus should have been, in the vast majority of cases, so thoroughly acquainted with them as to be able to describe them from memory, as he may have done with the larger vertebrates and plants, and I do not see any reason why one should believe he discarded the specimens he used for his description to substitute others. On the contrary, we have an actual proof that he carefully preserved his most ancient specimens, the butterflies described in 1758, or before that memorable year, not being set at all, or being set much more roughly than those which were described at a later period. Besides it seems to me nobody can be a better judge of the distinctive

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\* *Journal of the Linnean Society.—Zoology*, Vol. xxxii. (May, 1913).

† Such species as *rapae*, *palaeno*, etc., which are abundant in Scandinavia, and have a very simple pattern, may have been exceptions, and, in fact, we find some evidence of it.

characters described by the author of a species than that author himself, so that I cannot conceive why, when the specimen from which he drew his first description is no more available, another specimen in existence named by him should not be accepted as the type of that species, if no reason to the contrary arises. When an author gives a description which can apply to two species, and leaves no specimen of it or, on the contrary, leaves specimens of the two species labelled by himself with the same name, I quite agree that the first subsequent naturalist, who revises the species, has a right to restrict it to the one he chooses. But Linneus has never done so in a single instance. In the few cases of composite species one insect alone bears his label, the other, or others, having evidently only been put in to show what he considered to be varieties, and being very often set so as to display the underside; therefore there is never any question as to which he meant to be the type.

My view on this point is that we should not restrict ourselves to accept as irrevocably consecrated only what has passed through the printer's press, and that documentary evidence of facts, such as those yielded by the Linnean collection, should be recognised as having more weight in the balance than the views of subsequent writers, which are based only on data furnished by literature. They were excellent up to the present day in the particular case of most Linnean lepidoptera, but we should not hesitate to correct them now that more has been added to our knowledge.

As regards for instance the *Apaturæ*, quoted by Dr. Jordan, Linneus having actually left us specimens of two varieties of a single species labelled by himself, why should we apply his name to another species?

I fail to see why we should argue that the distinctive character of the existing Linnean specimens must necessarily have been absent in the insect he used for his description on the ground that he did not mention it: his descriptions are far from being exhaustive enough for us to draw conclusions from negative evidence; the eye-spot on the forewing is not a striking feature, and, as Linneus was not acquainted with the allied species, in which it is absent, he had no reason to mention it particularly.

As regards the name *pualivius*, I frankly own that the argument of its having been created for Rösel's excellent figure seems sufficient to maintain it, annulling the subsequent description in which Linneus erroneously applied the same name to another species. It must, however, be emphasized that this conclusion can only be applied to this case, in which no description is given, as it would be extremely dangerous to make it a general rule to refer to Linneus's quotations of figures by previous authors with a view to clearing doubts arising from his own descriptions; the paragraph on *hermione* in which he quotes good figures of *Satyrus circe* and *idia* and the one on *cirgaureæ* in which he quotes figures of *hippotoe* ♀ and *phlaeas*, afford excellent examples of blunders of this sort, which are carried on throughout the Linnean literature.

Dr. Jordan's argument on the *Argynnis* I have answered by giving my views on the validity of types; suffice it to add that, as the specimen in question bears a label with the name "*cydippe*" and not *adippe*, we have a sure proof that the specimen cannot have been

inserted in the collection very long after the publication of the first name\* ; besides, the specimen is the only Linnean one of its kind and agrees perfectly with the original description, so that in this case we have particularly good reasons to believe that it is the very one used by Linneus in 1761.

Anyhow I should deem it wise to accept as typical any single specimen bearing a name in the hand-writing of its author, unless it should not agree with the original description or there should be any other particular cause pointing to the contrary. If for every specimen, which can reasonably be held a type, we were to demand positive proofs that it corresponds to the definition of that status, we would be obliged simply on academic grounds to discard an enormous amount of valuable data, proofs of such a nature being generally impossible to furnish. Finally, however, I wish to state that I fully agree with Dr. Jordan that changes of names ought only to be made when necessary to establish nomenclature on definite bases.

Having thus summarised my views on the points which have been emphasised by my first critic, I wish to add a few observations regarding what has been said about my paper by Mr. Bethune-Baker,† and by the Rev. G. Wheeler.‡

The former, I think, will be fully satisfied with my declaration concerning *podalirius*. As to his observation that "had Linneus marked his own xth. edition, it would have been more easy to accept at least some of the conclusions arrived at" by me, I am glad to be able to point out that the xth. edition has actually been so marked, and that every one of the species described in it, which are marked in the xiith. edition (except two, probably due to an oversight), are also marked in that volume. Thus we have a sure proof that Linneus did possess the palæarctic species he described in the vast majority of cases, and did not add a single one to his collection after having dealt with it. What's more, I am glad to see that species, specimens of which I had considered Linnean, although they were not marked in the xiith. edition, are, on the contrary, actually marked in the xth., thus showing they had only been overlooked by Linneus in going over the former, and that my inferences, drawn from the labels, the pins and the setting, were quite correct.

As regards the particular use of *virgaureae*, the Rev. G. Wheeler has exhaustively gone into the question and amply proved that my conclusions are correct. Concerning *hippotoë*, I am quite prepared to see the three names of *stieberi*, Linnean *hippotoë* and *mirus* standing together to correspond to *oranula*, Linnean *virgaureae* and *inalpinus*.§ As a matter of fact, in the two Linnean specimens the orange band on the underside of the hindwings described by Linneus does exist, but it is much shorter, narrower, and less bright than in the large, bright

\* *i.e.* : after Linneus changed the name *cydippe* into *adippe* in his subsequent work, having noticed he had employed the former also for an Oriental *Cethosia*. This alteration is not necessary according to modern rules and anyhow the *Argynnis* has the right of priority.

† *The Ent. Rec.*, vol. xxv., p. 251 *et seq.*, and p. 272 *et seq.*

‡ *Loc. cit.*, vol. xxvi., p. 28 *et seq.*

§ This name, which does not meet with the approval of the Rev. G. Wheeler is used by Suetonius and by Brutidius in Cicero's *Epistulae*, and means "inhabitant of the Alps."

Central-European form, for which I have proposed the name of *mirus*. I am quite aware that male specimens similar to the Linnean *hippotoë* do occur in many localities besides Scandinavia, but this species having been described in *Fauna suecica*, the nymotypical race is certainly the Scandinavian one, and a more exhaustive study of the females will surely show whether it occurs *in toto* also in other localities; anyhow, *mirus* is perfectly distinct from it in some regions, such as those I have mentioned in my first description.

*Idas*.—With reference to this name both Mr. Bethune-Baker and the Rev. G. Wheeler have, it seems to me, misinterpreted my exhibition of facts and my conclusions, although I have done my best to make things clear in my private correspondence with the former. I will now try and complete the data as well as the inferences I draw from them. The name *idas*, as Mr. Bethune-Baker correctly states, first appeared in Linnean literature in *Syst. Nat.*, xth. edit., accompanied, by the following description: "*Papilio barbarus alis nigris concoloribus, punctis 10 flavis oratis sparsis. Habitat in Indiis.*" I will waste no words to show what an extraordinary assumption Mr. Bethune-Baker makes in stating that "the description exactly suits an Indian female of *P. icarus*," and again that "in the absence of the type I (B-B.) look upon that *idas* as the female of our *icarus*." Surely Linneus has never revealed himself so inaccurate as to describe as "sparsis," "ovatis" and "flavis" markings, which in *icarus* female would be quite similar to those he very clearly describes as "*fascia terminali rufa ocellari*" in the other *idas* I will presently deal with, nor can we be so offensive towards him as to think he would not have detected the similarity of *icarus* to his *argus*, instead of placing it amongst the *Barbari* and right at the end of his group *Papilio* (=butterflies)! For what species *Barbarus idas* is meant, it is difficult to say, and it is useless to make hazardous assumptions about it; but what interests us in the present case is that we can be pretty well certain it is not a *Lycaena*, as none of the known species would answer to that description.

*Idas* has been the subject of a special correspondence between Prof. Courvoisier, of Bâle, and myself, and I am glad to be able to quote his authority, and say that he is perfectly of my opinion that the groups into which Linneus has divided his insects ought to be considered as genera, this having been the first attempt to create them; so that as the International Code on Zoological Nomenclature does not prevent us from using the same name in different genera understood in the modern restricted sense, there is no reason why Linneus should not have done the same in his widely distinct groups of species. I conclude I cannot follow either Mr. Bethune-Baker's or the Rev. G. Wheeler's arguments by which the former considers the name *idas* as "pre-occupied in the group" *Lycaena*, and the latter as "a homonym which cannot be employed for any species." If this were the case many other well-known names would have to be altered, such as *hylas*, *cleus* and *telamon*, which are all three amongst the *Barbari* of Linneus, and have, notwithstanding, been subsequently accepted for a *Lycaena*, a *Chrysophanus* and a *Sericinus*, not to mention many others.

Hoping to have set out my views clearly on this point, I will now consider the second Linnean name *idas* applied to a *Plebeius ruralis*. This name we first find in the iind. edition of *Fauna suecica* given as *nomen triviale*, to the insect which has the following *nomen specificum*.

"*Papilio idas alis ecaudatis caeruleis: posticis fascia terminali rufa ocellari: subtus pupillis caeruleo-argenteis.*"

The importance of this definition stating the wings are blue with orange marginal lunules is greatly increased by the fact that amongst the older (very large, thick pins and wings not set) Linnean specimens there exists a female *Lycæna* answering exactly to that description. As it is a most typical specimen of what Standinger calls *L. argyrognomon*, Bgstr., female aberration *callarga*, Stdgr. (not to mention the other names it has been known by), I suggested in my first paper on this subject to adopt the name *idas*, thus obviating the hopeless confusion which exists in the nomenclature of this species and of its near ally *argus*. The Rev. G. Wheeler suggests, instead, going back to the names "*argus*" and "*ægon*" on the ground that Linneus has, according to him, "included the two species under one name"; but this assumption is again quite wrong, for Linneus only subsequently suggested that his *idas* might be the female of his *argus*. We now see quite clearly that he was accidentally right the first time in describing the male specimens under one name and the female ones under another. He also perhaps made a mistake in grouping his other specimen, a brown one, with *idas* and labelling it with this name, as it may be a female of *argus* (a point of which I am not certain, as already stated in my previous paper): but this has no importance, as this mistake would have occurred later, after he had clearly defined *idas* as blue in the *nomen specificum*, a fact upon which Linneus himself could not come back, and which fixes the blue female in the collection as the type of *idas* and excludes the brown one definitely. Anyhow the name *ægon*, Schiffermüller must fall before *argus*, L., now we know for certain for which of the two species Linneus meant the latter; Schiffermüller was unfortunate in his choice between the two, just as he was with the aforementioned *Apturac* and *Satyri*.

The root of the question as to whether my suggestion of adopting the names *argus*, L. and *idas*, L., is to be accepted or not lies in the following propositions: (1) Can the same name be used to designate both a *Plebeius* and a *Barbarus*? (2) Is the *nomen specificum* of a Linnean species to be considered as its first description? (3) Is the blue *Lycæna* in the Linnean collection, which in every way seems to be the one from which the *nomen specificum* of *idas* was drawn, to be accepted as its "type?"

Some of the criticisms of the Rev. G. Wheeler I have answered in an indirect way, dealing with Dr. Jordan's and Mr. Bethune-Baker's papers; suffice it then for me to add a few words concerning some species he mentions particularly.

His observations about the names *jason* and *jasius* are quite correct and I discovered my oversight very soon after my first paper was published.

Those concerning *niobe* I quite understand he should have made and I was wrong in not being more exhaustive in my first exposition of the matter. I should have stated that I was myself struck at first by the fact that the description and the specimen labelled by Linneus did not agree, the former mentioning *maculis argenteis* whereas the latter belongs to the form *eris* usually, in its most typical form, with no silver at all on the wings. It was only after a closer investigation I was able to understand that the description, and the specimen



answered each other so admirably as nearly to furnish an absolute proof that the latter is the very one from which the former was drawn. In reading *maculis argenteis* one is of course immediately inclined to think of the specimens in which the silvery spots are fully developed, but it must be observed that Linneus in the *nomen specificum* states that the *maculis argenteis* are thirteen, and that in the brief description which follows it he specifies that there are seven marginal spots (“*maculis . . . marginalibus*”) and six specks (“*punctis*”) across the disc of the wing. Now, in the so-called nymotypical *niobe*, there exist no less than 27 and sometimes as many as 34 silver markings on the hindwing alone. On examining the Linnean specimen we instead, find that the seven marginal sub-triangular spots have a slight silvery shine and that the six rust-coloured spots on the light band which crosses the disc have minute, but most distinct, silver pupils. Thus it answers perfectly to Linneus’s accurate description. On the other hand the specimen can only be regarded as belonging to the form usually known as *eris*, O., because all the large basal markings are yellow and the aforementioned marginal ones are but very slightly silvery. That is why I do not hesitate to consider the latter as the nymotypical form of the species\*.

As to *cydippe*, it seems to me there is first of all no reason to accept the change Linneus proposed when he converted it into *adippe*, simply because he chose to call another species by that name: *cydippe* was the first name given to the *Argynnis*, and *cydippe* it must remain: if anything, the Oriental *Cethosia*, described some years later, should receive another name, as I have already mentioned; but *cydippe* can stand for both, as they belong to entirely different groups and *adippe* can be nothing else but a synonym of *cydippe* as far as the genus *Argynnis* is concerned; it is remarkable no entomologist should have noticed this before, independently of my latest discovery that the species first figured by Esper is not the one for which either of these names was intended.

*Hermione* and *alcyone*.—Here again the Rev. G. Wheeler is not correct in stating that Linneus described the two species under the name *hermione*: his description may be insufficient to decide which of the two he was dealing with (though I personally think the fulvous band, mentioned as being on the underside of the forewings, is sufficient to designate the species subsequently named *alcyone*, Schiff.), but the specimen now under our eyes, labelled by himself, seems sufficient to eliminate any doubt also on this point, and Schiffermüller’s tentative choice between the two, which, as in other cases, turned out unfortunate, must be corrected.

*Macra*.—I own I am very surprised at my critic’s observations about this species. There certainly may exist faint traces of a tawny band on the upperside of some Scandinavian specimens and these bands may, on the contrary, be absent in some Central-European specimens (these individual variations generally occur amongst all races), but the point of chief interest is that *monotonia*, Schilde, has the underside of the forewings of a dark chocolate colour with a

\* It is also noteworthy that Linneus in his descriptions of *adippe* = *cydippe* compares it to *aglaia* and not to *niobe*, which shows the latter must have had quite a different look from the specimens with fully developed silver markings, a character to which he evidently gave considerable specific importance.

mohogany coloured patch and the hindwings thickly shaded with dark scaling; these characters the Linnean specimens possess to a high degree, so that there is no mistaking them for the races from the rest of Europe, for which I have suggested the name *vulgaris*, and in which all have in common a tawny underside to the forewings and, usually, light-coloured hindwings.

I have thus tried to clear the points in which I had been misinterpreted by my critics and to correct a few others in which they seem to me to have been inaccurate. The alterations in nomenclature I have suggested are, I agree, very drastic; they have already excited the wrath of some entomologists and met with the approval of others. I must leave it to a jury of authorities to give its verdict on the subject!

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### Lepidopterology\*.

By T. A. CHAPMAN, M.D.

This Volume is prefaced by a statement of the "eminent honour" conferred on the author by the *Académie des Sciences* in awarding the Cuvier prize for 1913, "à M. Charles Oberthür, de Rennes, pour les Études d'Entomologie et les Études de Lépidoptérologie comparée," with an expression of the author's gratitude and encouragement.

The first paper is by M. Oberthür on the South American *Apaturas*, dealing with 25 species, with ten plates containing 37 figures. The next treats of the Lepidoptera of the Sino-Tibetan region, with 33 figures on seven plates, largely of new species and new forms described. A new *Castnia* from Uruguay has a place on the last plate. We then arrive at the further elucidation of the Lepidoptera of California described by Boisduval; these are Melitæids, Argynnidæ and Satyridæ, with 39 figures on seven plates, on the last plate is also a figure of a var. of *Pieris brassicæ*, *rasquezi*, Obth., ♀, and on the same plate is a figure of Boisduval's specimen of *Iarnassius nomion* from Eschscholtz, Alaska (close to the Arctic circle). The figure certainly seems to show a specimen of *P. nomion*. The labels on the specimen say "California," "Eschscholtz, Calif. russe." Russian California is Alaska, and is in a different latitude from California as now understood, though the latter is quoted as the habitat of this specimen by various authors. A new *Syrichthus*, *S. macdonoughi*, Obth., is also figured on this plate, from Arizona.

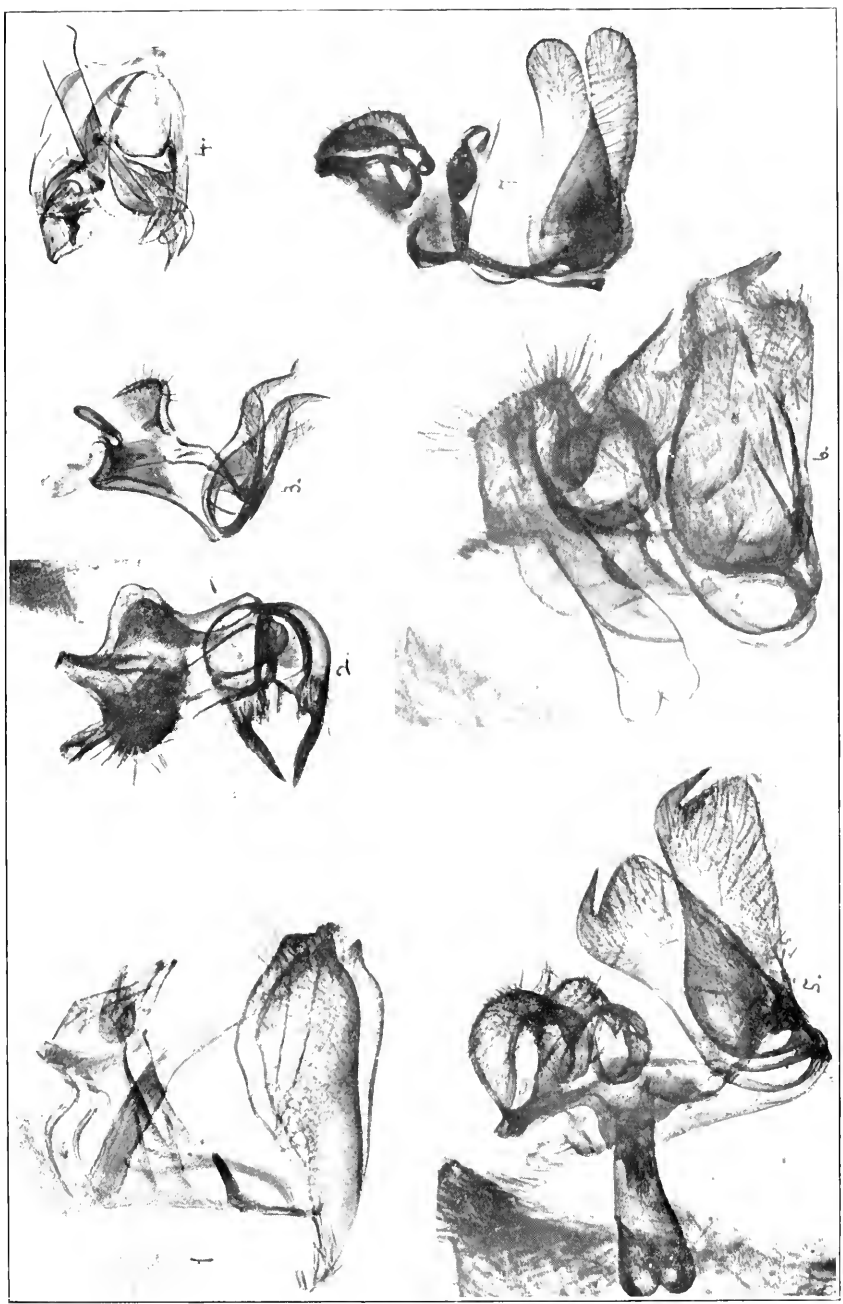
An interesting paper by Standfuss follows, on hybrid *Smerinthus*, a hybrid, *leoniæ*, Stdfs., between *tiliæ* and *ocellatus*, first described by Standfuss in the *Annales de la Soc. Ent. Fr.* for 1901 (p. 86), is here figured, as also hybrid *neopalæarctica*, Stdfs., between *ocellata* and *excavata*, Abbot and Smith (described by Stdfs. in 1907). Further hybrids of the genus *Celerio* are also figured, as well as species of the genus *Epistor*.

There is next a paper on the further work that has been done in regard to the variation in *Aglia tau*, since the preceding papers in the third volume of the *Lépidoptérologie comparée*. M. Oberthür illustrates certain points by comparison with species (a species?) of the American genus *Pseudohazis*, with two plates, and also six plates

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\* *Études de Lépidoptérologie comparée*, par Charles Oberthür. Fasc. IX (2nd Partie).

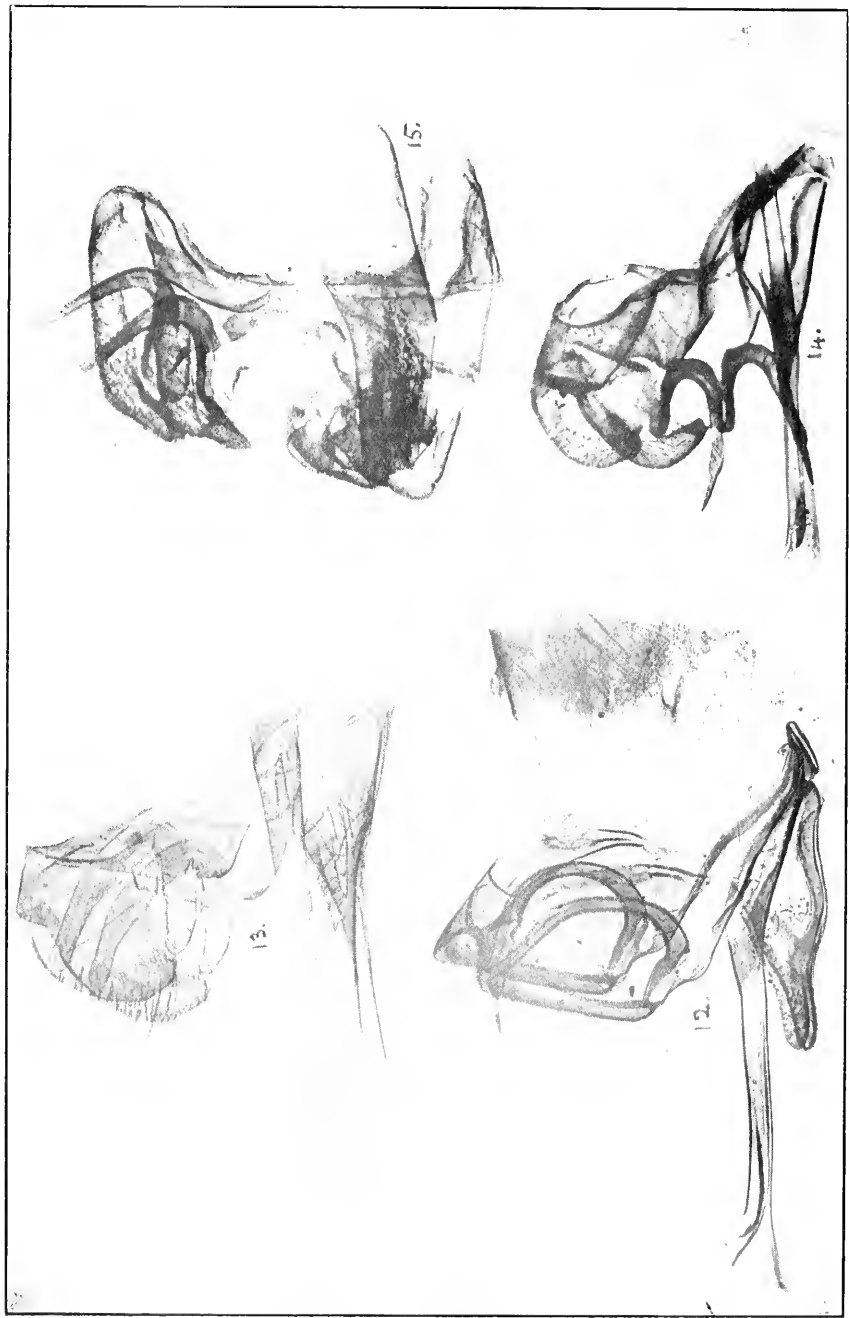






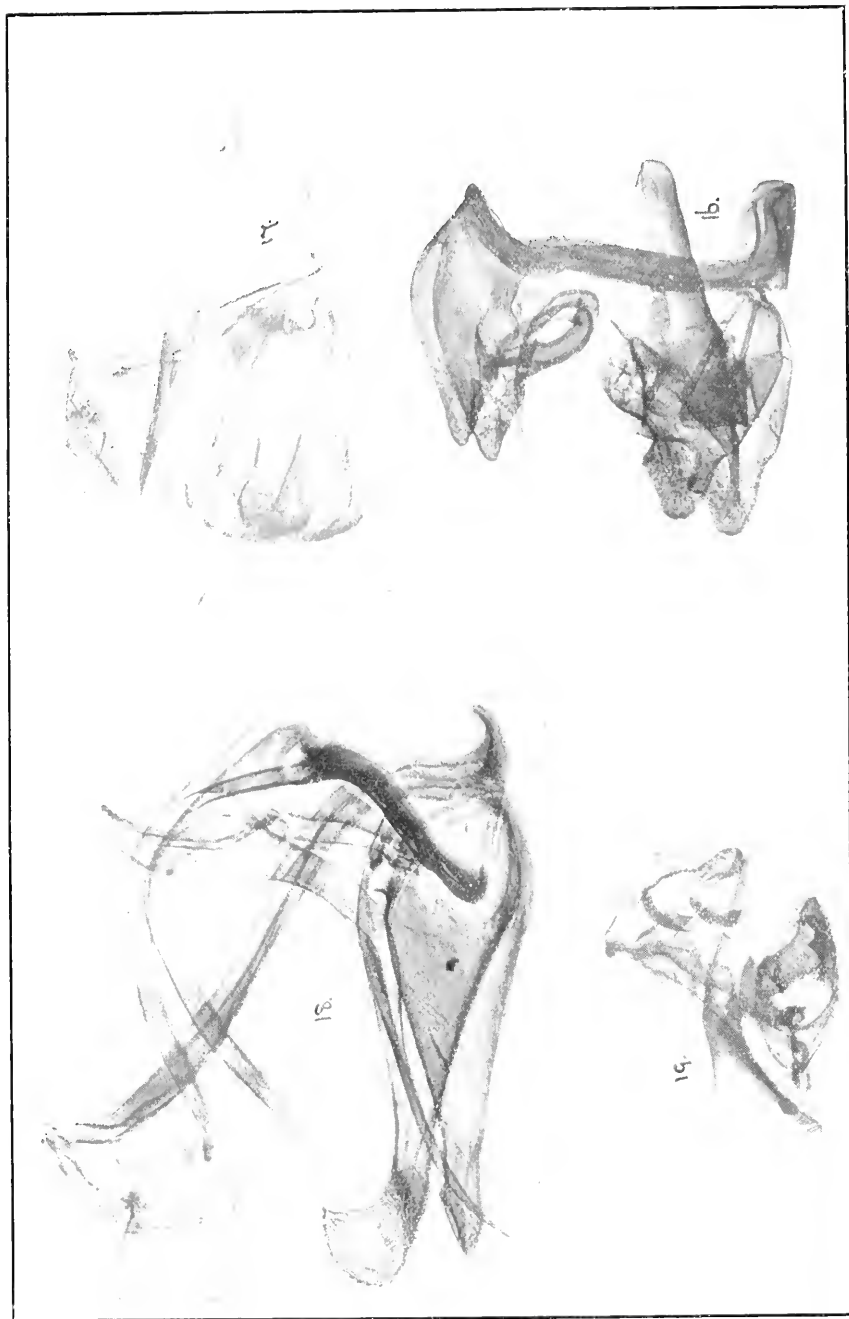




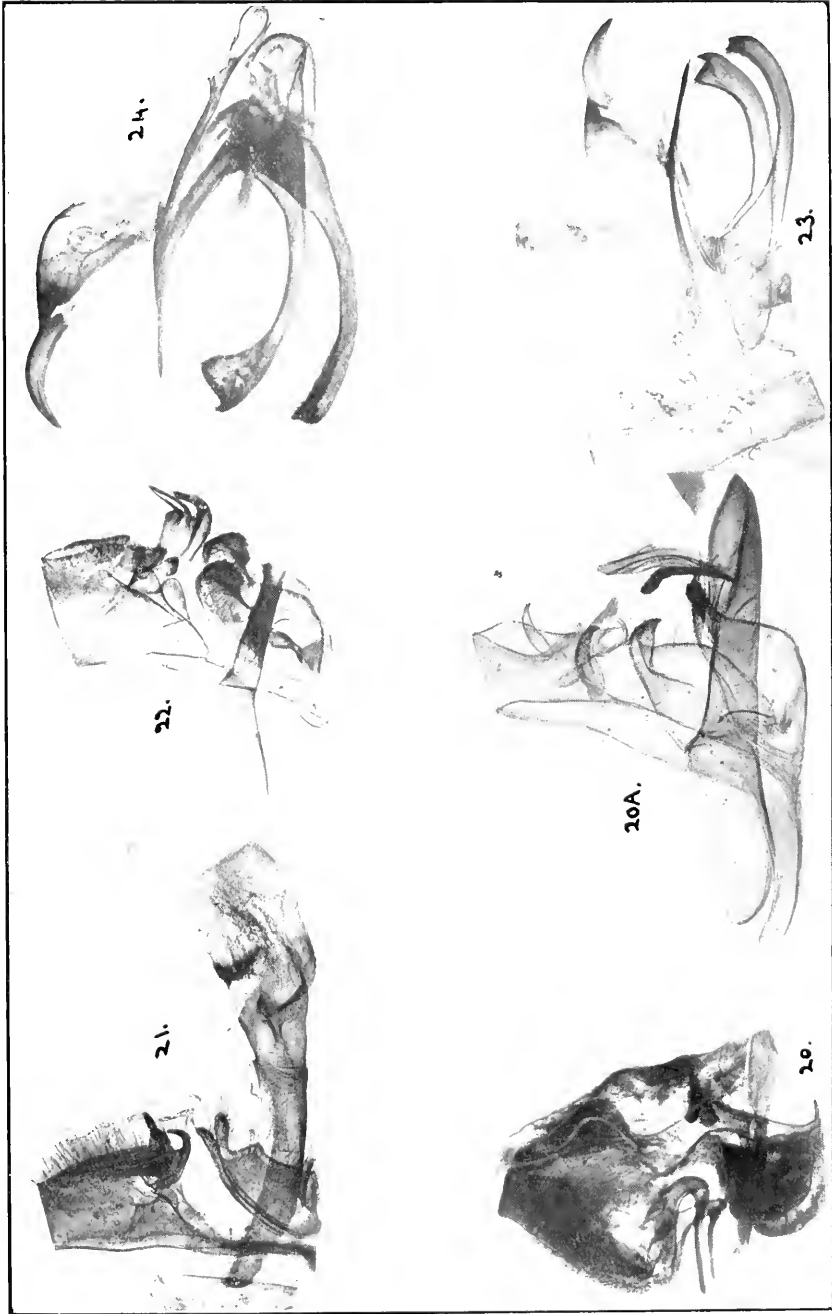




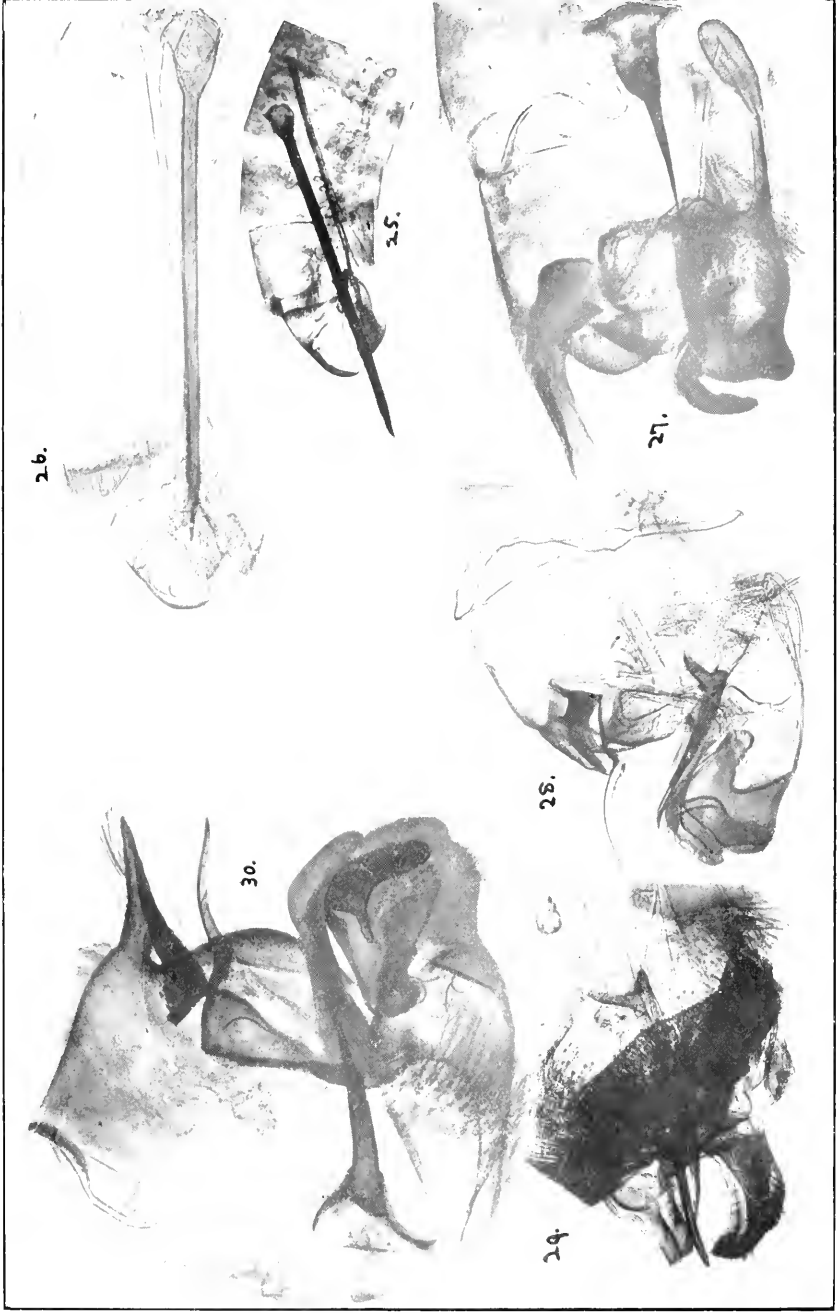




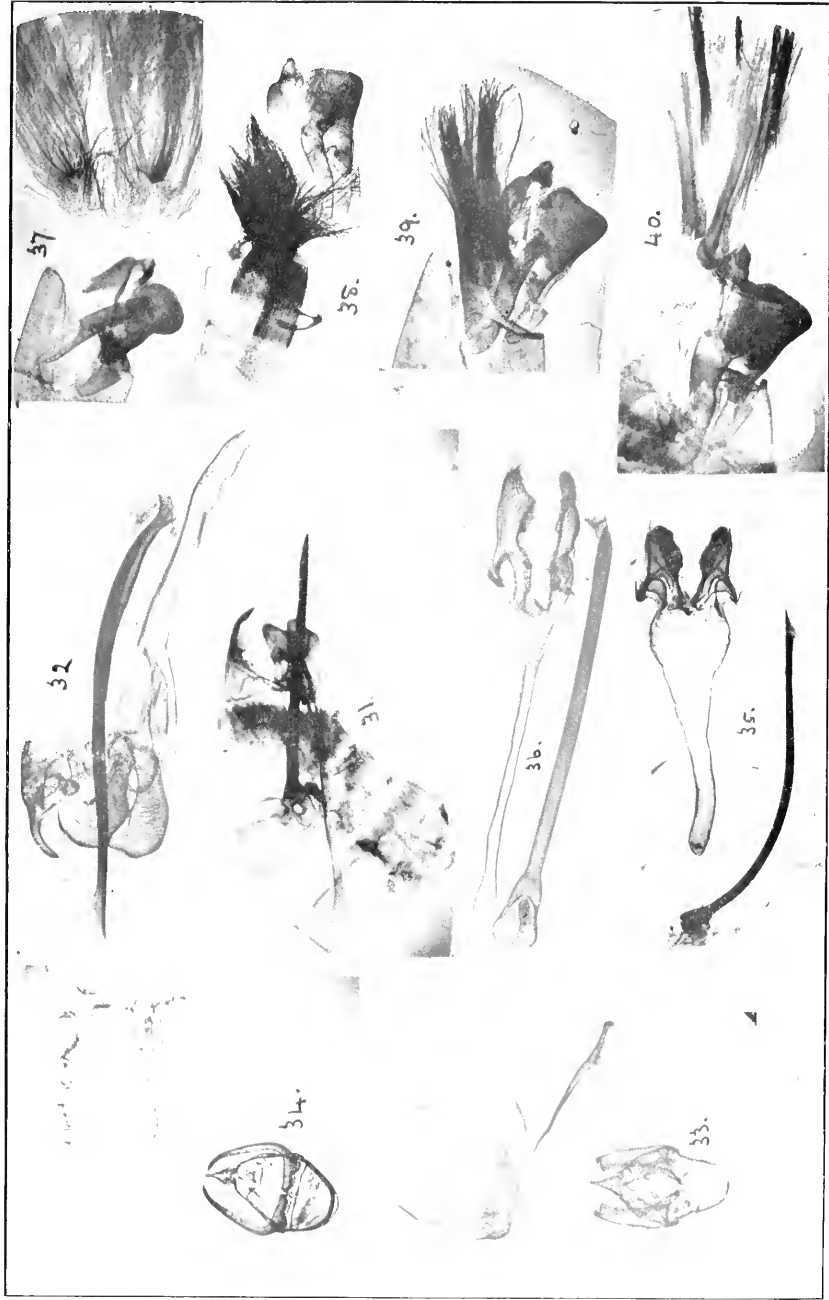














of forms of *Aglia tau*: this is followed by a more detailed account (in German and French), by Dr. Standfuss, of crossing of mutational and other forms, their relative fertility, etc.

The first 21 plates in the volume are portraits of eighteen Lepidopterists, all well-known to English entomologists, the most interesting being, perhaps, the six first, Boisduval, Herrich-Schaeffer, Rambur, de Graslin, Guenée, and Milliere, and the two last, Reverdin and Oberthür. The remaining plates we have already referred to as fully as space permits, being by M. Calot, praise of them is superfluous.

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### On the Correlation of Pattern and Structure in Rhopalocera with special reference to the *Ruralidæ*. (With seven plates.)

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

(The subject of a paper read before the British Association in Birmingham in 1913.)

It is many years ago since Schoyen's discussion on *Lycaena argus* and *L. aegon* (as the two species were then called) took place, and I only mention it now because it was his papers that impelled me to undertake what had till then been a more or less spasmodic investigation, *viz.*, a thorough systematic study of the sexual armature of butterflies, and especially of that group of butterflies to which those two species belonged. I felt that we ought not to depend solely upon pattern for the differentiation of closely allied species, and I therefore at once set about making microscopic preparations of all the Palearctic species of the *Ruralidæ*. This naturally led on to a much wider field of research, extending beyond the Rhopalocera and also beyond the Lepidoptera. The taxonomic value of these organs gradually pressed itself forcibly upon me, until to-day I regard them as necessary to the correct grouping of the *Ruralidæ*, and probably (I do not say certainly) of other families of Rhopalocera, if not of the Lepidoptera as a whole, so that in any cases of doubt after the neuration, I should first investigate the sexual organs.

Long continued study of these organs gradually brought to light the fact that a *marked* change of form in them was also accompanied by a change in pattern in the species and the genus. From the very beginning I had learned that there were small specific differences, but it was only a wide experience that could show their value from the taxonomic point of view, and it is this view, especially, that I want to lay before my readers, *viz.*, that so far as the *Ruralidæ* in their widest sense are concerned, it is a fact that change of structure is accompanied by change of pattern, or, *vice versa*, change of structure accompanies change of pattern.

As my first instance may I give one of the species already mentioned, *Plebeius argus* (the type of the genus *Plebeius*), and compare with it an allied genus *Celastrina*, whose type is *argiolus*. The difference in colour is at once apparent, whilst the pattern of the underside is very diverse.

These distinctions are followed by an equal change in the male armature. *P. argus* (Pl. xiv., fig. 1), has the longish clasp, the gently projected (backwards) girdle, the tegumen strongly bifid and very narrow in front with strong falces or hooks, and with the apical hood fairly broad. In *C. argiolus* (Pl. xiv., fig. 2), the clasp is totally

different, being sharply excavated beyond the centre and terminating in a long dagger-shaped point, the girdle is suddenly projected backwards, and the bifid fore-part of the tegumen has very copious broad cheeks without falces, whilst the apical ridge is much elevated and reduced to a very narrow saddle. The ædœagus is also quite different in shape.

*Ereves argiades* (Pl. xiv., fig. 4), may be taken as somewhat near to *C. argiolus*, but again the colour and underside pattern show a different development, and this is more strongly marked in the armature, whilst the neuration also differs slightly. The marked difference in the clasp will be seen at once, as also in the tegumen, but the ædœagus is nearer. At the same time, if we refer to the clasp of *argiolus* and also of *puspa* (Pl. xiv., fig. 3), the process of the development of the clasp of the genus *Celastrina* towards *Ereves* is quite evident, viz., the curving downwards of the long spike of the upper margin so as to form the long recurved hook of the latter (*Ereves*). The tegumen is very diverse being greatly reduced with its greatest development along the dorsal line, whilst the cheeks are much reduced, and have short spikes in place of the falces, these being of the most reduced form of this organ that I know of in the group.

The nearest species in pattern to this genus (omitting the genus *Cupido*, which is an Everid) is perhaps *Glaucopsyche cyllarus* (Pl. xiv., fig. 5.), but the male armature differs and the colour and pattern are in reality different from both though difficult to describe in words. The clasp is large and heavy, and in its termination is a modification of both the previous ones; the tegumen is very near *Celastrina*, in fact it might belong to it were it not that it has well developed falces, whilst the ædœagus is nearer to *Ereves*. Our beautiful English large blue *Lycaena arion* belongs to the same section as *Glaucopsyche cyllarus*. I only bring it forward now (Pl. xiv., fig. 6), to show how a marked development of pattern may be accompanied only by a small alteration in structure when it occurs within its own sub-family. In the former the difference in pattern is well known. In the armature, however, the clasp is yet larger and heavier (squarer), the terminal hook is also more heavily developed, and the tegumen is decidedly further away from the Celastrinid group. The dorsal part of it is not excised to anything like so great an extent, and the lateral cheeks, which are provided with very long and strong falces, are unusually large and square. The ædœagus does not differ materially from the species last described, this however we should expect, *Glaucopsyche* belonging to the *Lycaena* group in its strict sense.

*Scolitantides arion* (Pl. xiv., fig. 7), brings in another group of the *Plebeïinae* with several genera, but the one species will be sufficient for my purpose. The pattern is quite different to any of the others. The prehensores are likewise different, the clasps being very simple, of moderate length and width, and evenly rounded at its termination, not being divided into two sections at its apex, as so many are. It would have (one would imagine) but little grasping power. The tegumen is of a reduced Celastrinid type, but with regular Plebeiid hooks. The ædœagus is very different, though it has the Everid little spikes at its lower extremity; the fulcrum, however, is very highly developed, being very long and deeply curved.

*Callophrys rubi* (Pl. xv., fig. 8).—Our common Green Hairstreak is

well-known with its plain brown upperside and green underside. Its male armature consists of a rapidly tapering, wedge-shaped clasp, without any fulcrum (a characteristic of the *Ruralinae*), the tegumen ample, with broad, lateral cheeks moderately excised, and long formidable falces, whilst the ædœagus is very long indeed, and very narrow. The abundance of long strong bristles on the clasp and tegumen is also an important feature in this genus. Very similar, indeed to it, so far as these organs are concerned is *Satsuma frivaldszkyi* (Pl. xv., fig. 9), though much different in pattern, the upperside being blueish, and the underside dull brown and somewhat mottled; at the same time there are also differences in the prehensores. The wedge-shaped clasps are much broader, the tegumen is less ample and proportionately more excised on the dorsum, whilst the falces are heavier and stronger.

*Strymon titus* (the type of the genus) (Pl. xv., fig. 10), is easily recognisable by its spotted underside. The genitalia differ also in their erect position in the shape of the clasps, and in two (so far as I know) quite unique shields extending on two strong arms from the girdle (one shield being developed from each side of the girdle). I bring this forward to show a specific difference rather than a generic one.

*Strymon r-album* (a close relation of our British *r-album*) (Pl. xv., fig. 11,) is distinct in colour and pattern with its chestnut coloured patch on the upperside and the fine white lines on the underside, but the male armature proves it to be closely allied to the previous genera. It has, however, no saccus at all, which is an important character in this order.

*Neolycaena tengstroemi* (Pl. xvi., fig. 12), is abundantly distinct in its shape and in the somewhat Plebeiid type of markings on its underside, the genitalia, however, show at once its alliance to this section. The small narrowish clasps and the long ædœagus bring out this prominently, the tegumen however is very different having very unusually copious laterals, the falces are very large with a bold deep curve, whilst the girdle is very short.

*Thestor fedtschenkoi* (Pl. xvi., fig. 14), and all in its genus show great differences in pattern, but again the armature is peculiarly Strymonid. The clasp is much longer and finer, and the tegumen differs slightly, whilst the neurulation also differs, it having an extra subcostal vein in the primaries. *Ruralis quercus* (Pl. xviii., fig. 21), is entirely different in pattern and colour as also in the structure of the genitalia, its alliance to the genus *Neolycaena* is shown in the large hooded tegumen, its deviation in the shorter, thicker and differently shaped ædœagus, whilst the clasps also differ entirely in general pattern.

In colour *Laeosopis roboris* (Pl. xvi., fig. 15), is very close to the previous species though in the underside pattern it is very distinct. This change is likewise carried on in the genitalia, the tegumen being unique, I believe, in its quite vertical position instead of being horizontally placed. The ædœagus is shorter still, whilst the clasps are also further reduced, though they are sufficiently near to *quercus* that if we were to cut off the prolongation at the upper apex of the clasp of that species we should approximate to those we are now considering.

I have brought *Cigaritis zohra* (Pl. xviii., fig. 16), in at this point to show its correlation with the *Heodinae* on the one hand in its general colour, and with the *Ruralinae* and *Plebeinae* in structure on the other hand.

The erect girdle is quite Strymonid (*i.e.*, Ruriline) its clasps partake of an admixture of the *Rurilineae* and the *Plebeinae*, whilst its deeply cleft tegumen approaches the Plebeiid pattern, and it may also show some approximation to the quite peculiar and reduced structure of that organ in the *Heodinae*. In the pattern of its underside it may have some affinities to the *Plebeinae* already referred to, it has much more to some exotic genera, but its colour is very close to that of the genus *Heodes* to which I will now refer in the species *phlaeas*, a species which is found almost over half the world, extending right across Asia into Japan and India, and going westward through the Madeiras over a large part of North America. Its relation in colour is evident, though the underside pattern differs from it considerably. This, however, in the group of insects we are dealing with, is of great importance, both from the phylogenetic and also from the taxonomic point of view. The tegumen (Pl. xvii., fig. 17), is very specialised, consisting as it does of two lateral narrow lobes attached to each other merely by the girdle and having no dorsal chitine beyond the narrowest collar, joining the two sides of the girdle. Attached to these lobes are the usual falces, but instead of being connected to the cheeks of the tegumen near the front, they are attached right at the rear. The clasps are very broad, expanding somewhat in the front with an evenly curved and sharply serrated apex, though the serrations are very small. From the base of each clasp in this series, a peculiar super-structure arises of a wedge-shape that inclines forward over the clasp and reaches to near its centre. This is peculiar to, and typical of, the genus *Heodes*, though, in other species, it assumes a very different form. The aedeagus will be seen to be somewhat bulbous at the base, but very rapidly tapering to its tip, where it ends in a fine point. The tegumen, the aedeagus, and the super-structure of the clasp are entirely peculiar to the *Heodinae*.

In *Heodes thetys* (Pl. xvii., fig. 18), the male armature assumes its extreme form, and is in its general lines a very beautiful object. The tegumen is not so bulky, nor are the falces; the girdle is long and elegantly curved; the clasps also are more delicate in form, being of a somewhat long pear-shape, the thick end forming the base, whilst the apex is curved upwards and sharply serrated, forming a broad hooked extremity. The super-structure assumes in this species its highest development, and consists of two long, narrow, boldly and beautifully curved arms terminating in a fine tip. The aedeagus is equally elegant in shape, having a somewhat elliptical base, the tubular three-quarters gradually tapering into a fine point, and being curved and recurved at its tip. The colour of the insect is brilliant, spotless, lustrous, reddish-copper, whilst the underside is the softest toned design in the group, and is somewhat different to all its near allies. In the same genus is a small section of purplish species, that from their small size and colour look very different indeed, but their underside markings show them to belong to the same genus as the others. The little butterfly *Heodes sarthus* is found in the Eastern Turkestan, and in the Pamir Mountains. The difference in colour and pattern speaks for itself. We find, however, some change in the male armature (Pl. xvii., fig. 19). The tegumen (an important character from a taxonomic point of view) is quite similar in general structure to all its allies, as also is the aedeagus, though in this a modification in shape is to be

observed, but the clasps are very different, there being a considerable change of shape in them, whilst the super-structure comes nearer to our common British *phlaeas* than to the general form. I have mentioned these three species of one genus so as to show specific variation of armature with also small variation of colour. We will now take three species of marked difference in colour into consideration. *Ruralis betulae* with an entirely brown male and an orange spotted female, *R. lutea*, which is entirely orange in both sexes, the underside of these two being very closely alike, and a brilliant metallic green species *Ruralis orientalis* with a different underside closely allied to *Ruralis quercus*, already referred to (see *antea* p. 179). *R. betulae* (Pl. xviii., fig. 20), has a very large hooded tegumen, not excised on the dorsum at all, with large strong falces attached to its lower front extremities; the girdle is broad, strong, erect, deeply excised at rear; the ædæagus is small, rather short, straight, somewhat tapering, whilst the clasps are very small and broadly oval with no processes. This is the type of the genus. In *R. lutea* (Pl. xviii., fig. 20A), the tegumen remains the typical, unexcised, hooded-shape, but it is much smaller in its dimensions, the falces being also much smaller: the ædæagus is very large and similar in general shape and size to *quercus*, the girdle and the clasps also are more nearly allied to *quercus* than to *betulae*, the clasps having a protruded lobe-like process at their upper apex. In *R. orientalis* (Pl. xviii., fig. 22), with its underside pattern so closely allied to *quercus*, we find the armature rather nearer to *betulae* than to *quercus*. The hooded tegumen is more ample, the ædæagus is quite close in shape to the small ædæagus of *betulae*, whilst the clasps, though larger than *betulae*, are nearer to that species than to *quercus*. The variation of species *inter se* has thus been demonstrated, but it will also be advisable to examine two other cases of specific *inter se* variation, in cases where species are very different superficially, but where their armature is so close that only a very expert eye would observe anything to raise a doubt in his mind—and cases where the imagines are exceedingly close superficially, but the male armature is less so. Professor Poulton has drawn my attention to this, and has enabled me to show this little group of African species of the genus *Acraca*. These species do not affect my main argument, but they are most interesting in showing that specific variation occurs\* also in the genus *Acraca*, as one would expect, though it seems to proceed on different lines to what occurs in the *Ruralidae*.

In *Acraca zetes* and *A. chilo* we have two species that appear very different superficially, the former with its entirely blackish primaries and heavily marked secondaries, the latter pinkish tawny in both wings. If, however, we examine the spots of the wings we find they are very close indeed. Eltringham in his able monograph places them next each other and we find the armature is so close that it needs a critical examination to discover the differences that, as a matter of fact, do exist. The two species are as nearly the same size as can be, but the armature of *zetes* (Pl. xviii., fig. 23), is decidedly smaller than that of *chilo* (Pl. xviii., fig. 24), the uncus and tegumen are

\* By specific variation I mean variation between species *inter se* of the same genus—not that the same species has differentiation in armature, this I have not found.

slightly different in shape, the girdle of *zetes* is more erect and decidedly slighter, the pilosity of the clasps is markedly diverse from that of *chilo*, being much longer, thicker and heavier, whilst the *ædæagus* of *chilo* is longer and different in shape in the basal area. The saccus also is quite different in the two insects. The species look very different, they are, however, very closely allied, and the armature follows their specific relationship, not their superficial facies. This is as we should expect. Again there are two forms *A. natalica* var. *pseudogina* (Pl. xix., fig. 25), and *A. natalica* (Pl. xix., fig. 26), as also *A. acrita* var. *ambigua* (Pl. xix., fig. 27), and *A. acrita* var. *pudorina* (Pl. xix., fig. 28). Both these two pairs are decidedly different, but we have in each case *natalica* and its various races, and *acrita* with its various races, so that in the light of Mr. Eltringham's monograph, we might quite properly call them two polymorphic species, with wet and dry forms and intergrades almost all along the line. In these cases we should not expect their structure, such as neuration or armature to change, and so it is, the structure remains true though the colour differs. It is a case of that unknown quantity *x* in the constitution of the species (would that we could find out what *x* is) that under different conditions causes the mutability of species, the most interesting factor of it being why some species respond and why others do not.

This brings us to the second and last instances I have to draw attention to, *viz.*, similarity of design but difference in structure. In *Acræa periphæus* var. *acritoides* (Pl. xix., fig. 29), and *A. acrita* (Pl. xix., fig. 30) we certainly have a superficial, a very superficial, resemblance, but the armature is very different. At the same time I must say that no experienced entomologist would hesitate in at once separating the two species; some of the spots in the secondaries assume quite different positions. With *Acræa calderena* (Pl. xx., fig. 31), and *A. pudorella* (Pl. xx., fig. 32), the case is more interesting; they had always been considered forms of one species so exceedingly close were they, and I think it was due to Mr. Eltringham (I speak under correction) that they were discovered to be distinct species, his armature dissections proving this. At the same time the postmedian line of spots is quite different in the two insects, and it was this, no doubt, that induced the query in Mr. Eltringham's mind. In *A. chambezi* and *A. mansya* the difference in the perfect insects, the absence of many spots on the upperside in the latter, would at once lead one to expect the divergence of armature that we see (Pl. xx., figs. 33, 34).

Finally I would refer to the genus *Amauris*, to the two species *A. echeria* var. *jacksoni* (Pl. xx., fig. 37) and *A. albimacula* var. *hamingtoni* (Pl. xx., fig. 38), and also to the species *A. danfeldti* and a new species from Angola that I call *A. angolæ*. The first two are separable only by the size and shape of the sexual brand on the secondaries and by the palpus of the first being spotted, whilst the second is streaked. *A. angolæ* and *A. danfeldti* are separable in precisely the same way, but their colour is white and black, instead of being more or less yellowish, as in the other case.

The male armature differs likewise (Pl. xx., figs. 39, 40), the contour of the clasps differs in each species, whilst the terminal sternite, which in this genus is furnished with very formidable teeth, differs in the shape, in the size, and in the abundance of teeth. This last character

is of much interest, for it is a feature I have not found in any other butterfly that I have examined.

In considering the whole question, however, it must be borne in mind that as there are generic resemblances and specific resemblances so there are both generic and specific differences, and they do not necessarily pass along the same line. Investigation has taught us that in the *Ruralidae*, in its broadest sense, the tegumen is of dominant generic value, that the ædœagus and the harpagines (clasps), so far as their general form goes, are also of generic value, but in both of the latter mutation occurs which is purely specific, rarely with the ædœagus but regularly with the harpagines, whilst so far as specific divergences are generally concerned, the clasps are the most sensitive, and it is in these organs that we find the smaller or larger differences that are observable between species and species. I have referred to two genera that are evidently in a period of marked mutation, *Heodes* and *Ruralis*. In both cases it was seen that the clasps were altering considerably in different sections of the genera, and that this had been possibly concurrent with alteration of colour and pattern, but that at present, though colour was already different, yet the structure of the imagines, in their form, their neuration, and other characters had practically changed but little. The male armature, however, showed definitely that mutation was in progress, and that both genera are evidently in the process of splitting up. For the present, however, there seems nothing tangible, except the colour, whereby it would be possible to divide them, and colour is too unstable a feature on which to break up an otherwise thoroughly homogeneous family. I have said that the altering of the clasps may have been concurrent with colour; as a matter of fact, I believe that colour is much more sensitive to mutation than structure, and that any mutability in the structure follows, rather than is followed by, mutation in colour and pattern.

My only really thoroughly exhaustive study has been on the *Ruralidae*, but from a very considerable number of dissections made by myself in other families, the same result occurs more or less in most of the Rhopalocera, and I am now led to believe that pattern is very generally correlated with structure.

## EXPLANATION OF PLATES XIV.-XX.

All the figures are magnified  $\times 30$ , except those of the genera *Acraea* and *Amauris*, which are  $\times 7$ .

## PLATE XIV.

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|-----------------------------------|--|
| Fig. 1. <i>Plebeius argus</i> .   | Fig. 5. <i>Glaucopsyche cyllarus</i> . |
| „ 2. <i>Celastrina argiolus</i> . | „ 6. <i>Lycæna arion</i> .             |
| „ 3. <i>Celastrina puspa</i> .    | „ 7. <i>Scolitantides orion</i> .      |
| „ 4. <i>Eceres argiades</i> .     |  |

## PLATE XV.

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|------------------------------------|---------------------------------|
| Fig. 8. <i>Callophrys rubi</i> .   | Fig. 10. <i>Strymon titus</i> . |
| „ 9. <i>Satsuma frivaldszkyi</i> . | „ 11. <i>Strymon v-album</i> .  |

## PLATE XVI.

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|--|--|
| Fig. 12. <i>Nøolycaena tengstroemi</i> .               | Fig. 14. <i>Thestor fedtschenkoi</i> . |
| „ 13. <i>Thestor ballus</i> , (not mentioned in text). | „ 15. <i>Lacosopsis roboris</i> .      |

## PLATE XVII.

- Fig. 16. *Cigaritis zohra*.  
 ,, 17. *Heodes phlaeas*.  
 ,, 18. *Heodes thetys*, (ædæagus upside down, apex of one clasp cut off, for clearness, and falces of tegumen misplaced.)  
 Fig. 19. *Heodes sarthus*.

## PLATE XVIII.

- Fig. 20. *Ruralis betulae*.  
 ,, 20A. *Ruralis lutea*.  
 ,, 21. *Ruralis quercis*.  
 Fig. 22. *Ruralis orientalis*.  
 ,, 23. *Acraea zetes*.  
 ,, 24. *Acraea chilo*.

## PLATE XIX.

- Fig. 25. *Acraea natalica* var. *pseudogina*.  
 ,, 26. *Acraea natalica*.  
 ,, 27. *Acraea acrita* var. *ambigua*.  
 Fig. 28. *Acraea acrita* var. *pudorina*, (uncal extremity broken off).  
 ,, 29. *Acraea periphanes* var. *acritoides*.  
 ,, 30. *Acraea acrita*.

## PLATE XX.

- Fig. 31. *Acraea caldarena*.  
 ,, 32. *Acraea pudorella*.  
 ,, 33. *Acraea chambezi*.  
 ,, 34. *Acraea mansya*.  
 ,, 35. *Acraea pudorella* var. *detecta* (not referred to in text).  
 ,, 36. *Acraea pudorella* (not referred to in text).  
 ,, 37. *Amauris echeria* var. *jacksoni*.  
 ,, 38. *Amauris albimaculata*.  
 ,, 39. *Amauris danfeldti*.  
 ,, 40. *Amauris angolae*.

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## SCIENTIFIC NOTES AND OBSERVATIONS.

ON ELACHISTA POAE.—I have been breeding this Tineid and can add a few points to Stainton's account (*Nat. Hist. Tinea*, vol. iii., p. 104). On May 10th, 1914, most of the larvæ had already pupated, however, I found a couple of larvæ on the eve of pupation as late as May 27th. The imagines emerged from May 23rd onwards, nearly always in the morning. I have the actual hour of emergence noted in a few cases, 8.30 a.m., 8.45 a.m.; and one as late as 10.0 a.m., but that is exceptional.

The insects were found along the banks of the River Granta, above Cambridge. The pupa is generally about two feet above the water. It is frequently on an uneaten leaf, so we presume the larva wanders about when full-fed. Once only, out of sixty cases observed, did I find two pupæ on one leaf. The pupa is invariably head upwards on the concave side of the leaf-lamina of *Glyceria*, sp. A slight cocoon is formed, frequently when the leaf is still young. The cocoon bridges across the space between the two sides of the partially folded leaf, and as the leaf grows and becomes flatter the cavity of the cocoon is reduced and the whole structure is not seldom ruptured. This does not appear to harm the pupa. The cocoon varies in vertical length from 11mm. to 18mm., and in breadth from 6.5mm. to 8mm. It is extremely frail, and formed of white silk, nearly all the strands of silk run transversely from one side of the leaf to the other. The cocoon forms a "blanket" over the pupa, and there is no inner cocoon. The tail of the pupa is attached, I suppose by means of hooks, to a small dense web under the lower end of the "blanket." The upper end of the pupa is absolutely free but retains its perpendicular position by virtue of thin fixation of the tail, and also because the pupa is very stiff. This position is not affected by the accidental rupture of the "blanket."



The pupa remains attached after the emergence of the moth. I have no definite notes on the pupal period, which is somewhere between a fortnight and three weeks. I could not discover that one sex emerged before the other, but my observations lack completeness.—P. A. BUXTON, (F.E.S.), Fairhill, Tonbridge.

## NOTES ON COLLECTING, Etc.

BRITISH BLATTIDÆ.—The following records of cockroaches may be of interest, as these insects are not much studied. July 5th, 1913, Studland, Swanage, Dorset.—Nymphs of *Ectobia panzeri* among marram grass; nymphs and adults of *E. livida*, very abundant on sand dunes and among bracken; also at sugar. June 17th, 1914.—*E. livida*, one flying actively in hot sunshine on Wrotham Down, Kent.—P. A. BUXTON (F.E.S.), Fairhill, Tonbridge.

COLIAS EDUSA IN EARLY JULY.—While walking over the Downs near Ventnor to-day, I saw, but failed to capture, a female *Colias edusa*. Is it not rather early?—H. G. GREGORY, Westleigh, Salisbury. July 6th.

[The time of appearance is usually August and beginning of September. The late C. G. Barrett records freshly emerged specimens as early as June 4th in South Wales, in 1877. Whether these latter were suspected as first or second brood specimens he does not say.—H.J.T.]

PYRAMEIS ATALANTA (HIBERNATED?).—On May 27th (last month) a specimen of *Pyrameis atalanta* settled on the lawn in my garden at Ditchling, Sussex, on a sunny warm morning, within two feet of where I was sitting. It was in very good condition though a little worn. I can offer no opinion as to whether it was an example that had hibernated in the locality or not. There were a good many of the insects about the garden in September last year.—J. C. DOLLMAN, (F.E.S.), Hove House, Newton Grove, Bedford Park., W.

AN IRREGULAR PAIRING IN NATURE.—While collecting at High Wycombe on Saturday afternoon, June 27th, with Messrs. L. E. Dunster and F. H. Stallman, I met with a ♂ *Anthrocera filipendulæ* paired with a ♀ *Hippocrita jacobææ*. This was about 3.30 p.m., and at 11.45 they were still *in cop.*, and Mr. Stallman took them to photograph. Shortly afterwards the *H. jacobææ* was found to be dead; apparently they were unable to separate.—B. S. WILLIAMS, E. Finchley, N.

HAEMARIS TITYUS (BOMBYLIFORMIS) IN ROSS-SHIRE.—I would like to record in your magazine a moth that I have caught in this district the last two seasons. It is the "Narrow-bordered Bee Hawk," *Haemaris tityus (bombyliformis)*. I caught two specimens on June 18th, 1913, on Bromhill, Fortrose, Ross-shire, and on May 27th of the present year two more specimens in the same place. I believe that they are fairly rare in this district, and would like to know if they have been recorded before from this part of Scotland.—ALLAN G. CAMERON, Oakfield, Fortrose, Ross-shire.

[In the account of this species by the late J. W. Tutt, *British Lepidoptera*, vol. iii., pp. 537-8, *H. tityus* is said to be locally common in some parts of Scotland, and has been recorded from the following

counties, Aberdeen, Argyll, Ayr, Dumbarton, Lanark, Mid-Lothian, Moray, Nairn, Perth, Renfrew, Roxburgh, Stirling, Sutherland and Wigtown. Thus Ross is apparently a new record.—H.J.T.]

A QUERY.—I enclose a larva or worm recently found in a goose-berry-bush. It is certainly not a caterpillar, but I would be greatly obliged if you could identify it for me.—IBID.

[The specimen enclosed was a "thread worm," probably belonging to the genus *Mermis*, the species of which are parasitical within the Insecta and at certain times make their way out by perforating their hosts, and hide themselves in the moist soil. There they reproduce, and the embryos, born viviparously, pass some time in the ground. They wander in search of an insect host, the caterpillar of a moth or beetle for instance, which they penetrate by means of a sharp stylet that is hidden within the head when not in use. Large numbers of these worms are sometimes found in the soil, and I have seen them on more than one occasion in numbers on the heads of flowers, no doubt in search of hosts. In August, 1907, one of these worms  $5\frac{1}{4}$  ins. in length emerged from a specimen of *Erebia ligea*, which a week or two before I had captured and papered on the shores of Lake Lucerne. Dr. Chapman records another from an imago of *E. eryale*, and Mr. Jäger another which emerged from a larva of a *Cucullia* (*Proc. S. Lond. Ent. and N.H.S.*, 1907 and 1911).—H.J.T.]

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## CURRENT NOTES AND SHORT NOTICES.

In the April number of the *Entomologist* Mr. Gervase F. Mathew announces a recurrent form of *Arctia villica*, at Dovercourt, in which there is a very large apical white blotch extending one-third along the costa and along almost the whole of the outer margin, and including only one or two specks as remains of the usual black area. This form he names ab. *wardi*, in honour of its finder Col. Ward, some twenty years ago. A figure of the aberration is given in the text. Mr. Mathew also records and names as ab. *unipunctalis* a specimen of *Pyralis costalis* taken in July, 1906, at sugar, in which the usual rosy grey of the wings is replaced by deep maroon, or plum colour, without transverse lines and the large yellow spots on the costa reduced to one minute, dull yellow spot, near the apex. He also calls attention to the variation exhibited by a long series of *Gnoudontis bidentata*, bred from county Cork, which varied from pale straw, through biscuit colour, richer biscuit tone, pale ochreous, golden brown to warm brown, with much diversity in lines and discal spots.

In the conclusion of his notes in the *Entomologist*, on butterfly hunting at Larche, Mr. Rowland-Brown describes the form of the ♂ of *Albulina* (*Polyommatus*) *pheretes*, from the Ornaye Valley, under the name of ab. *azurica*. The ground colour of the upperside is black, not brown, the discoidal spot on the forewings is large and of the lovely azure hue as on the wings of the male, with the basal area of all four wings heavily scaled with blue of the same brilliancy. At the same time Mr. Rowland-Brown reports an example of *Brenthis pales*, from the Ornaye Valley, in which the rufous ground of the upperside of the forewings is entirely replaced by creamy white, and he names it as ab. *primula*.

Prof. Hudson Beare sailed by the steamship "Euripides," for Australia, on July 1st, and will not be back till the end of November. We hope to get an account of his entomological experiences.

In the *Bull. Soc. Ent. France* is a short but interesting account of *Coenonympha oedipus*, with a plate of a dozen varied forms. M. Gelin has been accustomed to take this species for many years past among the dense vegetation of the marshes of Sèvre Niortaise, la Charent, la Gironde and l'Adour on the west Atlantic coast of France. He says that the females are large and very strongly marked on the underside, the band inside the ocelli on the hindwings being much emphasised, characteristic of ab. *miris*, Fab. Usually the upperside of the hindwings has three or four ocelli, that of the forewings being generally without. M. Gelin names a form in which there are four incipient ocelli on the latter and four well developed ones on the former as ab. *ocellaris*. It is noted that M. Oberthür in *Lépid. comp.*, iii., 397, names a Boisduvalian form in which all the ocelli are of a deep velvet with white pupillation, as ab. *gelini*. M. Gelin calls attention to and figures the form named by him in 1912 as ab. *lucasi*, in which there is complete absence of ocelli on the upperside of all four wings.

In a paper published in the *Bull. Soc. Ent. France*, p. 182, M. Gelin gives notes on new and rare forms of French Rhopalocera. (1) He names an aberration of the brilliant race *coelestis*, Obtr., of *Agriades thetis* (*bellargus*) indigenous over the calcareous area of the Atlantic coast of France, as ab. *bicolor*, characterised by black scales being grouped and concentrated in the intraneural spaces. (2) He figures two specimens he calls hermaphrodites of *A. thetis*, in one of which the dark female ground colour is streaked irregularly on all the wings, while in the other specimen the brown colour of the female predominates, the male coloration only showing in a few scattered scales and streaks. (3) He names an aberration of the *syngrapha* ♀ form of *Agriades coridon* as ab. *oberthüri*, characterised by considerable scattered dark coloration in the bright blue area of the wings and by very pronounced discoidal spots on all the wings. (4) An evident teratological and small specimen of *Pieris brassicae* with elongated wings is named ab. *clongata*, and another small specimen with total absence of the inner marginal black line on the forewings and the costal spot on the hindwings, as ab. *collinensis*.

In the *Canadian Entomologist* for April, A. W. Hanham gives his experience of sunflowers as a lure for moths. Last autumn in Duncan, British Columbia, he took no less than eleven species of the Noctuid family *Plusiidae*, as well as many other species at these flower heads.

In the *Revue Meus. Namur.*, M. l'Abbe J. de Joannis, in discussing the forms of *Ellopiopsis prosapia*, especially the forms var. *prasinaria* (green) and var. *grisearia* (grey), says that the former does not occur around Paris, and suggests to M. Guerin, who has taken and bred all three forms around Raismes, Belgium, that he should carry out his breeding with a view to obtain, if possible, some Mendelian result. M. de Joannis considers that probably the type form (rose) is the dominant, and that the *prasinaria* from (green) is the recessive.

In the *Ent. Mo. Mag.* for May, Mr. D. Sharp describes a new species of Coleoptera, *Helophorus ytenensis*, which he has differentiated from its very close ally, *H. granularis*. It was first taken in 1869 in Dumfries-shire, but is apparently very rare although occurring also in

England and Ireland. In the same number Mr. Joy announces another species as new to Britain. In June, 1911, Mr. Harwood took a specimen of *Malthodes*, sp., near Bishops Stortford. This has been identified as *M. crassicornis*, and has now been differentiated from its near ally *M. brevicollis* (*nigellus*).

In the *Ent. Mo. Mag.* for May, the Hon. N. C. Rothschild states that in the collection of the late J. W. Tutt, among the British *Crambi* were five specimens of a *Crambus*, taken at Deal in 1889, which are *C. lithargyrellus*, a species formerly considered as British. In the same lot was a single specimen of *C. poliellus*, a sand-frequenting species, taken at Deal in 1885.

The *Entomologist* for May contains among other things interesting accounts of collecting in Corsica by G. H. Gurney, in Sicily by J. Platt-Barrett, and Notes on British Orthoptera in 1913, by W. J. Lucas.

In a communication to the *Bull. Soc. Ent. France*, M. P. Chrétien describes three new species of *Nepticula*. Two are attached to *Labiatae*, the larva of *N. rosamarinella* feeds upon the leaves of *Rosmarinus officinalis* and that of *N. teucriella* feeds on *Teucrium chamaedrys*. The third species, *N. zollikofferiella*, has a larva attached to the Composite, *Zollikofferia nudicaulis*, at Biskra, Algeria. The two first-named species came from the Alpes Maritimes and l'Ardeche department respectively.

The *Naturalist* for May contains a very interesting record of the persistent devastation of a Yorkshire wood by lepidopterous larvæ since the year 1910, made by Mr. B. Morley of Huddersfield. The attack commenced by the defoliation of the trees in 1910, caused by the larvæ of *Phigalia pedaria* (*pilosaria*), *Himera pennaria*, *Hybernia defoliaria*, *H. aurantiaria*, *Oporabia dilutaria*, *Cheimatobia boreata*, *C. brunata*, and *Tortrix viridana*, all of which species had been common as imagines in 1909. There was a keen struggle for existence. By 1912 *T. viridana* was almost extinct, *C. boreata* rapidly diminished and was rare by 1912, *O. dilutaria* was very scarce in 1913. In the present year *P. pedaria* has become a rare insect. *H. pennaria* was the next to fail after abundance in the autumn of 1912. *H. defoliaria* and *H. aurantiaria* swarmed in vast numbers, but the resultant larvæ in 1913 were reduced to such straits that they paid the penalty of overproduction and few survived. *C. brunata* was the apparent winner in the struggle for it was still as abundant as ever in the autumn of 1913. Probably the larvæ were reduced to cannibalism in which they often indulge in the breeding cage when their food goes stale.

In the *Ent. News* for May, we read that Annette Frances Braun has communicated a paper to the *Journ. Acad. Nat. Sc.*, Philadelphia, on the "Evolution of Colour Pattern in the Microlepidopterous Genus *Lithocolletis*." One of the author's conclusions is stated that, "the primitive colour pattern is a series of seven uniformly-coloured, pale, yellow transverse bands, separated from one another by unpigmented areas. . . . These bands, either in their primitive, or modified shape, constitute the ground colour. Upon this ground colour a second darker series of elements, the markings proper, also usually transverse, are superimposed." As a further result of her studies she considers that "the uniform yellowish ground colour which suffuses the wing in the higher Lepidoptera, beginning at the base and spreading distalwards, is the outcome of a phylogenetically older type

of marking, originally banded, and later fused to a uniform colour, and that the markings are a second series superimposed upon the first."

## SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 9th, 1914.*—NEW MEMBER.—Mr. C. P. Emmett was elected a member. VARIATION IN *D. FASCELINA*.—Mr. R. Adkin exhibited three *Dasyschira fascelina*, one with the usual black transverse lines largely yellow and another with the black markings intensified and with absence of the yellow freckling. BURMESE LEPIDOPTERA.—Mr. Edwards, several very conspicuous and beautiful Heterocera from Burmah, including *Argina argus*, *Euchromia formosa*, etc. A RECORD OF *L. LEUCOMELANELLA*.—Mr. Sich, specimens of *Lita leucomelanella*, first discovered in England by the late Mr. Boyd in 1858. They were from Weymouth.—VARIATION IN *E. PRONOË*.—Mr. Hy. J. Turner, a long series of *Erebia pronœ* from the Austrian Tyrol and Switzerland, and read notes on the variation, both local and aberrant, and on the distribution of the species. THE SOCIETY'S COLLECTIONS.—Mr. West, Greenwich, several drawers of the Society's Collection of British Lepidoptera to show the additions made to the Pyrales and Tortrices by the donation from Mr. Dawson. *C. STROBILELLA*.—Mr. Platt Barrett, a series of *Coccyx strobilella* bred from spruce cones collected at West Wickham some weeks ago.

*April 23rd.*—A SPECIAL EXHIBITION OF ORDERS OTHER THAN LEPIDOPTERA.—Mr. Stanley Edwards, numerous large and conspicuous species of exotic Coleoptera and Hymenoptera. Mr. Ashdown, a collection of Swiss Coleoptera including 40 species of Longicornia taken by himself. Mr. Gibbs, the lantern-flies *Fulgoria lanternaria* and other conspicuous insects sent to him from British Honduras among a collection of butterflies and moths. Mr. Step, ♂ and ♀ *Asilus crabroniformis*, a predacious Dipteron, with *Tachinus grossa* and *T. fava* two hairy flies which attack larvæ. Mr. West (Greenwich), thirteen drawers of the Society's reference collection (Coleoptera, Orthoptera, Neuroptera, Hymenoptera and Hemiptera), a box of typical examples of Diptera presented to the Society by Mr. Andrews, and his own collection of British Homoptera. Mr. C. B. Williams, the beetle *Lochmæa suturalis* on heather from Cheshire, and willow stems damaged by larvæ of *Cecidomyia saliciperda*. Mr. Andrews, the following very rare Diptera and contributed notes:—*Lispe pygmaea*, Fall., *Limnophora aestuum*, Vill., *Macronychia griseola*, Fall., all from Porthcawl, *Phorbia parva*, Ztt., from Chattenden, *Fannia ciliata*, Stein., from Milford, and *Chirosia parvicornis*, Ztt., from N. Kent. Mr. R. Adkin, Rösels's *Der Natuurlyke Historie der Insecten*. Mr. Dennis, photographs of plant-galls. Mr. E. E. Green, many species of *Coccidae* largely from Ceylon with coloured drawings of their life-histories. Mr. B. Adkin, pieces of bark showing depredations of the Homoptera, *Chermes corticalis* on larch, and *C. viridis* on Weymouth pine. Mr. Moore, 925 mites of the genus *Gamisus*, taken from a beetle.

*May 14th.*—PAPER.—Mr. B. S. Williams read a paper on "The Thysanoptera," and showed lantern slides and specimens under the microscope in illustration. THE FURZE MITE.—Mr. Hocking exhibited branches of the common furze from Danbury Common, which had

been covered by a pearly white web and killed by an attack of countless numbers of *Tetranychus lintearius*, an extremely small mite which congregated in reddish-brown dust-like patches. Mr. Step had seen a similar attack of a mite on lime at Mickleham. Mr. R. Adkin, aberrations of *Colias edusa*, including a ♂ with very pale marginal bands, one-half the usual size, and a yellowish form of the var. *helice*.

May 28th.—HYBRID NYSSIA-APOCHEIMA.—Mr. Buckstone, 1 ♂ and 3 ♀ hybrids of the cross *Nyssia zonaria* ♂ and *Apocheima hispidaria* ♀. The larvæ were very like those of the latter species and were constitutionally weak, only four imagines resulting from some 300 fertile ova. CAPTURE OF A VERY RARE HEMIPTERON, P. BIDENTATA.—Mr. West (Greenwich), a specimen of the extremely rare Hemipteron, *Pygolampis bidentata* taken by him in the New Forest in May. Only one specimen had previously been captured in Britain. PUPA OF S. PRUNI.—Mr. Newman, a living pupa of *Strymon pruni*, which closely resembles bird's excrement. OCCURRENCE OF AN EXOTIC COCCID AT BEDFORD PARK.—Mr. Gahan, examples of a mealy-bug, both sexes of which had occurred two years running on flowering currant in his garden at Bedford Park. It was supposed to be *Pseudococcus citri*, a hothouse species. PAPER.—Mr. K. G. Blair read a paper on "Luminous Insects," many examples of which were exhibited by himself, Messrs. Main, Edwards, and H. Moore.

THE LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—March 16th, 1914.—LECTURE.—Professor Robert Newstead, M.Sc., F.R.S., gave a lecture entitled "Some Observations on the Natural History of Nyassaland." The lecture, which dealt with the Professor's own experiences during an expedition undertaken to discover the breeding habits of the *Glossinidae*, was most interesting, especially the account of the finding of the first pupa of *Glossina morsitans*, and of the connection between this fly and sleeping sickness and "ngana." A capital photograph shown on the screen recorded this historic event. EXHIBITS.—Mr. A. W. Hughes exhibited *Phigalia pedaria* (*pilosaria*), including a pale olive unicolorous variety, from Eastham, also *Hybernia leucophaea* and var. *marmorinaria* from the same locality; he further reported that *Nyssia zonaria* had been plentiful at Crosby.

April 20th, 1914.—ADDRESS.—Mr. A. W. Boyd, M.A., F.E.S., gave an address entitled "The Natural History of Rostherne Mere." Having described the physical characters of the mere and the probable causes of its formation, the nature of the surrounding land and its flora, both arboreal and herbaceous, he dealt exhaustively with the birds known to frequent the mere and finally the Insecta of the locality were discussed. Several very interesting records have been made, viz., *Acidalia circellata*, a fine female specimen in 1913, *Ornis arellanella*, *Laverna raschkiella*, this species being an addition to the Lancashire and Cheshire county list, and *Nepticula argentipedella*. Mr. Boyd exhibited the Lepidoptera catalogued for the locality and was congratulated upon having made such good use of the opportunity of collecting upon the private ground surrounding the mere. At the close of the address Mr. Boyd was heartily thanked for his kindness in coming from Manchester to give his experiences. EXHIBITS.—Mr. W. Mansbridge exhibited several xanthic varieties of *Pidonia atomaria*, bred among a large number of the species from Burnley females. The xanthism was confined to the hindwings, and in most of the specimens it affected only one of the hindwings; in two instances,

however, both the secondaries were nearly white all over. Mr. F. N. Pierce exhibited generic types of the British *Geometridae* arranged according to their affinities as indicated by the genitalia.

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## REVIEWS AND NOTICES OF BOOKS.

\* PROCEEDINGS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, 1913-14.—The flourishing Society, familiarly spoken of as the "South London," deservedly takes premier rank among the minor scientific organizations of the metropolis, chiefly on account of the solid work done by its members, and the contributions they make to our knowledge in various branches of biological research. The annual volume of *Proceedings*, which has just appeared, well maintains the high reputation won by its predecessors, and the papers published are in every case by authors of acknowledged position in the scientific world. The Report of the Council for the year 1913-14 shows that the census of membership stands at 179, though we notice that 184 names actually appear in the list. This is a most encouraging total and gives cause for hope that in the near future the 200-mark will be reached.

The first paper printed is from the pen of one of the Society's veterans, Mr. R. Adkin, F.E.S., who contributes what he modestly calls, "Some Notes" on the life-history and history of *Tinea pallescentella*, Stainton. It is accompanied by an excellent plate and is really a most useful monograph of the species, and a valuable addition to the literature of the Micro-lepidoptera. Messrs. Ebray and Alfred Sich give an interesting account of their sojourn in one of the most picturesque districts of the Dual-Empire, in a paper entitled "Spring in the South Tyrol," while two other equally observant members, Messrs. Hugh Main and K. G. Blair, discourse upon "Entomology with a Camera in Switzerland." This latter paper is illustrated by four plates dealing with the life-histories of the Tiger Beetle and Ant Lion. Those who had the privilege of listening to the carefully prepared paper which was read by Mr. H. J. Turner, the Society's Report Secretary, on "One of our Common Butterflies, *Epinephele jurtina*," will almost feel themselves aggrieved when they find that so much of the valuable material which they had been hoping to make good use of, has been omitted. The six pages which have been allotted to Mr. Turner are occupied by a bibliography of the species, which is indicative of a great amount of painstaking research, and which all students of Palearctic butterflies will be glad to have, but they would have been still more thankful if the Powers-that-Be had put a little extra pressure on the author to allow the remainder of the paper to be printed. An excellent contribution to Systematic Entomology is the paper on "British Short-horned Grasshoppers," by Mr. W. J. Lucas, B.A., F.E.S., which supplies a want long felt by the field naturalist. In it the eleven British members of the *Acridioidae* are described at some length, and there is a table given which will prove a great help in specific determination. There are three plates accompanying this paper, one of which illustrates the veins and areas of the wing, while the other two contain

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\* London: Published at the Society's Rooms, Hibernia Chambers, London Bridge; 4/.

figures of the different species. Students of the Diurni of the New World will find two items which will specially appeal to them. One is an abstract of a paper on "Mimicry in the North American Butterflies of the Genus *Limenitis*," read before the Society by Professor E. B. Poulton, in which he shows that the North American *Danaina* serve as models for the species of the Nymphaline genus *Limenitis*, or as its Nearctic forms are called *Basilarchia*. The other paper is by Mr. W. J. Kaye, and deals with "The *Ithomiinae*." There are few living entomologists, certainly none in this country, who can speak with greater authority, or have a more intimate knowledge of, this rather obscure sub-family than the author of this paper. Whatever he writes on the subject is therefore worth reading, and those of us who have devoted some attention to these most interesting butterflies are grateful to Mr. Kaye for his very helpful notes. The Presidential Address is in the main a continuance of that of the previous year, when Mr. A. E. Tonge, F.E.S., dealt at some length with the problems connected with the first stage of insect life, the ovum. This year he elaborates his subject by describing a large number of British lepidopterous ova, which had been "laid wild." Mr. Tonge has made the study of the eggs of butterflies and moths particularly his own, and in his address we have the result of a great deal of painstaking observation, careful description, and accurate measurement. Nearly one half of the volume is devoted to a record of the proceedings at the fortnightly meetings of the Society, and we must congratulate the Report Secretary on having induced so many of those who have exhibited interesting objects in various branches of Natural History, chiefly of course Entomology, to hand in for publication such full notes about them. A glance at this part of the work shows how numerous and varied such exhibitions have been, and this, in itself, is a healthy sign, and is full of promise for the future.—A.E.G.

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## OBITUARY.

### Heinrich Dohrn. (With portrait.)

Dr. Heinrich Dohrn was born on April 16th, 1838, and died unexpectedly at Florence, of influenza, on October 1st, 1913, in his 75th year.

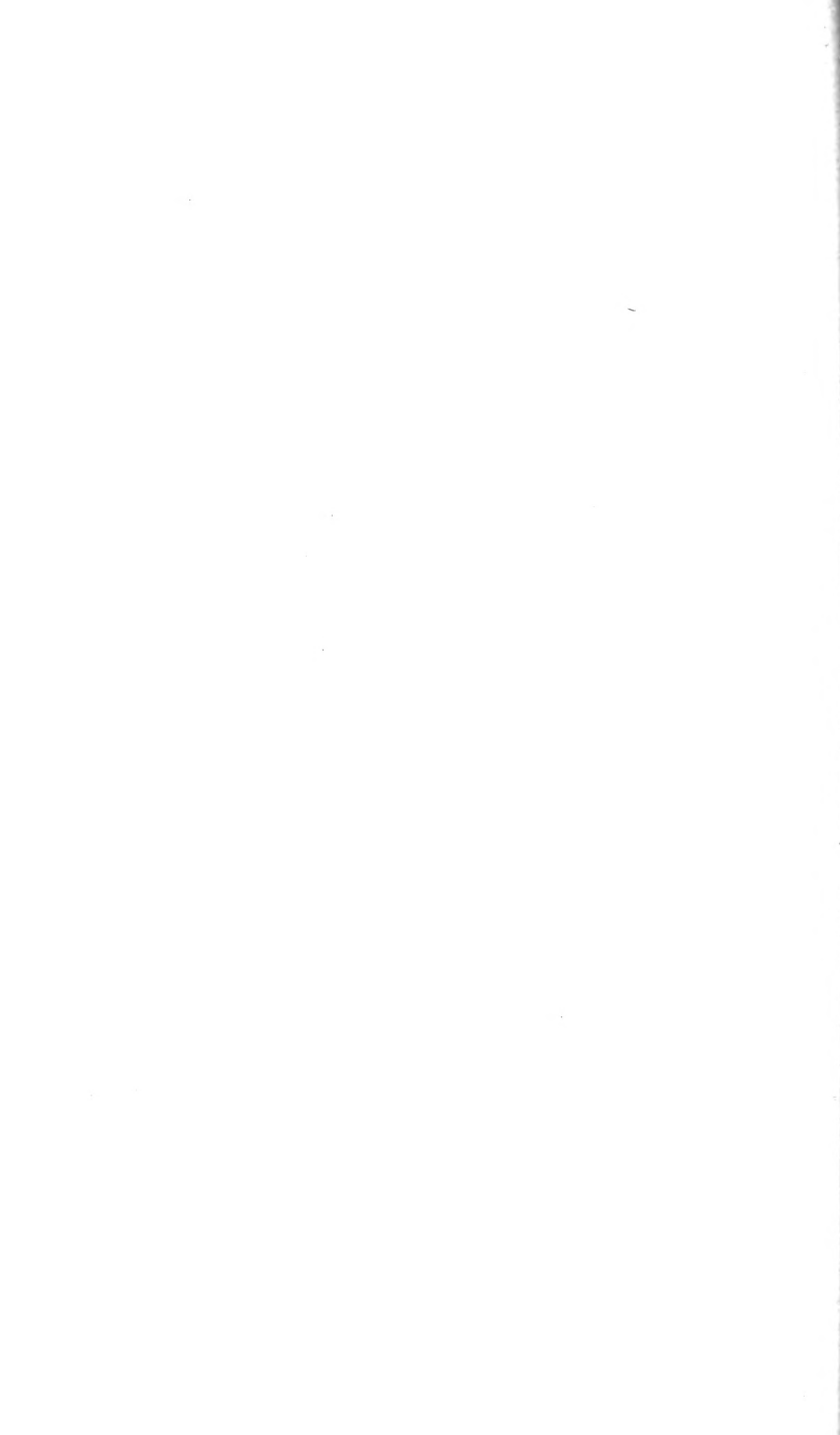
He was a member of a family of distinguished biologists. His father was the well known entomologist, Prof. C. A. Dohrn; his brother Anton was founder and first director of the Naples Biological Station, of which his nephew, Professor Reinh. Dohrn, is the present director. Heinrich Dohrn was the chief organiser and director of the Municipal Natural History Museum of Stettin, his native town, where he was in recent years assisted by Dr. G. Enderlein. He was also the tireless editor of the *Stettiner Entomologischen Zeitung*. He was the author of a number of important works. His *Versuch einer Monographie der Dermapteren*, published in the *Stett. Ent. Zeit.*, 1863-67, was a fine piece of work, in spite of the meagre material then at hand. It was scarcely superseded even by de Borman's monograph in 1900, and is to-day indispensable to the Dermapterist.

Dr. H. Dohrn was a tireless worker, a member of the Imperial Reichstag and a charming correspondent.—M.B.





*Dr. H. Dobson*



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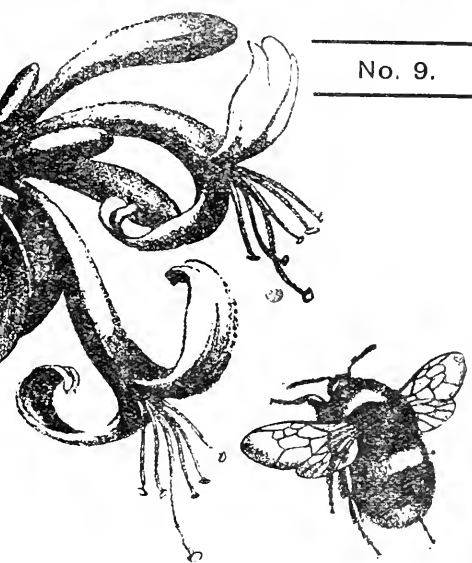
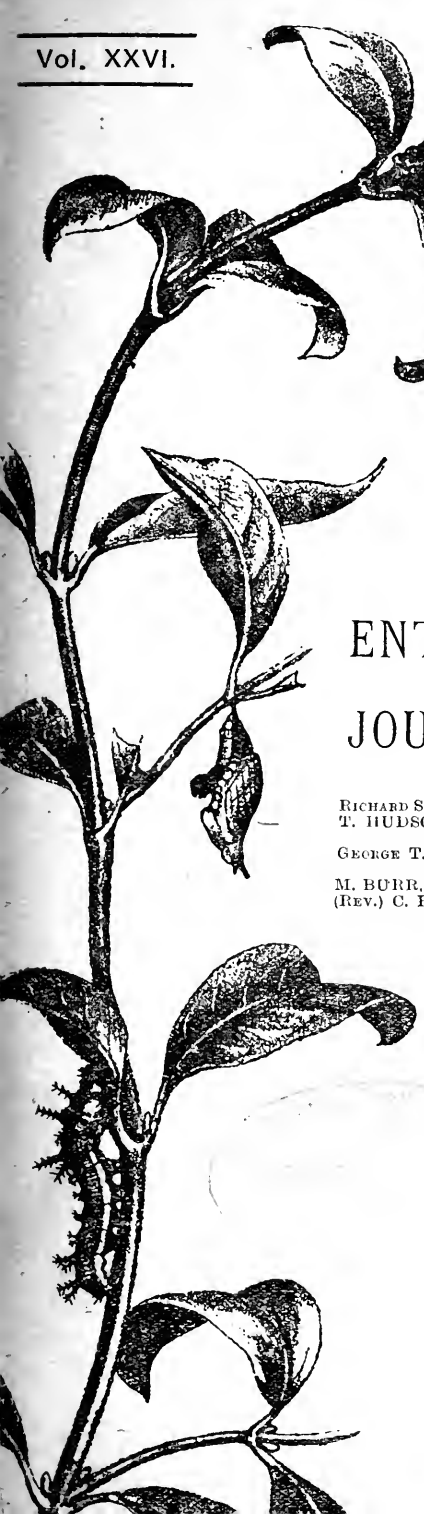
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EDITED BY

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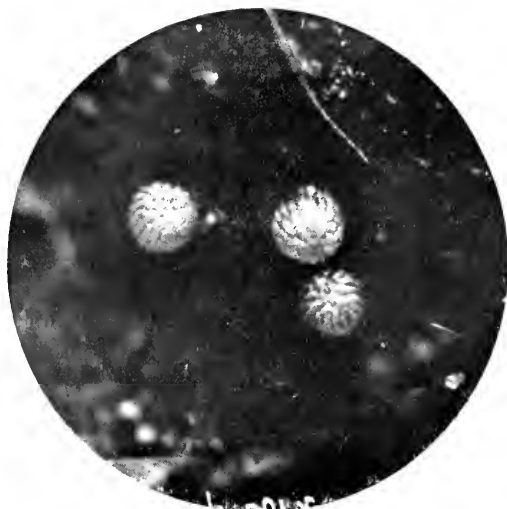
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*Photo. F. N. Clark.*

COLEOPHORA BICOLORIELLA.

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COLEOPHORA BICOLORELLA.

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Notes on the Coleophoridae. (*With two Plates*).

By Hx. J. TURNER, F.E.S.

## COLEOPHORA BICOLORELLA.

This nut-feeding species is very local but abundant, as a rule, when it is found. On May 29th, 1904, beyond Chatham, on nut bushes growing by the roadside going towards the Hook and Hatchet, a hostelry well known to entomological wanderers, I obtained some dozens of the cases of this species. Most of them were obtained from the top-most shoots, two, three, four or five on each, and frequently three on one leaf. Only a few were found low down, most were exposed to wind, sun and dust. The larvæ appear to be very restless, the blotches were innumerable and small. But very few traces of the larvæ were noted lower down on the bushes, and the very few larvæ found there had probably fallen from their higher perches. As a rule the cases are affixed to the under surfaces of the leaves, and irregular oblong blotches are made between the chief ribs. The cases are made of the epidermis of the nut leaves, which turns rich brown in colour when dead, thus giving them a parti-coloured appearance. When a larva wishes to enlarge its case it attaches it to the edge of a leaf, which edge it splits and eats out the cellular tissue for some distance around the opening thus made. The two surfaces of the leaf thus separated are fastened together with silk around the boundary of the mine, and form the addition, which is then cut off from the leaf, it having already been attached to the mouth of the older case, which persists. The mouth of the case of this species is very oblique to the axis of the case, and thus when the new portion, which is irregular in shape, is added, it gives a clumsy and crested appearance.

It was found that the larvæ were quiet if kept in deep shade. Only a few imagines were bred as most of the larvæ produced abundance of Chalcids. The first imago came out on June 30th.

Cases of this species have been met with on alder at Oxshott, and on June 18th of the same year I found one on birch (!) at Chiselhurst.

I have since bred this species freely, and have obtained the ova, but unfortunately either omitted to describe them or have mislaid my MS. However, photographs of the ova and of the micropylar area were taken by Mr. Clarke, and Plates xxii. and xxiii. give very fair representations of the ova *in situ* and of the variability of the micropyle.

[NOTE:—*C. bicolorella*, was described first from imagines bred from cases found on alder (Stainton, *Ent. Ann.*, p. 89, 1861.). Subsequently the imagines bred from hazel were described and named *C. politella* (Scott, *Tr. Ent. Soc. Lond.* (2), vol. v., p. 410, pl. 17, fig. 4, 1861.). This latter is placed in Staudinger's *Catalog*, 1901, as a synonym of *C. fuscadinella*! Collectors have generally considered the alder and nut feeding species to be one and the same species on account of the identical characters of both, and imagines. Here is a problem to be solved.]

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Near Eastern Urbicolids.

By PHILIP P. GRAVES, F.E.S.

I am informed by Dr. J. L. Reverdin of Geneva, who has done so much in recent years to elucidate the difficult problem of the relationship of the various Palaearctic Urbicolids, and especially those of the

SEPTEMBER 15TH, 1914.

genera *Erynnis* (*Carcharodus*) and *Hesperia* (*sensu lato*), that an insect erroneously recorded by me in the *Ent. Record*, vol. xvii., p. 150, as *Carcharodus lavaterae* is a new species closely related to, but distinct from, *Erynnis stauderi*, Rev., which was described and figured in the last fascicule of vol. ii. of the *Bulletin of the Lepidopterological Society of Geneva*. The new species, to which Dr. Reverdin has given the specific name of *rhamses*, Rev., will be described and figured in the next number of the above-mentioned *Bulletin*. Further, I may add that specimens of what I took to be *Erynnis* (*Carcharodus*) *althaeae* from the Cedars of Lebanon (August) and the Constantinople district (May, June and August) prove, after examination of the genitalia, to be the newly described *E. orientalis*, Rev., which was first described from Greek specimens. Dr. Reverdin informs me that, as far as he is able to judge from the small amount of material I have been able to send him, there is a distinct seasonal difference between the first and second broods of this insect.

The *Hesperia* resembling a "very heavily spotted *phloemidis*," to which I have referred in the *Ent. Record*, vol. xvii., p. 150, and vol. xviii., pp. 48, 307, 308, and which occurs sparingly in the desert East of the Nile near Cairo, has been examined by Dr. Reverdin and proves to be a new species, which will also be described by Dr. Reverdin and figured by M. Culo in the next number of the Geneva *Bulletin*, and to which the former has given the name of *amenophis*. Finally I may note that the examination of the genitalia of Constantinople specimens of *H. armoricanus*, sent by me to Dr. Reverdin for examination, prove to be in some cases *H. armoricanus*, in others *H. persica*, which Dr. Reverdin described in the last number of the *Bulletin* as being possibly a new species, possibly a form of *H. armoricanus*. Dr. Reverdin writes, "les *armoricanus* ont les uns la valve d'*armoricanus* typique et d'autres celle de *persica*, mais malheureusement ces deux catégories ne répondent pas aux deux formes à bord abdominal gris ou blanc et il y a un mélange sans correspondance. Cela me rend encore plus perplexe que jamais sur la valeur de cette forme particulière de la valve et je ne sais plus du tout si *persica* est ou non une forme d'*armoricanus*."

May I terminate by thanking Dr. Reverdin for the invaluable assistance he has given me and many another entomologist in the study of this difficult group of butterflies, and by expressing the hope that he may long continue to elucidate the relationships of the puzzling "skippers."

---

### Notes on the Synonymy of Boisduval's N. American species of *Lycænidae*.

By J. McDUNNOUGH, Ph.D.

Mr. Bethune-Baker has asked me to contribute a paper dealing with the synonymy of certain species of *Lycænidæ*, described from California by Boisduval in two papers appearing in *Ann. Soc. Ent. Fr.*, (2), x., 1852, and *Ann. Soc. Ent. Belg.*, xii., 1869. M. Charles Oberthür, in one of the most recent numbers of his *Études de Lépidoptérologie comparée*, has published excellent figures of the actual type specimens still in existence in his wonderful collection; these types I had the privilege of examining whilst on a recent visit to Europe and can vouch for the accuracy of the reproduction. Thanks to M. Oberthür,

a problem that has vexed American entomologists for the past half century, *viz.*, the correct identification of Boisduval's species is at last satisfactorily disposed of.

Taking Dr. Dyar's list as a basis (*Bull. U.S. National Mus.*, no. 52, 1902), I shall offer a few notes on the various species, following the order of the above catalogue; the material at my disposal is contained in the Barnes' collection.

#### THECLINÆ.

*Habroclias grunus*, Bdv.—The generally accepted notion of this species proves correct; the ground colour on the underside of the type specimens is rather yellower than anything I have before me, which may possibly point to a local form; the species varies considerably in the distinctness of the marginal lunules.

*Thecla borus*, Bdv.—This is at present listed as a synonym of *californica*, Edw., and I think correctly so. Unfortunately none of Edwards' types of *Lycenidæ* in the Edwards' collection (now in the Carnegie Museum at Pittsburg) are marked as such. Under *californica* there are 1 ♂ and 2 ♀s, labelled "Calif. (O.B.)," 2 ♂s, "Wash. Terr. (Morrison)," and 1 ♀, "Vanc. Is." These all belong to a form with greatly reduced red marginal lunules on secondaries and do not correspond with the original description in this particular, so can hardly be considered as types. *T. cygnus*, Edw., described from a ♀ from Nevada (Hy. Edwards), is represented in the Edwards' collection by 1 ♂, "Nevada," and 1 ♀, "Calif.," which are identical with *borus*, Bdv. It is possible that Edwards, having lost the true type of *californica*, or returned it to Dr. Behr, and misidentified it at a later date, redescribed the species under the name of *cygnus*. For the present, in any case, the synonymy as given in Dyar's list will have to stand.

*Thecla aurotorum*, Bdv.—This species is unknown to me; it is a tail-less form in the ♂ sex, apparently closest to *tacita*, Hy. Edw. Skinner (*Ent. News*, xxv., 47) lists *spadicæ*, Hy. Edw., as a synonym, and Comstock (*Jour. N. Y. Ent. Soc.*, xxii., 34) places both *tetra*, Behr and *spadicæ*, Edw., in the synonymy. I have not seen the types of either species but the original descriptions of both certainly call for something very dissimilar to Oberthür's figure, so for the present I can see no reason for regarding these three names as applying to a single species.

*Thecla sylvinus*, Bdv.—In the *Bull. Brooklyn Ent. Soc.*, ix., 32, Mr. Wm. Comstock has an excellent article on this species and its allies with which we entirely agree. He lists the synonymy as follows:—

<i>sylvinus</i> , Bdv., 1852.	...	...	San Francisco, Calif.
var. <i>itys</i> , Edw., 1882.	...	...	Prescott, Ariz.
var. <i>putnami</i> , Hy. Edw., 1876.	...	...	Utah.

I have not seen much material from the lowlands of California and have not been able to match Boisduval's type exactly; specimens from higher altitudes in California tend apparently to a diminution in the size of the spots on underside; the upperside is quite variable in the amount of fulvous suffusion on secondaries; the species may be distinguished from *californica*, Edw., by the fact that the blue patch

at anal angle of hindwings on underside is not surmounted by a red lunule, nor do the red lunules extend so far towards costal margin, being often reduced to a single one preceding the blue patch.

Regarding *dryope*, Edw., I might state that the specimens in the Edwards' collection cannot be regarded as types as they bear labels not coinciding with the original description. The description was drawn up from a single ♀ from "Plain Co., Colorado" in the Hy. Edwards' collection; this locality was later (*Tr. Am. Ent. Soc.*, iii., 193) corrected to "Placer Co., Calif." and the ♂ description added. It is probable that the two metatypes mentioned by Mr. Comstock as existing in the Hy. Edwards' collection in the American Museum at New York are really the true types. We have not examined these but are willing to accept Mr. Comstock's statement that they are distinct from *sylvinus*, Bdv., although closely related. The specimens in the Edwards' collection at Pittsburg belong to what we consider the mountain race of *sylvinus*, *i.e.*, the form with reduced markings on the underside.

*Thecla saepium*, Bdv.—This species is well known and needs no comment; the type shows considerable white markings to the line of spots on underside, but this is merely individual, a long series before me from various localities showing all degrees of variation in this respect.

*Thecla nelsoni*, Bdv.—The general usage of this name proves to be perfectly correct and further comment is superfluous. We can see nothing that would indicate that *evoleta*, Hy. Edw., and *muiri*, Hy. Edw., are anything more than mere individual aberrations, the one with nearly obsolete markings, the other with the markings better defined than in the type.

*Incisalia iroides*, Bdv.—I consider that Comstock is correct (*Jour. N. Y. Ent. Soc.*, xxii., 34), in not accepting Skinner's statement that *iroides* is a synonym of the Eastern *augustus*, Kirby (*Ent. News*, xxv., 47); the two are no doubt closely allied, but I might point out that *augustus* shows decidedly checkered fringes in most instances, whilst in *iroides*, the fringes are almost unicolorous; we are probably at least dealing with racial forms.

*Incisalia eryphon*, Bdv.—Closely related to *niphon*, Hbn.; our series of both species are not long enough to point to any one feature which might be used to separate the two forms; possibly the dentate nature of the subterminal black line of underside in *eryphon* may be distinctive, but careful breeding will probably decide the question.

*Callophrys dumetorum*, Bdv.—This is the N. American representative of the European *rubi*, Linn. In *Ent. News*, xxiii., 3, Messrs. Haskin and Grinnell have endeavoured to point out the differences between the two forms, and while, to judge from the material before me, their conclusions are not entirely correct, I quite concur with them in holding the name *dumetorum*, Bdv., separate from *rubi*, L.; *viridis*, Edw., will remain as a synonym. As pointed out in the article above mentioned, Middle Californian specimens are typical showing the white spots on underside very distinctly; Southern

Californian specimens on the other hand, notably from San Diego, show hardly a trace of white; in the long series before me the ♂s are constantly deep smoky on the upperside, the ♀s shaded with rufous. I only know this species from California; the record from Colorado (Barnes, *Ent. News*, xi., 380) is incorrect; the specimens on which it was based are before me and should be referred to *apama*, Edw., being a form of this species with greatly reduced markings on underside; certain better marked specimens in the series however render the reference certain.

Messrs. Haskin and Grinnell would also refer *affinis*, Edw., to the synonymy of *dumetorum*, but incorrectly so in my opinion. Both sexes, as stated by Edwards, are "glossy red-brown," and the fringes on the underside of secondaries are pure white outwardly and show none of the checkered appearance usually found to a greater or less degree in *dumetorum*; we only know *affinis* from Silver Lake, Utah; it is probably a high altitude form.

#### CHRYSOPHANINÆ.

*Tharsalea arota*, Bdv.—This form is closely related to *virginiensis*, Edw., but is smaller with duller coloration on underside; the white submarginal band especially is much less prominent and the primaries show none of the bright orange suffusion found in *virginiensis*; we only know the specimen from California.

*Gaoides xanthoides*, Bdv.—A well-known species; the markings of underside are not so cleanly cut as in *dione*. Send., from the Central Plain region, the dots in *xanthoides* usually showing a central whitish shade.

*Gaoides gorgon*, Bdv.—The species has always been correctly identified; it is apparently not very common.

*Epidemia zeroë*, Bdv.—This becomes a synonym of *mariposa*, Reak.; owing to a peculiar error this name had become interchanged with *nivalis*, Bdv., although the original description is perfectly clear regarding both species.

*Epidemia nivalis*, Bdv.—Boisduval's name becomes valid for the species heretofore known as *zeroë*, with *ianthe*, Edw., as a synonym. This latter form is slightly better marked on underside than typical *nivalis*, but individuals vary in this respect.

*Epidemia halloides*, Bdv.—A common species and widespread; *castro*, Reak., is apparently correctly listed as a synonym.

*Heodes hypophlaeas*, Bdv.—This species is not figured by Oberthür, nor have I any note on the type; the usually accepted determinations are apparently correct, although I have seen no specimens from California.

#### LYCENINÆ.

*Satyrium suasa*, Bdv.—This species has been correctly listed as a synonym of *fuliginosa*, Edw.; the markings on the underside are quite variable in distinctness; I have taken the species on Mt. Hood, Oregon, at an altitude of 6000-7000 ft. in August quite commonly.

*Cupido heteronea*, Bdv.—This species has presented no difficulty; the peculiar purplish reflection on upperside is quite characteristic.

*Cupido icarioides*, Bdv.—The species is apparently common all through the higher regions of California and is very variable on the underside; the type shows the black dots distinct, white ringed, the submarginal ones preceded by slight white arrow-like dashes; many specimens before me lack these dashes and others again show a tendency towards obsolescence of the black markings on secondaries, the dots being largely white with minute black centres, and in some instances almost all traces of these may be lost, on the primaries the black spots are usually considerably larger than on secondaries and show less tendency towards obsolescence. The ♀s usually show a considerable amount of blue suffusion on upperside and traces of reddish marginal band near anal angle of secondaries.

I consider *fulla*, Edw., a synonym of this species; it was described from one ♂ and one ♀ from California, obtained from Dr. Behr and the types are not in the Edwards' Collection at Pittsburg; the series there contains specimens from California, Utah and Colorado, all labelled *fulla* in Edwards' handwriting, and specimens before me which I have compared with Edwards' series are certainly *icarioides*, Bdv.; *lycea*, Edw., from Colorado, is so close that it would be hard to point to any definite point of distinction as both forms vary in the same manner; it will do no harm, however, to hold the name for Colorado specimens. *Pembina*, Edw., at present listed as a synonym, I do not know; the types should be in the Hy. Edw. Collection. The remaining names in the synonymy of *icarioides* are apparently misplaced; *pardalis*, Behr, *erymus*, Bdv., and, I think, *maricopa*, Reak., all apply to a species distinct from *icarioides*, which I will deal with later; *daedalus*, Behr, is stated by Mr. Comstock to be close to *saeptolus*, Bdv., it is thus placed in the Barnes' Collection, but on what grounds I know not; Behr's types were all destroyed in the San Francisco fire and his short Latin diagnosis is insufficient to determine the species; however, it is possible that some of the Eastern collections contain material that has been identified by Dr. Behr, which has led to the above association. I can see nothing which would warrant a separation of *phileros*, Bdv., from *icarioides*: Dr. Boisduval was of the opinion, when he described *phileros*, that it was merely a local race of *icarioides*, but I fail to see on what grounds even this supposition could be based; long series before me from various Californian localities show quite as much affinity to one as to the other, and specimens can be picked out of one series to exactly match either type. Much careful study is still necessary to determine the local and racial variations of this puzzling species, but for the present we offer the following synonymy based on the above remarks:—

- |   |     |     |                           |
|---|-----|-----|---------------------------|
| <i>icarioides</i> , Bdv., 1852              | ... | ... | Calif.                    |
| <i>phileros</i> , Bdv., 1869.               |     |     |                           |
| <i>fulla</i> , Edw., 1870.                  |     |     |                           |
| <i>fuliginosa</i> , Stkr. (nec Edw.), 1874. |     |     |                           |
| <i>mintha</i> , Edw. (?), 1870.             |     |     |                           |
| var. <i>lycea</i> , Edw., 1864              | ... |     | Colorado.                 |
| var. <i>pembina</i> , Edw., 1862            | ... |     | Manitoba and N.W. Canada. |



*Cupido erymus*, Bdv.—The species is quite distinct and apparently rare, or at least local. I consider it will fall as a synonym of *pardalis*, Behr. Behr's description is short, but he fortunately states that the species shows great resemblance to the European *alcon*: this is very true of specimens before me, which I have compared with Boisduval's types, and so removes most of the doubt in my mind concerning the correctness of the above synonymy. I have not seen the type of *maricopa*, Reakirt, recently; it is a ♀ without any blue on upperside, and from my notes the name may also apply to the same species as *erymus*, but a further study of the type will be necessary before I can definitely decide this point. Of this species there are only one ♂ and three ♀s before me from Sonoma Co., California, but they are at once separable from *icarioides* by their darker undersides with heavy rows of submarginal and median black spots; once seen the species is not easily confounded with any other.

*Cupido saepiolus*, Bdv.—This species and *rufescens*, Bdv., present certain features which are rather puzzling and which will require careful study and breeding before any definite statements can be made; the group may be readily known by the presence of a distinct dark discal dash on upperside of forewings in the ♂ and small reddish subterminal lunules near anal angle on underside of hindwings; the ♂ types of *saepiolus* and *rufescens* are very similar, the latter being rather paler both on upper- and underside and with very narrow border to wings on upperside compared with that of *saepiolus*; the ♀s present greater differences of coloration, *rufescens*, as the name expresses, being suffused with brown, whereas *saepiolus* is darker with blue basal shading.

All the ♀s before me from California, including those from high altitudes, belong to the *rufescens* form, whereas the ♂s seem closer to *saepiolus*: the *saepiolus* form of the ♀ is before me from localities in Arizona, Idaho, and Colorado, *i.e.*, the Rocky Mountain district. In my estimation we have only one species, but whether these two names may be applied to geographical races, or whether they merely represent individual variation, is a question that will require study on the part of collectors in California. As has been already stated *daedalus*, Behr, is said to belong to this group; as Dr. Behr described the species at the same time as he did *aehaja*, which is undoubtedly a synonym of *saepiolus*, and as he makes no mention in the short Latin diagnosis of either the discal streak of primaries above or the reddish tinge to submarginal lunules below, I have my doubts concerning this association. Behr's description reads as follows:—"Icarioidi similis sed subtus, quæ puncta in Icarioide sunt rotundissima, in Dædalo sunt transverse *producta* lineaque discoidalis alarum posticarum, quæ in Icarioide deest et pro qua macula alba subtriquetra inclitat, hac in specie *linea transversa distinctissime nigra* vindicatur." The three specimens of the type lot were collected in the Alpine region around the head waters of the Tuolumne River, *i.e.*, at an altitude of over 10,000ft.

The above description would fit partially with either *icarioides*, *saepiolus*, or *pheres*; as all these names date back to 1852 it is evident that *daedalus* will in any case be a synonym so its exact position becomes fairly unimportant.

*Cupido pheres*, Bdv.—Typical *pheres* is readily recognisable by its peculiar shade of blue at base of wings in the ♀ and the single row of white round spots on underside of secondaries; the outer margin of secondaries in ♂ is at times slightly suffused with pale grey-blue as is usual in the ♀.

There is a tendency for the white spots of the underside to become quite distinctly pupilled with black, and ♂ specimens of this form are very hard to separate from those forms of *icarioides* where the black spots tend to obsolescence. A fairly safe means of separation seems to be found on the upperside of hindwings, which in ♂ *icarioides* (at least in Californian specimens) shows a more or less distinct row of marginal black spots lacking in *pheres*, for the most part entirely, or only very faintly visible.

*Erius*, Bdv., at present listed as a variety of *pheres*, I should be inclined to remove from this association and place closer to *icarioides*; if M. Oberthür's figure of the ♀ be correct (I have no note on this), then it probably will prove a good species; the ♂ very closely resembles a small *icarioides*; the species was described from the southern portion of California, and I have nothing before me that I could definitely associate with this name.

*Nomiades xerces*, Bdv.—Readily recognizable by the large white unpupilled spots on underside of both wings; of late years Californian collectors are disposed to regard this as merely a form of what has generally gone by the name of *antiacis*, Bdv. (cf. Williams, *Ent. News*, xix., 476; Huguenin, *Ent. News*, xxv., 326). I think this is correct, only the name *antiacis* must be changed to *polyphemus*, Bdv., which can best be characterised as *xerces* with prominent black pupils to the white spots of underside; as Williams has stated, all kinds of intergrades between the two forms occur; *merita*, Edw., is an aberration of *polyphemus* in which on underside of forewings the discal dash is joined to the base of wing by a white streak. Regarding *antiacis*, my own opinion, from an examination of the type alongside the type of *polyphemus*, was that it was an aberrational form of this species, but in spite of much material before me I fail to match M. Oberthür's figure exactly; for the present therefore the name must remain doubtful.

Concerning *behri*, Edw., Mr. Williams regards this as a good species (*loc. cit.*, p. 482); I have specimens of what is evidently Mr. Williams' *behri* before me from San Francisco and concur with him that it is distinct from *polyphemus* and more closely related to *oro*, Scudder, than anything else; there is, however, some doubt as to just what *behri*, Edw., is; the type specimens were received from Dr. Behr and may have been returned to him; my notes on the specimens at Pittsburg made several years ago are as follows: "In Edwards' Coll. two ♂s and two ♀s from California labelled *behrii* in Edwards' handwriting. The ♂s differ from each other in depth of blue and breadth of marginal border; the underside shows traces of submarginal spots which would preclude association with *antiacis*; the ♀s look like the black-spotted form of *xerces*."

A form of Mr. Williams' *behri* from Southern California with much reduced spots on underside of hindwings has been commonly known as *polyphemus* by various Californian collectors; this is an error as a reference to M. Oberthür's excellent figure at once shows.

*Orcus*, Edw., is evidently an aberration with greatly reduced maculation on underside, but of what species I cannot say as I have not seen the type; it should be in the Hy. Edwards' Collection.

*Phædrotes piusus*, Bdv.—The species has been completely misidentified and placed as the Californian form of *ladon*, Cram. (*pseudargiolus*, B. and Le C.). In reality the name applies to the same species as that which has been known as *sagittigera*, Feld., and has priority over this name.

As far as I can judge by the material before me there are distinctly two forms of this species; the one has the underside rather pale grey with the white area rather diffuse and not sharply defined outwardly by dark subterminal lunules; this is typical *piusus*, and to judge by Felder's figure (I do not know the type) *sagittigera*, Feld., also; we have a series of this form from the higher mountain regions of Tulare Co., California, the other form has the underside much darker, the white area more distinct and sharply defined and the subterminal dark lunules of secondaries more prominent and often tinged with reddish; this form is before me from the southern coast region (Los Angeles) and the Rocky Mountains extending from New Mexico to British Columbia; *catalina*, Reak., with *rhaea*, Bdv., as a synonym would apply to the coast form of S. California, the vicinity of Los Angeles being practically the type locality for both names, whilst if necessary to differentiate the Rocky Mt. form, *daunia*, Edw., may still be used; the only point of difference I can point out between Rocky Mt. specimens and those from S. California is that the former show black ocelli to the submarginal lunules preceding the anal angle of secondaries, which are absent in the few specimens before me from the neighbourhood of Los Angeles.

I do not know to which form *lorquini*, Behr, and *riaca*, Edw., would refer; very possibly they would become synonyms of typical *piusus*.

*Philotes regia*, Bdv.—This is correctly listed as a synonym of *sonorensis*, Feld.

*Agriades nestos*, Bdv.—This name and also *tehama*, Reak., are correctly placed as synonyms of *podarce*, Feld.

*Rusticus enoptes*, Bdv.—Typical *enoptes* has a broad black border to upperside of both wings, checkered fringes on primaries only, and on underside the submarginal lunules tinged with red outwardly, which colour does not form a broad continuous band occupying the whole subterminal space; the ground colour of the underside is greenish-grey. I do not at all concur with Dr. Skinner's opinion (*Ent. News*, xxii., 259) that *enoptes*, Bdv., *glaucon*, Edw., and *blattoides*, Behr, are one species; I imagine that Dr. Skinner has never seen the true *blattoides*: I certainly never had it until last year, when we received a splendid series from an altitude of 11,000 ft. in Tulare Co., California, a spot very close to the type locality of similar altitude. Behr very aptly compared his species with the European *battus* = *orion*, Pall., and in the heavy *quadrate* black markings of the underside it even surpasses this species; the fringes of upperside are checkered on both wings prominently, the outer black border of secondaries tends to break up

into round spots shaded inwardly with reddish-orange; on the underside, apart from the very heavy, almost confluent, black markings, a distinctive feature is a broad black line at base of fringes and a subterminal continuous orange band; the ♀s have a continuous orange band subterminally on upperside of secondaries which does not, however, attain the costa. There is a series of typical *eoptes* before me from the same locality and there is not the least difficulty in at once separating the two species. The status of *glaucan*, Edw., I am unable to determinate at present; it was described from Nevada specimens received from Hy. Edwards and the types may be still in his collection; they are not at Pittsburg, the series of so-called *glaucan* in the Edwards' collection there, being a very heterogeneous assemblage.

A great deal of careful field work will be necessary to work out the correct relationships of the various forms of this group which, apparently, to judge by numerous specimens before us, tends to break up into several geographical races as well as high and low altitude forms.

*Eusticus nirium*, Bdv.—This is apparently correctly placed as a synonym of *shasta*, Edw.; the types of this latter species, received from Dr. Behr, are not in the Edwards' collection however, and are probably lost, so that the original description is all we have to fall back upon. *Lupini*, Bdv., at present listed as a synonym of *shasta* falls into the *acmon* group.

*Eusticus antaegon*, Bdv.—This is a synonym of *acmon*, Dbldy. and Hew., as listed; typical *acmon* is distinguished by its pale purplish-blue colour and very narrow black border to primaries.

*Eusticus lupini*, Bdv.—I consider this a good species; it is at once distinguished from *acmon* (*antaegon*) by its deeper blue colour and much broader black border to primaries. I have before me six ♂s from Tulare Co., California, that are typical; it is apparently more restricted in its distribution than *acmon*. It approaches very close to *monticola*, Clem., but this latter species is of a brilliant greenish-blue on upperside and the dark border of primaries is slightly narrower.

*Eusticus philemon*, Bdv.—Correctly listed as a synonym of *anna*, Edw. I have long series from various localities in the Sierra Nevada Mts. before me; the black spots on the underside vary in size and the marginal maculation often tends to indistinctness, even more so than in the ♂ type of *philemon*, figured by M. Oberthür; this is, however, merely individual, not racial. The ♀s rarely show any blue scaling on upperside. *Cajona*, Reak., and *argyrotoxeus*, Behr, are probably correctly listed as synonyms of *anna*, Edw.; the latter name certainly refers to this species, the type specimens being taken in the Sierra Nevada Mts.

*Ereres amyntula*, Bdv.—Mr. Bethune-Baker has ably treated of this species in the *Ent. News*, Vol. XXIV., 1913, p. 97 *et seq.* and I have nothing further to add to his remarks.

*Brephidium exilis*, Bdv.—This small and very distinct species has

been correctly identified by American entomologists; I can see no difference between Texan and Californian specimens before me, so imagine that *fea*, Edw., described from Texan material, is correctly listed as a synonym.

In conclusion I would point out that there is still a great deal of very careful work necessary before the synonymy of our N. American *Lycænidæ* is straightened out; thanks to M. Oberthür we are now able to definitely fix the nimitypical form of Boisduval's species; Behr's types being all destroyed, leaves us only his short and often inadequate Latin diagnoses to fall back upon, but fortunately he has stated his type localities more definitely than Boisduval, so that material from these regions will probably be of aid in definite fixation; Reakirt's so-called types are in the Strecker Collection in Chicago and will have to be studied carefully; Edwards' species will probably cause the most confusion as the material which served for a number of his earlier descriptions is apparently not contained in his collection in Pittsburg and may have been returned to the original owners, or lost; if we add to this the unfortunate habit that Edwards had of not labelling his types and of misidentifying his own species at a later date and incorrectly labelling them in his collection as it now stands, one can form some idea of the difficulties to be encountered in a study of the *Lycænidæ*. It is a source of great surprise to me that some of our so-called specialists in Diurnal Lepidoptera have for years been content to leave the nomenclature in this unsatisfactory condition; fifteen years ago, when most of the authors of a large portion of our names were still alive, it would have been a much simpler matter to locate the types, or at least obtain definite information concerning them, but this, alas, has been neglected, and we poor unfortunates of a later generation are left to solve the problems as best, or as badly as, we may, giving our own personal interpretation to the descriptions and paving the way for long and futile discussions on nomenclature in the journals, constant shifting of names, and corresponding disgust on the part of economic and practical entomologists who care less for the law of priority than they do for a stable system of nomenclature.

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### Mr. Bethune-Baker on the genus *Lycænopis*.

By T. A. CHAPMAN, M.D.

I wish to say a word as to how Mr. Bethune-Baker treats my statements as to the genera *Lycænopis*, *Cyaniris*, and *Celastrina* (in the *Proc. Zool. Soc.*, 1909, p. 419), in his "Synonymic notes on the *Ruralidæ*" in *Ent. Rev.*, vol. xxvi., p. 162.

I have a dim idea that he is poking fun at me, but being a Scotchman, I fear I shall need a surgical operation to enable me to see the point of the joke.

He interprets me as meaning that if *haraldus* to which the generic name *Lycænopis* was given, be not congeneric with *argiolus*, then the generic name *Lycænopis* is to leave *haraldus* and attach to *argiolus*. If such a thesis commended itself to me, my intelligence must be so low, that my not seeing the joke is comprehensible.

If I might, in such suspicious circumstances, venture on a vague

glimmer of humour permissible with an old friend, I might suggest that Mr. Bethune-Baker should get a pair of spectacles that would not slip off at a critical point, as they obviously did, or he would have read that I said a line or two further on "should someone find reason to divide *Lycaenopsis* into several genera, *Celastrina* would become the name of that containing *argiolus*." It savours at an attempt at a surgical operation to point out that this clearly means that in any circumstance *Lycaenopsis* adheres to *haraldus*.

My own opinion was decidedly that given by Mr. Prout, but I referred the question to him as one of our authorities on nomenclature. The question was, Felder gave to *haraldus* the generic name *Lycaenopsis* because he considered it was not congeneric with *argiolus*, does this in any way tell against placing *argiolus* under *Lycaenopsis*, when they are held to be congeneric and when any other generic name for *argiolus* is invalid, or more modern than *Lycaenopsis*? Mr. Prout said it did not.

Next time I have to report such a matter, I must not condense it into a short sentence, but enlarge it, as I have, in fact, to do now, into a good long paragraph.

[My good friend Dr. Chapman has kindly sent me the above note before inserting it in the *Ent. Record*, and of course I must say a word in reply as he has misunderstood the gist of my remarks.

It will be seen on a second reading of my article that I accept the Doctor's reasonings and statements at least temporarily. I differed, and differed strongly, from a statement of Mr. Prout's—but that statement is given as Mr. Prout's, not as Dr. Chapman's. My glasses had not slipped off at the critical point as I should have thought the doctor would have seen on reading the paragraph beginning at the fourth line of p. 163 *ante*, where I expressly accept his statement of the case for the time being.

I must, however, say here that Dr. Chapman's explanation of Mr. Prout's opinion *as given above* puts an entirely different meaning on the case from that I had imagined, but I hold that my interpretation of it, as it was given originally and as I transcribed it, was the only possible interpretation of it.—G.T.B.-B.]

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### Remarks on Dr. Verity's Reply to one of his Critics.

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., F.E.S.

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

I want to make two observations on Dr. Verity's reply. He charges me, by a negative assertion, with being offensive to the great naturalist Linnæus. He says: "Surely Linnæus has never revealed himself so inaccurate as to describe as *sparsis*, *oratis* and *flavis* markings, which in *icarus* female would be quite similar to those he very clearly describes as '*fascia terminali rufa ocellari*.'" No, certainly not—because the "*punctis 10 flavis oratis sparsis*" in the strongly marked specimens of female *icarus* are very emphatically not like the *fascia terminali rufa ocellari* of *argus*, but are quite correctly described in the words of Linnæus, and I am afraid I must repeat that the description

does suit many female specimens of *icarus* from India and the East. Dr. Verity may possibly argue that *flavis* does not suit, nor yet *nigris*: the large spots of many female *icarus* are quite a different and paler colour from the *fascia rufa* of *argus* and no doubt the great author saw the difference, though I must admit I doubt whether a comparison ever occurred to him. Again, *nigris* instead of *fuscis*—without doubt the latter would be more accurate, but we find the same learned author two or three pages previously (p. 485, no. 167) describing *malvae* as *nigris albo-maculatis*; but instead of charging him with inaccuracy we should remember that his object was not a mere description of species, but rather, the enormous work of classifying all the known animals of the world.

I trust I have said enough to show that I was in no possible way "offensive" to that learned observer; and I may say that I probably yield to no one in my respect for the great departed one.

The other point is the question of types. Types as we know them were quite unknown in those days. Dr. Verity says "Anyhow I should deem it wise to accept as typical any single specimen bearing a name in the handwriting of its author." I regret I am unable to follow Dr. Verity's lead. We have absolutely no evidence that the description was drawn up from that specimen. We know that he, Linnæus, was in constant correspondence with the naturalists of his day, specimens were travelling to and fro between them and we have evidence that he described specimens from figures, etc. Under these circumstances the label in the author's handwriting signifies nothing more than that he considered the specimen to be a certain species, and cannot be accepted as indicating that it was the type.

In conclusion I would say that I hope nothing said at any time on this matter shows "wrath" or anything approaching it. I differ from the Doctor very decidedly, but that is all, and even as he, so am I entirely content to "leave it to a jury of authorities to give its verdict on."

## SCIENTIFIC NOTES AND OBSERVATIONS.

ATTACK ON *TRIPHLENA PRONUBA* BY A SPARROW.—At 1.20 p.m., on July 9th, I saw a specimen of *Triphaena pronuba* flying in bright sunlight in Kings Road, Chelsea. While I was watching the insect a sparrow espied it and gave chase. The moth flew down an area closely pursued by the bird, which appeared quite unable to detect the moth when it had settled with closed wings on the cemented floor of the area, although it was clearly visible to myself at a distance nearly twice as great as that between the insect and the bird. The moment the moth started to fly, however, the sparrow again caught sight of it and renewed its pursuit. I did not see the finish of the chase as both the pursuer and the pursued were lost to view among the traffic.—A. BACOT (F.E.S.).

## NOTES ON COLLECTING, Etc.

THE KILLING OF ANTHROCERIDS.—At a recent meeting of the South London Entomological Society, Mr. L. W. Newman introduced a very effective method of killing Anthrocerids, Burnet-moths, by immersing

them for a few minutes in petrol. They are almost instantly killed by this process and can later on be readily set and are in no way deteriorated by their unwonted bath. All of us know how difficult it is to bring home the members of this family in a satisfactory condition on account of their tenacity of life. Instead of a mass of crawling insects in the poison bottle, a number can be immersed in the petrol in the field and taken out at leisure to be dried on blotting paper in the air. A small bottle of petrol wrapped round with several thicknesses of blotting paper and fitted to a tin, can be easily carried in the pocket when out collecting and will travel well.—H.J.T.

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## CURRENT NOTES AND SHORT NOTICES.

Owing to the necessity of the label "detained abroad" and subsequent pressure of work, it was impossible to take up the editorial business in time either to issue at the usual date or to get matter ready for a full issue. However, we have plenty of matter forthcoming for subsequent issues and several more plates have been promised for the present volume.

The generally excellent popular production *Marvels of Insect Life*, in Part 2, contains unfortunately two serious errors. The plate on p. 75, which is reproduced on the wrapper, shows what is described as a female brooding her young; it is a pity that she is figured with a male abdomen, that is with ten segments, and thorned tubercles on the angles of the tenth tergite, although the forceps resemble those of a female. The second error is on the plate on p. 79, showing "Insects of the Coal Period," where an undoubted earwig is shown, and in the legend at the foot we read ". . . . a large species of earwig . . . . of that period." The creature known as *Baseopsis forficulina*, Heer, from the Lower Lias of Aargau has always been regarded as the oldest known earwig, but Handlirsch, whose authority no one will deny, has seen the original specimen, and states categorically that whatever it may be, it is certainly not an earwig. He also declines to admit as an earwig "*Forficula problematica*," of Weyenbergh, from the Solenhofen slate. Undoubtedly earwigs do not occur till the Tertiary Epoch; they are tolerably numerous in the famous Tertiary Lake Basin of Florissant, Colorado, and in the Baltic amber, both attributed to the Oligocene.—M.B.

Mr. A. Bacot writes to say that he sailed for Freetown, Sierra Leone, on July 29th.

In the *Ann. Soc. Ent. Belg.*, for May, M. F. J. Ball, in an article dealing with the rediscovery of *Agriades thersites* by Dr. Chapman and its differentiation and distribution, states that he has found evidence of its occurrence at several places in Belgium—Halloy, Tellin (Luxembourg), Denée, Han-sur-Lesse et Velthem from specimens confirmed by Dr. Chapman. But not until his article was in print had he obtained any evidence of the occurrence of *Polyommatus icarus* var. *icarinus*. Three specimens of this last were seen by him, two from Denée and one from Moorsel.

The *Report of the Entomological Society of Ontario* for the year 1913 has recently been issued. The Fiftieth Annual Meeting of the Society was held at Guelph, the President, the Rev. Prof. C. J. T. Bethune, was present and the Vice-President, Dr. C. Gordon Hewitt, took the



chair. Substantially supported as this Society is by a large annual government grant, a considerable section of the Report is necessarily taken up with details of the year's economic work, Insects of the Year with special reference to Attacks on Field Crops, Fruit Trees, Forest Trees, Greenhouse and Garden Plants, from the various areas over which the observations and experiments of the members are spread. The following papers are included. In the "Presidential Address," given by the Rev. Prof. C. J. T. Bethune, is a most interesting account of the origin and early days of the Society with a photograph of the members who attended a field meeting in July, 1868. The Rev. W. Fyles gives in "Green Lanes and Byways," a charming account of impressions of his youthful years in England long ago, and contrasts them with "Canadian Lanes," which, in a different way, have their distinctive charms for the lover of nature. A very long paper by Alex. Mac Gillivray on the "Immature Stages of the Tenthredinoidea," deals with the subject in much technical detail. E. P. Felt treats on "Adaptation in the Gall Midges" and gives a number of figures of the marvellously intricate structures attached to the antennæ of these insects. F. J. A. Morris in a very chatty paper gives an account of the "Chrysolids of Ontario," with abundance of notes on the life habits of the species ordinarily met with in that area. F. M. Webster in his paper "Applied Entomology for Farmers" urges upon them with many practical facts the necessity of availing themselves of the services and results of practical economic entomology. Dr. A. Cosens gives an account of "Insect Galls" with numerous figures, and Prof. W. M. Wheeler gives an abstract of his paper on "Ants." We note that the illustrations in this present report are practically all new and not the old ones that have appeared so often before.

One scarcely ever takes up books or reports on economic entomology from the continent of North America without finding more or less space devoted to the San José Scale, *Aspidiotus perniciosus*. From L. Cæsar, of Guelph, Ontario, we have received an illustrated pamphlet of 32 pages, devoted to an account of this terrible pest to all fruit trees, and also of another equally dreaded pest, *Lepidosaphes ulmi*, the Oyster-shell Scale. The former insect originally came from China, and was unwittingly introduced into California in 1870. By 1894 it had so enormously increased and spread as to be present over almost the whole of the United States, and to be found even in Canada. Wherever orchard trees will grow this pest will probably flourish. All parts of a tree are subject to attack, and young trees may be killed in two years, and in a somewhat longer period whole orchards may be totally destroyed. The best controls are thorough spraying with lime-sulphur, the pruning of old, dead, and badly infested branches, and the cleaning and scraping of rough bark. Nurseries are supposed to have afforded ready means of distribution in the past and are now under official inspectors, with power to break and burn all infested trees, and all stock sold has to undergo fumigation with hydrocyanic acid before being sent out. Unlike the San José Scale, the Oyster-shell Scale attacks only the trunks and branches, but does not confine itself to orchard trees alone, for it infests more or less most trees and shrubs. It readily succumbs to the same controls as the last species. The author says the insistent and thorough use of these controls and

general cleanliness in the orchard are sufficient to keep the attacks of both these minute pests in check.

In the *Irish Naturalist* for June, Mr. H. W. Andrews publishes a "List of Irish Diptera" taken by him during various holiday visits from 1906 to 1911, mainly in July and August, at Stradbally (Waterford), Kenmare (Kerry), and Glengariff (Cork). References are given to the list, previously published, of the Diptera captured by Col. Yerbury at the two last named places in 1901.

Our contemporary, the *Ent. Mo. Mag.*, has just completed the fiftieth year of its existence, and the June issue was its jubilee number. It contains a very interesting *resumé* of events which led up to its establishment in 1864 with references to all those who have been connected with the magazine in an editorial capacity. There are also included portraits of the eight deceased Founders and Editors. May the usefulness of the magazine continue under the present editors as it did under the guidance of those who have passed.

In the *Ent. Mo. Mag.* for June, Dr. R. C. L. Perkins announces a new British Hymenopteron, *Andrena mixta*, and differentiates it from the rest of the *helvola* group to which it belongs. It was taken on Shotover Common, near Oxford, many years ago, by Dr. Perkins himself.

In the same number Dr. Wood adds four more species of Diptera of the family *Phoridae*, as new to science. *Phora connexa* is near *P. ritrea*, with which it was taken in Stoke Wood in 1909. *Aphiochaeta submeigeni* is near *meigeni*, but much smaller. It was taken at Monnow in 1912. *Aphiochaeta elongata* comes near *campestris*. Both males and females were captured in Stoke Wood in 1907 and 1912. *Aphiochaeta vestita* comes near *pectoralis* and *claripes* but is larger and very black. One ♀ was captured in Stoke Wood in April, 1913.

In the *Naturalist* for June is an interesting account of the visit of the Yorkshire Naturalists' Union to Knaresborough during Easter week. The following interesting fact is quoted, "*Diurnea fagella* was common on the trunks of trees, practically all being of the palest form of the species, in strong contrast with the species in the manufacturing districts only thirty miles or so away, where the specimens were nearly all black." Among the Coleoptera "The most remarkable absences were those of *Steni* from flood-refuse, etc., of *Coccinellidae* from rubbish and general herbage, and of *Rhizophagi* from bark of all kinds."

We regret to record the death of Mr. H. T. Dobson of New Maldon, who passed away on June 27th last at the age of 61. For many years, more than a quarter of a century in fact, he had been a member of the South London Society, and only ceased his membership in 1912, when his health gave way. In the nineties he was an active member of the Society, taking considerable interest in the business matters and also in the Annual Exhibitions. He was a keen worker in municipal work in Southwark, and worked strenuously at whatever he had in hand. Much of his business led him into the country, and he always took these opportunities to collect and observe both insects and birds. Some years ago he pointed out to us some large trees and undergrowth in his garden, as reminding him of the New Forest which he loved and knew so well. He was a Fellow of the Entomological Society, although he rarely attended its meetings.

In the June number of the *Entomologist* Mr. Gerard H. Gurney concludes an account of an entomological trip to Corsica, Mr. H. Rowland Brown lists the Black-and-white Skippers of the genus *Hesperia* in his collection with localities, and Mr. Frohawk records the hibernation of the larvæ and breeding of the imagines of *Everes argiades*.

Mr. A. A. Dalglish has contributed to the *Scottish Naturalist* some notes on Clyde *Tenthredinidae* (Sawflies), supplementary to Mr. Malloch's List published in January and March.

An interesting fact is quoted below from the *Scottish Naturalist* of June. Mr. C. H. Alston writes: "On examining some trout caught in Loch Awe, on April 21st and 22nd last, it was found that their mouths and throats were crammed with small, dark-coloured beetles. . . . It seemed as if on the first day they were taking them largely on the surface, and, on the next day, below. . . . They were found to be the heather beetle, *Lochmaea suturalis*. Mr. Percy H. Grimshaw's surmise is that they were washed into the hill-streams, and so down into the loch by the recent heavy rains, alive or dead. They would thus be found by the trout at first floating, and afterwards when waterlogged, submerged. As they were present in such large numbers, it does not appear likely that they got there by flight."

The New York Agricultural Experimental Station, Geneva N.Y., continue to send us their *Bulletin*, issued at very frequent intervals, containing full accounts of the large amount of experimental and educational work they are doing in economic natural science. On our table lie some twenty of these pamphlets, all recently issued, and fully illustrated with excellent plates and figures. "Analysis of Materials sold as Insecticides," "The Cabbage Maggot (*Pegomyia brassicæ*) in relation to the growing of Early Cabbage," "The Cranberry Toad-bug (*Phylloscelis atra*)," "The False Tarnished Plant-bug (*Lygus incitus*) as a Pear Pest," are entomological matter, the remainder deal with soil, tillage, fungus pests, controls by spraying, bacteria testing, milk analysis, seed testing, etc.

In the *Annales de la Société Entomologique de Belgique* is a "Contribution to the Fauna of the French Indo-China," by E. Dubois and R. Vitalis de Salvaza, consisting of a systematic catalogue of the family of *Papilionidae*, giving the various groups there found with the species and local forms with the locality areas to each. We note that M. Dubois names a new form of *Papilio clytia* from Annam as f. *vitalisi*, from one example only, and that M. Vitalis names a new form of *Papilio hipponous*, from Annam, as var. *duboisii*, from one example only.

In the *Bull. Soc. Ent. Fr.* for May is a useful list of the Microlepidoptera of the Isle of Oléron, Charente Inferieure, by M. C. Dumont. The list contains 153 species, of which M. Dumont himself captured 121 species at acetylene light from August 1st to 17th, 1907. The rest were recorded by M. Mabille in 1906. Included are seven species of *Coleophora* and seven of *Pterophoridae*. In a further article M. Dumont contributes a list of the Microlepidoptera of the Vallée du Lot, near Cahors, obtained in the same way at acetylene light. He points out that at least seven species are generally considered at the present time to be exclusively Mediterranean, viz., *Ephestia tephriella*, *Phycita coronatella*, *Herculia rubidalis*, *Sylepta aurantiacalis*, *Orneodes cymatodactyla*, *Gelechia thomeriella*, and *Stomopteryx deterrentella*.

In the *Canadian Entomologist* for June is an article on the "Canadian Entomological Service," in which is given a short account of the rise and growth of the government organization of economic entomology. So far back as 1884 the Canadian government appointed a Dominion Entomologist to advise agriculturists and others regarding the control of insect pests. Almost from the first Entomology and Botany were associated, but it was not until 1908 that the growth in importance of the two subjects necessitated their separation. The recent rapid opening up of the country and the many and increased opportunities for the introduction of new agricultural pests have needed, year by year, fresh organization to deal with these matters, until at present we find that the Entomological Branch of the Canadian Department of Agriculture consists of a chief, Dr. C. Gordon Hewitt, a chief assistant, an assistant for forest insect investigation, another for fruit insect investigation, eight field officers in charge of branch laboratories, and another field officer for forest insect investigation, four inspectors and assistants, seven superintendents of fumigations, with a laboratory assistant and four secretaries. It is now proposed to erect a building to provide offices and laboratories especially for this Department, apart from the Department of Agriculture.

Pt. I. of the *Trans. Ent. Soc. Lond.* for 1914 was issued in June, and consists of 260 pages with 25 plates, three of which are coloured. It contains two faunistic papers: "New species of *Lepidoptera*—*Heterocera* from S.E. Brazil," by E. Dukinfield Jones, and "*Culicidae* from Papua," by F. H. Taylor; three Revisions: of "*Mexican and Central American Malachiidae and Melyridae*," by G. C. Champion, of "*Mexican and Central American Chauliognathinae (Telephoridae)*," by G. C. Champion, and of "*The Tipulid genus Styrgomyia*," by F. W. Edwards; "A new genus and new species of *Odonata* from N. Queensland," by Kenneth J. Morton, and a most important paper of scientific investigation on the "Egg-laying of *Trichiosoma (Tenthredinidae)*," by Dr. T. A. Chapman, with seven plates. There are also 32 pages of Proceedings.

In an article entitled "Exit British Fruit," which appeared a few weeks ago in a paper called *Answers*, after referring to the various pests to which fruit trees are subject, describing the ravages of these, and urging upon growers the necessity of drastic measures to keep the name and fame of British fruit, the writer heads his final paragraph, "Scientists Wanted." He says: "The evolution of pests is so rapid that it is difficult for mere humans to keep pace with it. Not many years ago grease-banding was introduced to allay the ravages of the wingless moth, a pest that moved up the trunks of trees in autumn to lay its eggs in the crevices of the wood. In its passage it was arrested by the grease-band, a kind of sticky flypaper, by which it was entrapped. *Scientific observations in Kent go to prove that, in the short space of twenty years, this particular pest has actually grown wings, and so can circumscribe the grease-bands!*" Truly, scientists are wanted.

In the July number of the *Entomologist* Mr. H. Rowland-Brown discusses at length proposals and suggestions for the conservation of Wicken-fen as a nature reserve particularly for entomology.

Several species of insects new to the British fauna are announced in the pages of the *Ent. Mo. Mag.* for July. In the Coleoptera Mr. D. Sharp announces that Mr. C. J. C. Pool has detected *Dorcatoma punctulata* near London, and he gives the differentiation characters

from the other two British species of the genus *D. flavicornis* and *D. chrysomelina*. Mr. James Edwards introduces the following species of Hemiptera belonging to the *Typhlocybidæ* as new to the British fauna, and all except the first as new to science. *Chlorita aurantiaca* from Colesborne, on blackthorn, on June 12th, 1913. *Typhlocyba prunicola* from Nottinghamshire, on garden plum, in July, taken by Prof. Carr; *T. plebeja*, on oak, lime, elm, alder and hazel, from the same county, by Prof. Carr, in July; *T. tersa*, from Birkdale, on willow, in 1911, by Mr. O. Whittaker; *T. distincta*, from Notts, by Prof. Carr; *T. bidentata* from Colesborne, October, 1913; *T. carri* from Sherwood Forest, on oak, in August, 1913, by Prof. Carr; *T. diversa* from Notts in July by Prof. Carr, and *Zygina neglecta* now differentiated from *Z. flammigera* with which it has occurred commonly for many years. Mr. A. E. J. Carter announces two species of Diptera as new to the British list viz., *Amalopsis schineri* taken in 1904 in Perthshire and Aberfoyle in 1905, and *Argyra auricollis* taken in 1906 in Midlothian.

## SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 11th.*—BLUE FEMALE *P. ICARUS*.—Mr. Dunster exhibited a short series of blue females of *Polyommatus icarus* from Horsley. EXOTIC BUTTERFLIES.—Mr. Edwards, butterflies from Costa Rica, New Granada, and Borneo. BRITISH COLEOPTERA.—Mr. W. West, the various species of Coleoptera taken by himself in the New Forest in mid-May, mainly from hawthorn blossom. EXHIBIT OF ANTHROCERIDÆ.—Mr. Curwen, about a dozen species with various forms of *Anthroceridæ* (*Zygaenidæ*) taken by him in numerous holidays on the Continent. THE MITE TETRANYCHUS LINTEARIUS.—Mr. Turner communicated a note on the species of mite (*Acarus*), *Tetranychus lintearius*, which had recently been exhibited as causing great devastation among gorse-bushes.

*June 25th.*—INTERESTING ITEMS IN VARIOUS LIFE-HISTORIES FROM THE CONTINENT.—MESSRS. Blair and Main, a number of interesting items collected by them during a recent holiday around Meiringen and Lugano, including (1) Living larvæ of a *Crioceris* sp. on Bryony (*Tamus communis*). (2) A *Polistes gallica* (living) on its nest. (3) Living glow-worms, *Lampyrus noctiluca*. (4) Living fireflies (*Luciola italica*), which were "flashing." (5) A field cricket found by Mr. Ashdown. (6) Several alpine newts. (7) Some young slow-worms. (8) A series of *Cetonia stictica*. (9) Specimens of *Gnophos glaucinaria* with ova, etc. ABERRATIONS OF *P. ICARUS* AND *C. PAMPHILUS*.—Mr. Coulson, a long series of many degrees of blue coloration of the females of *Polyommatus icarus* from Horsley, and several *Coenonympha pamphilus*, one having a bipupillate apical spot and another with three well-developed eyespots on the hindwings above.

*July 9th.*—LIVING LARVÆ OF *G. ILICIFOLIA*.—Mr. Newman exhibited living larvæ of *Gastropacha ilicifolia* and *Celerio gallii* with the parent imagines of the former species, together with a curiously suffused and obscure form of *Dianthoecia capsicola*. A SPEEDY METHOD OF KILLING ANTHROCERIDS.—Mr. Newman demonstrated a method of killing Anthrocerids (*Zygænid*s) by immersion in petrol for a few moments, which appeared to be quite successful. AN EXOTIC ORTHOPTERON.—

Mr. H. Moore, a specimen of *Aegrotera phymateus*, a large Orthopteron from the Cape. SICILIAN CAPTURES AND NOTES.—Mr. J. Platt Barrett, living mole crickets, *Gryllotalpa vulgaris*, small larvæ and ova-shells of of *Melanargia pherusa*, a large centipede, etc., all from Sicily. PESTS INFESTING OAK, BEECH, AND ASH.—Mr. W. West (Ashtead), the *Phylloxera* of the oak, *P. punctata*. Mr. Step, two Hemipterous pests *Phyaphis fagi* in masses under leaves of beech, and *Phyllopsis fraxini* in a similar manner under leaves of ash. RESULTS IN A BRED SERIES OF *C. ARGIOLUS*.—Mr. R. Adkin, a bred series of *Celastrina (Cyaniris) argiolus*, from 1913 autumn larvæ on ivy, one or two of which were of the facies of the autumn emergence. RÖSEL'S INSEKTEN BELUSTIGUNG.—Mr. Hy. Turner, the whole of the plates of Rösels *Insekten belustigung*, 1746-1761, with Kleemann's additional volume of plates and an autograph letter *re* the volume, written by W. Spence, 1812. RARE FORMS AND SPECIES OF THE GENUS PARNASSIUS.—Mr. A. E. Gibbs, a drawer of species and forms of *Parnassius*, including *P. mnemosyne*, *P. apollo*, *P. stubendorffii*, *P. delphinus*, *P. apollonius*, *P. imperator*, *P. hardwickii*, *P. discobolus*, *P. romanori*, etc. REPORT OF THE CONGRESS OF THE S.E.U.S.S.—Mr. Step read a Report of the Congress of the S.E. Union of Scientific Societies held at Bournemouth, June 10th-13th, and which he and Mr. Hy. J. Turner attended as the Society's delegates.

LONDON NATURAL HISTORY SOCIETY.—January 6th.—MENDELIAN RESULTS.—Dr. E. A. Cockayne exhibited *Boarmia consortaria* bred from a normal ♀ taken at Oxshott in May, 1912. The progeny were 50 per cent. melanic and 50 per cent. normal. ABERATION OF *M. BICOLORATA*.—Mr. L. B. Prout, *Melanthia bicolorata* var. *plumbata* with an extremely dark suffusion near the margin of the forewings. VARIOUS ABERATIONS.—Mr. W. E. King, *Tephrosia crepuscularia* and *Lithosia deplana* from Oxshott, and *T. biundularia* from Epping Forest, including some fine specimens of ab. *delamerensis*.

February 3rd.—POCKET BOX EXHIBITION.—Messrs. J. Riches and C. H. Williams, long series of *Abraaxas grossulariata* and its abs. *nigrosparsata*, *deleta*, *varleyata*, etc. Mr. C. S. Pickett, a series of *Ayriades coridon*, the result of two years' collecting in Hertfordshire, including long series of ab. *semisyngrapha*, of fine underside forms, *obsoleta* and *striata*, also several asymmetrical females, ab. *inaequalis*. Mr. H. B. Williams, his series of varieties of *Rumicia phlaeas*, including abs. *alba*, *intermedia*, *remota*, *addenda*, *radiata*, *suffusa*, *cleus*, etc. Mr. Bernard Cooper, *Nyssia* hyb. *denhami*, one specimen, and *Lycia* hyb. *harrisoni*, four males and four females. Mr. L. B. Prout, the same two hybrids and also the reciprocal hybrids of *Tephrosia crepuscularia*, and *T. bistortata*. Mr. L. W. Newman, a series of *Amorpha populi*, ranging from cream to rich pink, bred from Bexley, and a series of hybrid *Smerinthus ocellatus* ♂, and *Amorpha populi* ♀, showing considerable variation in ground colour and also in the spots on hindwings. Mr. H. Worsley-Wood, series of *Mellinia (Xanthia) ocellaris* and *M. (X.) gilvago*. Mr. V. E. Shaw, *Aporophila australis*, and the rare var. *orientalis* from Sandown (I. of W.), 1913.

February 17th.—Dr. E. A. Cockayne, a fine series of *Aegeria (Trophilium) andrenaeformis* and its parasites *Meniscus pimplator*, *Bracon variator*, *Cubocephalus brevicornis*, *Phanerotoma dentata*, and *Thrytocera spinipennis*, also *A. scoliaeformis* and parasite and cocoons *in situ*. Mr. L. W. Newman, life-histories of *A. scoliaeformis* and *A. andrenaeformis*.

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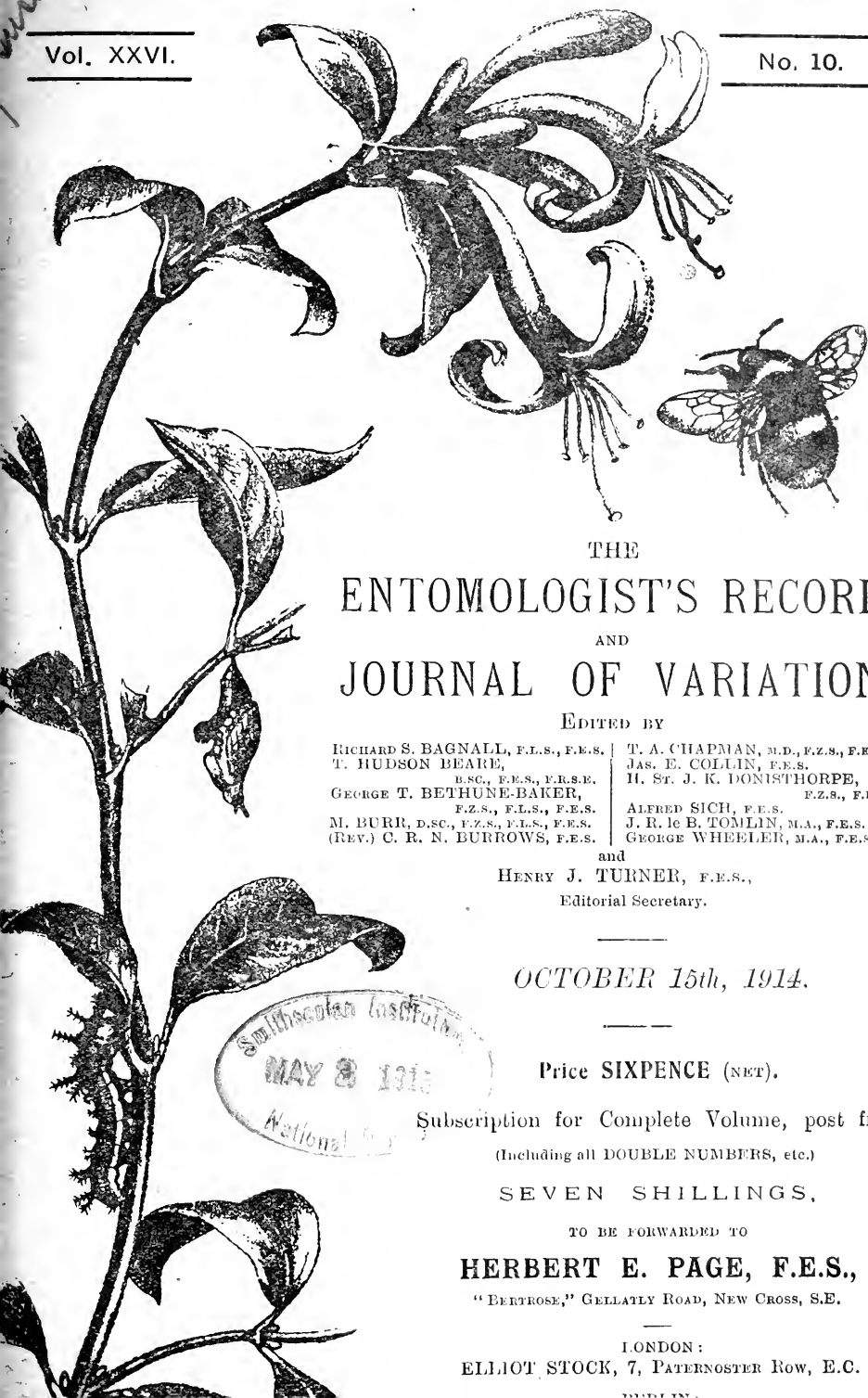
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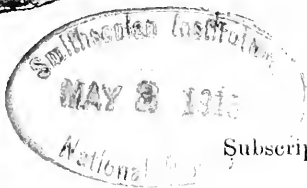
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## Variation in the Dermaptera.

By MALCOLM BURR, D.Sc., F.E.S.

Variation in the Dermaptera is strongly marked, and of great importance even from the purely systematic point of view, since several forms of this phenomenon which run almost throughout the group, have the effect of altering greatly the superficial appearance of the creatures, and so have caused an excessive multiplication of so-called species.

It is most necessary for the student to grasp the principle forms of variation in the Dermaptera, so that he may recognize the phenomenon when he sees it, and thus avoid the error of regarding as a new species what is nothing more nor less than a well-known form of polymorphism.

Variation in Dermaptera may be in colour above, or in the actual morphology.

### I. VARIATION IN MORPHOLOGY.

Two kinds of morphological variation occur so persistently through the Dermaptera that they afford regular cases of dimorphism: these are brachypterism and macrolabiism.

#### A. BRACHYPTERISM.

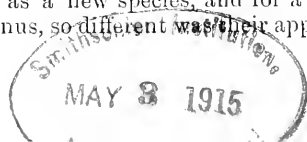
This striking phenomenon, which earwigs share with the true Orthoptera, with the Rhynchota, and doubtless with other insects, is very general in the Dermaptera. Most known fully-winged species are frequently brachypterous and indeed when the rarer forms are better known, it is quite possible, if not even probable, that this kind of dimorphism will be found to run throughout the order.

When the organs of flight are in repose the wings are almost entirely concealed by the elytra, only the chitinous squamæ or wing-scales projecting beyond them; as these are frequently highly coloured, it is evident that their absence must materially alter the appearance of the creature, but even when shortened, they may be usually found by lifting the elytra and looking beneath them.

These dimorphic forms are often given the rank of varieties, and we frequently find the expression "var. *longipennis*," "var. *brevipennis*," "var. *macroptera*," and "var. *brachyptera*"; it is not really necessary to dignify them with special names, if it is borne in mind that macropterous and brachypterous forms occur probably in all fully-winged species. It is fairly safe to assume that the macropterous form is the normal one, and brachypterism the deviation.

But it is important to remember that in brachypterous forms, the elytra too, are often involved, being somewhat shortened and truncate; for instance, *Tomopygia abnormis*, Borm., from Java, was for about thirty years known only from the unique type in the Vienna Museum, a brachypterous male, with decidedly short elytra, which was almost treated as a generic character. But Mr. Jacobson found several females at Samarang, all of macropterous form, with the elytra twice as long as in the type and the wing-scales protruding prominently; these narrowly escaped being described as a new species, and for a moment they appeared to require a new genus, so different was their appearance.

OCTOBER 15TH, 1914.



The species being so long known only in the brachypterous state, it is natural at first glance to look upon these macropterous individuals as varieties or aberrations; it will be interesting to see which form is actually the commoner.

Another instance is that of *Spongovostox kristenseni*, Burr, from Abyssinia. Mr. Kristensen sent over a large series, in which both forms in both sexes were well represented; the difference in appearance was heightened by a simultaneous colour variation, but the fortunate possession of a long series from one locality made it evident that it was merely another instance of what might be called pterodimorphism.

A further interesting example is afforded by the common earwig, *Forficula auricularia*, Linn., the macropterous form of which is exceedingly abundant in Europe; but a brachypterous form however exists, which is very rare; as the elytra are shortened also, and by correlation the pronotum is somewhat broadened, this has been described as a distinct species by Targioni-Tozzetti (*F. silana*, Targ.), and by Brunner (*F. targionii*, Br.), but the only so-called specific characters are the abbreviation of the wings, slight shortening of the elytra, and widening of the pronotum, which is a frequent correlative with brachypterism: the noteworthy point in this connection is that while the normal macropterous *F. auricularia* is abundant throughout Europe, the brachypterous *F. silana* is confined to Italy, so far as we know, with the rather surprising exception of a couple of females recorded from the Isle of Wight.

Instances of the description of the brachypterous and macropterous forms of one and the same species, as totally distinct forms, even placed in different genera, are by no means rare: thus *Forficula miranda* of de Bormans is the normal macropterous form of his *Labia aculeata*, the species being now assigned to the genus *Nesogaster*.

Some species are still only known in one of the two forms, thus *F. lurida*, Fisch., *L. smyrnensis*, Serv., and many others, are only known in the macropterous form, whereas *F. pubescens*, Géné, *F. lesui*, Finot, *F. decipiens*, Géné and many others only in the brachypterous; probably *F. decipiens*, Géné, and *F. lurida*, Finot, are a pair forming one species, as in the cases of *F. silana* and *F. auricularia*; in *F. rodziankoi*, Sem., and *F. senegalensis*, Serv., both forms occur.

The variation in the shape of the pronotum (where not sexual as in the *Diplatyinae*) is really correlative with brachypterism; it is very usual in macropterous forms to find the pronotum more or less widened posteriorly, apparently to accommodate the muscles which work the wings; but when in the same species the wings are reduced, the pronotum is correspondingly reduced by being narrower posteriorly and so parallel-sided, as in *Marava wallacei*, Rahn., and many other *Labiidae*, or by being shorter and broader, as in *F. silana*.

In the two forms of *Tomopygia abnormis*, Borm., however, the pronotum is very small and narrow and in the very plastic highly polymorphic *Labidura riparia*, Pall., the difference between the two shapes of the pronotum is very marked.

It is worthy of mention that in the *Chelisochidae*, in which group this dimorphism is less marked than in many others, the usual form of the pronotum is rather long, and distinctly widened posteriorly, and in this family, macropterism is the rule.

## B. MACROLABIISM.

This is a form of structural variation that is almost, if not quite, confined to the male sex, since it consists in often extreme elongation of the forceps, which are almost invariably more ornate and complex in the male than in the female; they may be compared to the antlers of deer.

There are two forms of the forceps in most species, a normal, short or "low" form, and a very elongate, or "high" form, but intermediates are rare or unknown. Messrs. Bateson and Brindley (1892) examined a thousand specimens of the common earwig (*P. auricularia*, L.), collected in one day on three small islands known as the Knocksies and Widerpern, in the Farne Islands, off the coast of Northumberland, and found that 583 were males; the length of the forceps varied between 2.5mm. and 9mm., the commonest length is about 3.5mm. and about 7mm.; the mean form, 4mm.-6mm., is comparatively rare; in the female the length of the forceps scarcely varied at all. We quote Messrs. Bateson and Brindley's observations upon these results:—

"It is perhaps unnecessary to say that this result is of considerable importance to an appreciation of the way in which variation may occur. There is here a group of individuals living in close communion with each other, high and low, under the same stones. No external circumstance can be seen to divide them, and yet they are found to consist of two well marked groups, containing about equal numbers. To those who are acquainted with the chapter on Organic Stability in Galton's *Natural Inheritance*, this will be recognised as an instance of variation about two positions of stability, the intermediate position being one of less stability. In the common language of naturalists, the facts of this case suggest that there is, for some wholly unknown reason, a dimorphism among the males of these Earwigs, maintained though all live together. In cases of dimorphism some have thought fit to speculate on the possible utility of the phenomenon. We know no basis of fact from which these discussions may be properly attempted, and we leave these matters to those who are satisfied with such methods of biological inquiry and have leisure and ingenuity to pursue them."

When the forceps are thus elongate, the effect is just as though they were elastic and had been stretched, each part being extended in proportion, but in this genus *Forficula*, L., and many others, the male forceps have two distinct portions, a basal dilated portion, and an attenuate apical portion; the proportions between these two parts is often of specific value; in the macrolabious forms, the dilated part is duly extended with the slender apical part, so that the proportions are approximately preserved. Thus, a vertical tooth on the upper surface of the forceps in *Skalistes lugubris* is drawn out into a compressed and acute ridge or crest in the macrolabious form which is known as the "var. *metrica*."

The varietal name *forcipata* is often given to the macrolabious form, but "var. *macrolabia*" occurs too; for the sake of uniformity, and on account of the very general occurrence of the phenomenon, I prefer not to use the varietal names, but to speak of the macrolabious and cyclolabious forms respectively.

The macrolabious form of the common earwig is well-known, and generally called var. *forcipata*, Steph. It is curious that it seems to be

most frequent in islands and in mountains. Navas has suggested that we may look upon it as a wild, savage race, and upon the commoner cyclolabious form as a more or less domesticated race.

In very many cases both forms are known, the cyclolabious being as a rule the commoner; such is the case in *Labia videns*, Borm., and many species of *Forficula*, but the macrolabious form seems to be a little commoner in *Elaeum bipartitus*, Kirby.

Only the cyclolabious form is known in several groups, as in many *Pygidicranidae*, *Psalinae*, *Esphalmeninae*, and others: only the macrolabious form in *Anchenomus longiforceps*, Karsch., *Spongiphora croceipennis*, Serv., *Allodahlia*, *Forcipula*, *Nesogaster dolichus*, *Eudohrnia metallica*, and many *Opishtocosmiinae*.

An exceptional case is offered by *Adiathetus shelfordi*, Burr, in which the male is only known in the cyclolabious form, and the female in a highly developed macrolabious form; only the macrolabious form is known in both the sexes in *Chelisochella superba*, Dohrn, and *Adiathetus tenebrator*, Kirby, *Enkrates elegans*, Borm., and a few other *Chelisochidae*.

The difference in appearance between the two forms in *Chelidura alpina*, and *Pseudochelidura sinuata*, Germ., is ample excuse for the former treatment of the two forms in each case as distinct species.

Other forms of morphological variation occur in the forceps, which are remarkable for their instability.

The actual number and relative position of the teeth which often form the armature of these organs is very variable, and numerous so-called sub-species have been raised on the slender basis of the exact position of the tooth; thus in *Spongiphora croceipennis*, Serv., there is usually a small tooth near the middle; sometimes it is at the middle itself, sometimes near the base, sometimes near the apex, sometimes it is absent altogether: to this instability we owe the existence of the names *parallela*, Westw., *therminieri*, Serv., and *dysoni*, Kirby, which de Bormans ranked as subspecies; similarly, *Prorens simulans*, Stål., has a strong median tooth, but when this is absent it is the "sub-species *modesta*, Stål.," of de Bormans; the same remark applies to *Nala liridipes*, Duf., and its "subspecies *vicina*, Luc."

In those species in which the branches of the forceps are normally bowed, or strongly arcuate, it is common enough to find specimens feebly nourished and ill-developed, in which the curvature is far weaker; we get every degree from a very gentle curve to an abrupt almost right-angled head, in *Forficula schlagintweiti*, Burr, *F. decipiens*, Géné, *F. lurida*, Fisch, and several *Ancistrogastrinae*, in which the forceps have a well-marked group-form, with a strongly bent forceps.

A rather curious variation occurs in the protean *Labidura riparia*, Pall. Normally the males of this species have a pair of short spines or points in the middle of the posterior margin of the last dorsal sclerite; these may be missing, as in the "var. *inermis*, Br.," or there may be only one present, and that in the middle, as in the form *pluvialis*, Kirby.

Pantel (1912) refers to the fluctuation in the number and appearance of the chromosomes in *Forficula auricularia*, and quotes works by de Sinety, Zweiger, Stevens, Carnoy and La Valette on the subject.

## II. COLOUR VARIATION.

The coloration of earwigs is very unstable. Frequently, the

antennæ have what is termed a pale ring, either near the base or near the apex; in other words, in dark antennæ, some segments are pale but it is far from constant which particular segments are the pale ones; a slightly different coloration of the two basal segments is very frequent; generally it is two or three segments short of the apical ones that are pale, but the inconstancy of the particular segment is seen in *Anisolabis annulipes*, Luc.

The coloration of the legs is also very inconstant; in a single species we may find specimens with pale legs, with dark legs, or with pale legs variously ringed, banded, or spotted with dark; this too, is well seen in *Anisolabis annulipes*, Luc.

It is very usual for the elytra to present in one species every gradation from uniform dark to distinct and well-marked alternate dark and pale bands; the banding first shows itself in a small spot near the shoulder; gradually the spot lengthens until it occupies almost the whole of the disc, leaving a narrow stripe of the ground colour on each side; this is well seen in *Protobia nigrella*, Dubr., in which the elytra are black in the typical form, have a relatively large pale shoulder spot in the form *fasciata*, Borm., or a broad band in the form *myrmeca*, Burr.

The small Neotropical species of *Labia* and *Spongrostox* often present every gradation from all black to strongly banded elytra. It is especially noticeable in *Allostethella donae*.

In many species it is common to find the elytra either unicolorous, or with a pale or red spot: we see this in *Echinosoma wahlbergi*, *Ancistrogaster mixta*, and others. There is an extreme case in the spotted Neotropical species of *Psalis*, where we have a regular transition in size and brachypterism, as well as in colour, through *P. pulchra*, *P. festiva*, *P. americana*, and *P. gayatina*: as a rule there is a large bright orange discoidal spot; sometimes this occupies the whole of the disc, sometimes it is quite small, and in some cases it is shaded over with fuscous brown to such an extent that it is almost entirely obscured.

In the Palearctic *Anechura bipunctata*, this variation has a geographical value; in the truly European form occurring commonly in the Alps, the general colour is dark, with a reddish spot on the elytra; as we trace the species eastwards through its range into Asia, the colour becomes paler and brighter, the spot finally occupying almost the whole of the elytra, with a narrow black margin in the Himalayo-Tibetan form *A. suborskii*, Sem. The intermediate forms are *A. bipunctata* var. *orientalis*, Kr., and *A. asiatica*, Sem.

In the *Pygidicraninae*, the varied patterns of the elytra, wings and pronotum are often very inconstant in detail, though fairly stable in general disposition; we may for instance find the pronotum almost entirely buff, or with a faint black mark, or a pair of black bands, or a black V, or an irregular black star; this is noticeable in *Kalocrania daemeli*, Dohrn.

In *Echinosoma sumatranum* we find specimens ranging from a light brown to nearly black, some with labrum blackish, some with labrum buff; some with yellow pronotum, some with black; some with plain black elytra, some with red-spotted elytra; some with black-ringed femora, some with plain tawny femora.

One of the worst offenders is the universal *Labidura riparia*, as we should expect from its immense range. The typical Palearctic form is

pale buff, which turns to blackish after death; ivory-like forms are known from Transcaucasia (subsp. *eburnea*) and South America (subsp. *livida* and *xanthopus*); the head varies from pale yellowish to black; the pronotum from tawny to black; with or without a pale border or median reddish band; the elytra vary from tawny to black; a narrow reddish band is usually visible; the wings (when developed) may be buff or brown, plain or black-spotted; the abdomen tawny, with faint dark band, or dark chestnut, with or without a band, or black; small wonder that so protean a kind, with a universal distribution, has been described and named times without number.

The common earwig, *Forficula auricularia*, is distributed throughout Europe, and Western Asia, and Northern America, and now is establishing itself in North America and New Zealand, yet it varies very little. The only colour variation that I know is one from the Levant, in which the abdomen, instead of being of a deep claret colour, is a brilliant light chestnut.

In *Prolabia annulata*, the elytra are of a plain blackish-brown ("*L. arcuata*"), or shining lustrous purple ("*L. chalybea*").

Pale and feebly developed specimens have probably suffered from insufficient nourishment during the earlier instars, or else they may be individuals that have been wounded when tender from fresh emergence from the nymphal skin.

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### A few Notes in Reply to Dr. Verity's "Answer."

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

I am not quite sure whether it is wise to continue this discussion, however interesting and however tempting it may be to do so, since I believe that in his main contentions Dr. Verity stands alone among entomologists, but perhaps it would be as well to make a final attempt to clear up the matter so far as present practical possibilities are concerned.

It seems to me that Dr. Verity has lost sight of the fact that the whole system of "types" is purely conventional, and has no scientific value whatever. If he replies that it ought to have, I can only say that I entirely agree with him, and have long ago argued the matter at length (*Ent. Record*, xvi., pp. 200, 231, and *Butts. of Switz.*, Introduction). I believed then, and still believe, that the whole system is unscientific and absurd, but I am quite convinced that neither he nor I have the power to make any alteration in the generally accepted plan, and that we must accept the usual conventions at their received valuation. The whole question has been greatly complicated by the controversies on "nymphotypical" races, but for this a great mitigation has been adopted in some quarters by naming every race of a species, the original specific name belonging equally to all, but not to the particular race originally described any more than to every other form of the same species. The general acceptance of this plan would no doubt remove Dr. Verity's objections to the present use of some specific names, and also many other difficulties raised by other writers. Meanwhile, if Dr. Verity will reflect that the whole system is one of convention, he will, I think, see that it is to the general advantage of stability in nomenclature to accept those conventions which have been agreed upon by almost universal consent, one of which regulates the question as to



what are and what are not to be considered "type" specimens; a convention which disposes, even more effectually than Mr. Bethune-Baker's argument (*suprà*, p. 205), both of his wish to accept Linneus' specimens as types, and of his objection to regarding any figures in illustrations as such. With regard to the latter point, indeed, Dr. Verity has already given way in the case of *podalirius*, and his implied argument that each case must be taken on its own merits is of course one which will meet with general approbation. I may observe in passing, that no one has more emphatically accused Linneus of blundering than Dr. Verity himself has done in the very passage (p. 171) in which he makes his admission with regard to *podalirius*; but surely no student of Linneus, unless completely blinded by partisanship or hero-worship, would ever seriously think of looking to him for detailed accuracy or for absence of self-contradiction; the marvel is, considering the immensity of his self-imposed task, not that he was sometimes inaccurate and inconsistent, but that he was not much more frequently so than is actually the case.

With regard to the particular cases under discussion, I am (regretfully) compelled to give way on the question of *cydippe* as against *adippe*, (but not as against *niobe*), not on the grounds alleged by Dr. Verity (p. 171) which involve his original *petitio principii* with regard to types, but solely on the question of dates, about which I was myself not wholly satisfied when I wrote my original criticism, but in which I had followed Dr. Jordan's treatment of *cydippe* as a "nomen praeoccupatum," without, I admit, going as closely into the matter at first hand as I ought to have done. With regard to the other points I could still only repeat what I have previously written, which would be a sheer waste of time and paper; for if the arguments I previously used, and in which I can still find no flaw, failed to convince Dr. Verity *then*, they would equally fail *now*. I must however repeat that those arguments were based not only on the evidence of books, but on a careful re-examination of the specimens in the Linnean collection, carried on with Dr. Verity's original paper beside me for constant reference. It will of course be seen that there is no possibility of agreement between us, so long as the fundamental difference remains that I accept (with intense personal dislike) the received convention with regard to "types," and that Dr. Verity does not.

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### Lepidoptera in Southern France, 1914.

By E. B. ASHBY, F.E.S.

DAUPHINY AND BASSES ALPES.—Leaving London on July 16th, I spent the afternoon of the following day, after a wet morning, in the Forest of Fontainebleau. There was very little on the move except *Melanargia galathea* and some very fresh *Dryas paphia*, with one or two *Polygonia c-album*. Travelling on through the night I passed the beautiful Lac du Bourget early in the next morning, and arrived at Grenoble via Chambéry about 9.30 a.m. From here I walked out some miles on to the hill-sides and was able to do a little collecting. The day was, however, very windy, so that my success was only moderate, and I got nothing very notable. Travelling on I reached Clérelles-Mens in the late afternoon and put up at the Hotel Ferat, which I found

quite cleanly and comfortable, after the manner of an English country inn, and the cooking was quite nice.

Next morning I sallied forth under a hot sun, taking the road towards Mont Aiguille leading past the railway station and over the considerable railway tunnel for about two miles. *Satyrus circe* was quite fresh although very elusive, but no *S. briseis* were met with as I had hoped. The day was most oppressive and the flies were very troublesome. I saw what appeared to be a *Lycæna euphemus*, and I caught a fine large *Phalera bucephala* on the wing as it made straight for me. Coming home to lunch I found Dr. and Mrs. Keynes, of Cambridge, who had arrived at Clelles that morning, and I had the great pleasure of collecting with them here and subsequently at Digne and St. Martin-Vésubie, making my holiday so much the more enjoyable.

The morning of July 20th was dull and windy, and we collected beside and beyond the large viaduct on the road beyond the hotel towards St. Michel-les-Portes. After much perseverance, however, we took *Satyrus circe*, *S. hermione*, *Argynnis adippe*, and *Hipparche semele*, but again no sign of *S. briseis*, although we tramped much most likely ground. Whilst returning back to the hotel we were fortunate enough to take a couple of *Hirsutina admetus* var. *ripartii*, a species which we believe has not previously been reported from Clelles.

The next day we arrived in pouring rain at the Hotel Boyer-Mistre, Digne, and it was not until after five o'clock in the afternoon that I was able to get out on to La Collette. There I secured my first *Cocoonympha dorus*, and also took a few Coleoptera.

July 22nd was dull and we had little sun on La Collette. Six of the typical form of the female of *Polyommatus meleager* were taken quite fresh, a var. *leucomelas* of *Melanargia galathea*, many examples of *S. circe* and *S. hermione*, in first rate condition generally, and a fine series of the male of *Colias hyale* were obtained.

The following morning I walked up beyond the Baths to the gorge at the Torrent des Eaux-Chaudes, and as the day was generally very dull and rather windy, I walked a long way up the cross gorge, and was rewarded by capturing a beautifully fresh female *Papilio alexanor* asleep on a flower stem, besides meeting with a *P. machaon* and many more *S. circe* and *S. hermione*. The severe thunderstorm which had occurred the previous evening had made the stream very difficult to cross, and the path up the gorge was very tedious, as much of it had been washed completely away by the swollen waters. On the return, when nearly opposite the broken bridge, several *Hirsutina admetus* var. *ripartii* were met with in excellent condition.

July 24th broke very fine and hot, and I collected along the Dourbes Road in the morning "angling" specially for *Satyrus nidia* below La Collette without success. Afterwards I continued on for some considerable distance, finally crossing the river and ascending to a wide extent of open ground to the right. Here I found *Colias edusa* males quite fresh and fairly abundant, together with many *Cocoonympha dorus*, several *Hirsutina admetus* var. *ripartii*, and a few *Polyommatus meleager*. It was here I found my one and only *Satyrus briseis*, at Digne, a nice specimen, on the billy and almost bare ground. On my return I recrossed the stream and followed the road back to the beginning of La Collette, where I ascended the hill by the narrow,

dry bed of the streamlet. Here were to be found quantities of *S. circe* and *S. hermione* trying to avoid the torrid heat of the sun, together with a number of *Gonepteryx cleopatra*, which were apparently just emerging.

The morning of July 25th was devoted to the ground behind the station water-tower, following the stream right up into the hills to the circular road by which I returned. The neighbourhood of the stream was unproductive, but on the high ground and road I found *Pontia daphidice* and *Gonepteryx cleopatra* in increasing numbers, and saw *Euranessa antiopa* for the first time this season. The males of both *Colias edusa* and *C. hyale* were conspicuous, and *Papilio podalirius* graced the return home to lunch along the road parallel with the railway. In the afternoon I drove up to the Eaux-Chaudes grounds, and in the cross gorge met with *Callimorpha hera* and *Lasiocampa quercus*, with a specimen of *Lithosia lurideola*. Going over to the other side of the stream, some time was spent in securing a good series of *Hirsutina admetus* var. *ripartii*. On recrossing the stream to the side I was first working I took a very nice series of *Anthroca* (*Zygæna*) *occitana*.

My last morning at Digne was spent at La Collete and the time was chiefly taken up with capturing good series of *Coccyonympha dorus* and *Bithys quercus*, which latter were quite numerous and fresh in their shady habitat.

Several species which I had hoped to have met with at Digne, such as *Erebia neoridas*, *Hipparchia arethusa*, *Revalis betulae*, and *Satyrus statilius*, did not put in an appearance. *Melanargia galathea* var. *procida* was everywhere the commonest butterfly. One's general conclusion with regard to the Rhopalocera at Digne this year is, that either the season in the South of France was bad in comparison with the season at home, or else that the district is suffering from over collecting. "Blues" and "coppers" were conspicuous by their absence, and one can only hope that if my latter conclusion be the right one, that Digne may be able to get a rest for a year or two on account of the present conditions and recover its entomologically good name when the "piping times" of peace return. On the afternoon of July 26th I left Digne by the Sud de France line on the long and tedious journey to St. Martin-Vésubie.

(To be concluded.)

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### Notes on *Agriades coridon*, with gynandromorphism limited to secondary sexual characters (Secondary Somatic-hermaphroditism).

By E. A. COCKAYNE, M.A., M.D.

Last year, when the females of *Agriades coridon* so greatly outnumbered the males at Royston, a considerable number of specimens were taken, which had the wings on one side smaller than those on the other and a variable amount of blue scaling on the small side.

Mr. C. P. Pickett recorded 43 examples in his paper in the *Ent. Record*, XXVI., p. 59, and doubtless more had been captured. The form has received the name ab. *inæqualis*. Mr. Newman in the same year took a splendid gynandromorph with large areas of blue occupying the greater part of one side, and this side was no larger in size than the other. These asymmetrical females seemed to me so remarkable as to

merit a careful examination. No precisely similar specimens seem to have been taken elsewhere. I thought it not unlikely that they were hermaphrodites, and determined to procure some more this year to settle the point. Mr. Newman kindly promised to help and we each found three, one of which was lost afterwards. Mr. Marshall also obtained a specimen with one forewing almost entirely of male colour and very much smaller than the other. This was handed over to me for investigation. In addition I procured a specimen with wings equal in size but showing streaks of brilliant blue on the right forewing and left hindwing. Mr. Newman obtained a less well marked example of the same kind. All except this last were carefully dissected under water in the fresh state and the chitinous portions were then softened in potash and examined while still soft. They were then mounted after dehydration and clearing and reexamined under the microscope. The following are detailed descriptions of these specimens and bring out some new and unexpected facts.

#### No. 1.

Both wings on right side small.

Expanse. Right forewing 15.4mm., left 16.6mm.

Right side shows small patches of blue scales chiefly near the anal angle of forewing, near apex and just internal to the central spot.

Four or five androconial scales found.

Hindwing scattered blue scales all round, but none in central portion.

Left side no blue scales on forewing and only a few at extreme base of hindwing.

The blue scales are nearly all rounded at extremity, as in the male, and they are accompanied by the coarse pale blue hair scales peculiar to the male.

Ovaries, oviduct, ductus seminalis, receptaculum seminis, cement glands and bursa copulatrix identified and found to be normal. In mounted specimen chitinous structures, ovipositors, etc., recognised and found to be normal. No trace of any male structure present.

#### No. 2.

Both wings on the left side small.

Expanse of right forewing 16.2mm., left 15.5mm.

Patches of blue scales along posterior margin, near apex, and just internal to central spot of forewing on left side, no blue scales on right forewing.

Some blue scales on both hindwings, but no more on left than right.

No androconial scales found.

Underside: Two small spots at base of left forewing, one at base of right, otherwise symmetrical.

Ovaries normal in size, but lower parts contained no ova. Oviduct normal, but devoid of ova.

Ductus seminalis, receptaculum seminis, cement glands and bursa copulatrix normal.

No male organs present.

Ovipositor and other structures normal; no part of male armature present.

## No. 3.

Both wings on right side small.

Expanse of right forewing 15.2mm., left 16.6mm.

Small groups of blue scales, most of them with rounded extremities and accompanied by coarse bluish-white hair scales, dusted all over the right forewing, most thickly near base and posterior margin.

No blue scales on left forewing. No androconial scales found.

Many blue scales grouped near anal angle of right hindwing; blue scales elsewhere symmetrical on the two sides.

Underside of forewing ab. *parisiensis* (*arcuata*), with one spot larger on right side than on left.

Ovaries symmetrical and normal in size. No ova in lower part, nor in common oviduct. Other organs all present and normal. No trace of male structure present.

## No. 4.

Both wings on left side small.

Expanse of right forewing 16mm., left 15mm.

Very numerous small patches of blue scales running out to the submarginal spots, and everywhere accompanied by the peculiar pale blue hair scales. With a good lens the scattered groups of blue scales and coarse bluish white hair scales, many with bifid extremities, were seen to be sharply defined from the ordinary quadrifid brown scales and fine whitish hairs of the other parts of the wing giving a very peculiar effect.

Androconial scales fairly numerous.

Right forewing shows blue scales with quadrifid extremities near base.

There are a good many blue scales in both hindwings. Great reduction of orange marginal spots of left hindwing.

Underside shows larger spots with one extra spot on the right forewing.

All internal female organs present and normal. No trace of male organs seen. Chitinous armature of normal female type. No trace of male armature.

## No. 5.

Both wings on left side small.

Expanse of right forewing 16.9mm., left 14.9mm.

The ground colour is pale brown, and so rather hides the extent of blue scaling. Blue scales, single or in small groups, are diffused all over left fore- and hindwings, and are accompanied by the coarse pale blue hair scales, even beyond central spot. The blue scales are chiefly rounded in forewing, but quadrifid in hindwing. No blue scales on right side except at extreme base of hindwing.

Androconial scales plentiful.

Underside: All spots large in right forewing and two additional spots present.

Ovaries normal in size and symmetrical. Ova present in common oviduct. Ductus seminalis entirely absent. Receptaculum seminis normal. Left cement gland smaller than right and shrunken in appearance. Bursa copulatrix abnormal. The first wide portion is present and normal in structure, but there is no trace of the long thin

chitinous tube, which ends in a thickened oval sac and lies folded between the two ovaries.

#### No. 6.

Right forewing very much smaller than left; right hindwing slightly smaller.

Expanse of right forewing 15mm., left 16mm.

Right forewing almost covered with blue scales, the majority of which have rounded extremities, others intermediate or sharply serrated. The blue scales are not disposed in regular rows, but there are numerous small gaps, where the underlying brown scales are exposed. Coarse bluish-white hair scales are numerous in the situations where they are found in the normal male forewing. Battledore or androconial scales are present in great numbers, and in some places occur even in the absence of the blue scales which normally overlie them. In the right hindwing, which is almost as large as the left, there are scattered blue scales arranged in three short lines, radiating from the base. The wings on the left side are devoid of blue scales. There are some long hairs on the right side of the abdomen near the tip.

On dissection the ovaries were found to be of normal size and equal, but the ova were rather irregularly arranged. The ova themselves appeared to be normal. Some were in the common oviduct, as low as the level of the entrance of the receptaculum seminis. Ductus seminalis and receptaculum seminis, normal. Cement glands equal and normal. Bursa copulatrix natural in size and shape. No male organs present. Chitinous armature absolutely normal, being without trace of male or deficiency of female structures.

#### No. 7.

The wings equal on both sides. On the right forewing there are blue streaks, two running from the base to the outer margin of the wing, and two running only a short distance. On the left hindwing, the opposite side, there is a short streak of blue near the anterior border. All the blue scales are broad and slightly serrated, and are everywhere mixed with scales of similar shape, but of a deep indigo blue or black colour, which form a marked contrast with the much more serrated light brown scales of the rest of the wing.

No male hair scales and no androconial scales were seen, though the blue streak runs through a part of the wing, where the latter are most abundant in the male.

The genitalia, internal and external, were symmetrical and of normal female form in all respects. No trace of male organs was present.

I have examined 31 similar specimens caught in 1913, 21 with the right wing small, nine with the left, and in all these I found coarse bluish hair scales and androconia on the small forewings, and in one case androconia also on the small hindwing. The remaining specimens had the right wing smaller than the left, but both sides were much dusted with blue, and on microscopical examination the male hair scales and androconia were seen on both forewings, though more numerous on the right.

I will discuss the last specimen (no. 7) first. This, though splashed with blue, shows none of the primary or secondary sexual characters peculiar

to the male. Even the blue scales are more like those found in females of *Agriades coridon*, intermediate between the type and the ab. *semisygrapha*, than in males. On the whole, the evidence is against the splashes of blue colour being due to the presence of male tissue, such as occurs in true hermaphrodites, though it is not absolutely conclusive. I should like to examine more specimens with similar blue streaks for androconial scales in the absence of fresh material. It would also be most interesting to dissect a few female specimens of other species, such as *Euchloë cardamines*, showing splashes of colour peculiar in the male and never present in the normal female. These are usually regarded as true hermaphrodites, but there is no sufficient evidence to support this view.

Passing on to the first six specimens described it will be seen that asymmetrical in size and colour, they form a descending series. The more the blue scaling, the smaller the wing, on which it occurs, tends to become. The blue scaling shows a very remarkable peculiarity in that it is accompanied by numbers of the coarse hair scales, always present in the male, but absent even in the bluest ab., *semisygrapha*, of the female. More important still is the presence in them of androconial scales otherwise known as "battledore scales," or "blasenschuppen," which are confined to the male, and are generally regarded as scent scales with a sexual significance. The number of androconia present obviously depends on the amount of blue scaling in the parts of the wing where androconia are most abundant in the normal male. Probably there are a few present even in the two specimens in which I failed to detect them. In both the females, in which I failed to find them, blue scales were scanty in the areas where these androconia are most abundant.

Another fact of the greatest interest is that in the first four there is no abnormality of ovaries or cement glands, such as almost invariably occurs in hermaphrodites.

In the fifth there is a considerable deficiency of internal organs; but the sixth, outwardly much the most remarkable specimen, shows no abnormality of the internal organs beyond a few small gaps in the regular disposition of the ova.

None of the specimens showed any maldevelopment of the external armature, and most remarkable of all, none showed any trace of male sex gland or of structures belonging to the male genital organs, either internal or external. In these respects the specimens appear to be unlike any hitherto described.

Another point of interest is that though the male *A. coridon* is considerably larger than the female, all the specimens which resemble those I have described have the wings which show both male and female characters smaller than those which show female characters alone.

Instances of perfectly halved gynandromorphous insects with almost normal female internal organs and without any trace of male internal organs are well-known. Indeed, I have dissected one myself, but in these there are considerable parts of the external chitinous structures of the male present in addition to those peculiar to the female.

The absence of any sexual characters of the two sexes in my specimens rules them out of this class. The name pseudo-hermaphrodite is unsuitable for them. It is used for individuals of

the mammalia, where one type of sex gland is present, but where the other portions of the secondary sexual apparatus are intermediate in character and most closely resemble those of the sex opposite to that to which they actually belong. This condition is made possible by the fact that these portions of the secondary sexual apparatus are absolutely homologous in the two sexes. Such pseudo-hermaphrodites are bilaterally symmetrical, whereas asymmetry is the most noticeable feature of these abnormal *coridon*.

I venture to suggest the following classification of these different forms of hermaphroditism.

(1) *Genetic hermaphroditism*. This is to be confined to those cases in which germplasm of both sexes is present, *i.e.*, both ovarian and testicular tissue. A number of gynandromorphs belong to this class.

(2) *Primary Somatic hermaphroditism*. In this class germplasm of only one sex is present (ovary or testis), but secondary sexual organs of both sexes. The secondary sexual organs are formed of somatoplasm. Some gynandromorphs belong to this class.

(3) *Secondary Somatic hermaphroditism*. In this class both sex gland (germplasm) and secondary sexual organs (somatoplasm) belong to one sex, but secondary sexual characters of both sexes are present in the wings and other parts formed of somatoplasm. To this class belong the Royston *coridon* (nos. 1 to 6) and probably all similar specimens.

The name gynandromorph is comprehensive, and merely means that both male and female characters in wing markings or coloration are present, and covers both groups. Unfortunately most of our gynandromorphous specimens are never dissected, and we do not know whether they are true hermaphrodites or not. All those which have been dissected have proved to be so, but they only form a small proportion of the total number.

Sex appears to behave as a Mendelian character, the female being heterozygous and the male homozygous. A possible explanation of hermaphroditism is that it is due to an abnormal division of chromosomes. One nucleus obtains too much of the chromatin substance which determines maleness or femaleness, and one too little. The recessive is able to show its presence either completely or partially, according to the complete or partial absence of the chromatin substance, which should have prevented it from showing its presence. More probably it is due to the fertilisation of an ovum with two nuclei by two spermatozoa. This occurrence, which has been proved to occur, would explain the presence of two complete sets of genital apparatus, internal and external, in some gynandromorphs. The presence of a double external apparatus in an individual developed from a single ovum and spermatozoon would be impossible if the external structures in the two sexes are homologous. There are difficulties in the way of accepting this theory, but they do not appear insurmountable.

Hermaphrodites in the lepidoptera show a series running from those in which the primary and secondary sexual characters of both sexes are evenly balanced, to those in which the characters of one or other sex preponderate to lesser or greater extent. But the primary sexual characters of both sexes may be evenly balanced, whilst the secondary sexual characters of one or other sex greatly preponderate, and *vice versa*. For instance, the secondary sexual characters of the



male may be highly developed even in the absence of the testes. I should regard these abnormal *coridon* as taking their place at the extreme end of this series. The primary sexual characters of the male sex are entirely swamped, and the secondary sexual characters of the female sex greatly preponderate over those of the male.

It would be interesting to breed from these Royston *coridon*. The ova would almost certainly prove fertile. We already have proof that hermaphroditism in lepidoptera is familial, and some evidence that it is hereditary, though in the case of most ordinary hermaphrodites direct descent is out of the question.

Most important knowledge of the nature of the descent might be obtained, and, if the experiment proved successful, investigation on the chromosomes of these individuals on the lines of Doncaster's work might be carried out, and throw light on more fundamental questions.

The existence of a race of *coridon* at Royston, in which femaleness so greatly preponderates over maleness, without entirely obliterating it, and the absence of specimens in which maleness preponderates over femaleness, or in which the characters of both sexes are evenly balanced, though these have been found elsewhere, points to a marked difference between different degrees of hermaphroditism, the nature of which still awaits elucidation.

NOTE.—It is a curious, and I think pertinent, fact, that at Royston the female specimens on all occasions when I have been there have numerically exceeded the males by at least 20 to 1—usually to a much greater degree even than this—pointing to a very strong racial preponderance of “femaleness.”—G. WHEELER.

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### Notes on Swiss Rhopalocera. I.

By the late Mr. A. J. FISON.

[In looking over various papers and manuscripts belonging to my late uncle, Mr. A. J. Fison, of Charpigny, Switzerland, we came across some notes on Swiss butterflies in his handwriting. Thinking these might be of service to collectors who make Switzerland their hunting-ground, and of interest to entomologists in general, I have arranged them in some sort of order for publication in the *Ent. Record*. This was no easy task as the notes consist of miscellaneous jottings on scraps of paper, written at odd moments. They therefore can lay no claim to perfection in literary style, or in detailed scientific description.

\* Further notes will follow, provided the editor cares to insert them, for it seems a thousand pities that Mr. Fison's knowledge of Swiss Rhopalocera, gained by 30 years' experience and patient study, should remain unpublished and so be lost to the science of Lepidopterology for ever.

This particular series describes his visits to Pontresina in July and August 1901 and 1904, and contains remarks on specimens he took there and in the immediate district on those occasions.—LILIAN M. FISON, Southcote, Guildford. *September, 1914.*]

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\* As Mr. Fison, during a good many years, rarely made any entomological expedition without writing an account of it to me (unless I was with him on the occasion), and as I have carefully preserved these accounts, I am putting the whole of them at Miss Fison's disposal, for incorporation, so far as may be convenient, in her notes. They contain a mass of valuable information which I have never had time to edit, and I am indeed glad that my old friend's niece should have undertaken the task of giving his notes to the world.—G. WHEELER.

## I. PONTRESINA. 1901 &amp; 1904.

1. *Parnassius delius*, Esp.

Abundant although rather worn early in August 1901; less so 1904. Three or four as ab. *inornata*, Wh. ♀s very dark. In marshes round entrance to Heuthal, and even before Bernina Haus. Towards Bernina Pass, Rosegg Valley near Restaurant (4), 30 vii. 04.

2. *Colias palaeno*, L.

West of first Schafberg Restaurant, 24 vii. 01, abundant but worn. Muottas de Pontresina and its Alp, plentiful but difficult to capture on rough ground. All July.

3. *Polyommatus eros*, Ochs.

Abundant on slopes near, and north of, Bernina Haus, 20 vii. to 10 viii. 01 and 04.

4. *Aricia donzelii*, Bdv.

26 vii.-15 viii. 01 and 04. Could take six to twelve any day (chiefly on low rose-bushes) between Pontresina Old Church and the walled-in torrent 30 yds. west of it. Most were about 50 to 80 yds. east of torrent, below steeper mountain slopes. Whole corner an excellent hunting-ground.

5. *Vacciniina optilete*, Knoch.

20 vii.-10 viii. 01 and 04. A few on paths besides Morteratsch and Rosegg glaciers, but more about half-way to Morteratsch glacier Restaurant\* (below foot of glacier) on path to south of river. Usually three or four there by a large wooden water trough with pipes.

6. *Brenthis pales* var. *arsilache*, Esp.

All July on Arnica flowers. Took nine, but rather worn, in clearings along edges of woods south of Samaden and Celerina, 23-25 viii. 04. Found none near Stätser See, as reported by Kane.

7. *Brenthis thore*, Hb.

All July, both years, in clearings in Rosegg Valley woods (east of torrent) towards end of woods, beyond spot where path has fallen into torrent. Found mostly on yellow flowers. Not very abundant.

8. *Brenthis ino*, Rott.

As one goes from Pontresina to St. Moritz by path in woods. Quite fairly common in meadows *just before reaching woods*. Also near St. Moritz at west end of lake, vii. 01. In 1904 plentiful in marshy spots (openings) in forest opposite Hotel Steinbok (south of it) across torrent.

9. *Melitaea maturna*, L., var. *wolfensbergeri*, Frey.

11 vii. 01, on Alp Gram. Two beside Lake of Le Prese (south-west end), 13 vi. 01. Two below Diavolezza Hut leading to glacier south of it, 19 vii. 01. A fine hunting-ground if hot.

\* This Restaurant does not now exist. A new one has been built by the station near the bridge crossing the stream.—H.J.T.

10. *Melitaea cynthia*, Hb.

South of Diavolezza Hut even in August if the summer be hot (one worn, 24 viii. 01). Between Bernina Haus and Hotel, top of pass, on flat south-west of road. Took several there 11-18 vii. 01.

N.B.—There were also many *M. parthenie*, Brkh., var. *varia*, M.D., *M. aurinia*, Rott., var. *merope*, Prunner, *Lattiorina orbitulus*, Prunner, and *Parnassius delius*, Esp.

*M. asteria*, Frr., is also reported from there, and from the Heuthal, but I did not see it.

11. *Coenonympha satyrion*, Esp., var. *unicolor*, Wh.

12. *Polyommatus semiargus*, Rott., var. *montana*, Frey, and

13. *Plebeius argyrognomon*, Bergst. (*argus*, L.), var. *aegidion*, Meiss.

I found all these on path along west side of Morteratsch glacier. The first 80-150 yds. above the path, just after leaving woods. The attraction seemed to be little bits of black or boggy ground in sheltered corners, as on Alp Grum.

The second and third I found at corners on path, almost touching moraine, near last dead trees; some water ran through this tiny hollow.

N.B.—Further on, below the club hut, I took *Erebia gorge*, Esp., var. *triopes*, Spr., and *E. alecto*, Hb., var. *glacialis*, Esp.

14. *Erebia flavofasciata*, Heyne.

I took six on zigzags, 20 metres above the first or lower restaurant, on the Schafberg, 24 vii. 01. I saw none at that point in 1904, but Professor Thieme, of Berlin, and a friend, got 55 from 1-16 vii., on flat path leading south-east from first restaurant towards Languard Alp. The point where they were found has a longer slope of grass (not so steep as most) above path, whilst below it is a *ridge* descending to just north of Pontresina Old Church. Professor Thieme said that *after* July 16 was too late for *flavofasciata*.

N.B.—The *Erebia mnestra*, Hb., I took ascending this ridge, 28 vii. 04, are a little like *E. christi*, Rätzer.

I also took a *flavofasciata*, 10 viii. 01, on steep slopes east of Tscherva Hut, and another ascending to it on grass slopes above junction of the two glaciers.†

N.B.—*E. epiphron*, Knoch, var. *cassiope*, Fabr., was very abundant on both these slopes. A dark form at that date (10 viii. 01), absent in August, 1904.

15. *Erebia gorge*, Esp., var. *triopes*, Spr.

High up (with *E. glacialis*) towards second restaurant, on Schafberg, and going towards Piz Languard. However, *most* abundant at top of Bernina Pass. I took 25 there, 18 vi. 01.

On Fuorela Surlej (between Rosegg glacier and St. Moritz. No *triopes*, but the *type* with two eyes, 17 viii. 01.

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One of these two specimens has the yellow band, underside hindwing, broken up into spots something like *melampus* but of irregular shape. It is the specimen to which I referred in the 2nd Obs. on p. 124 in my "Butterflies of Switzerland."—G. W.

## OLEOPTERA.

THE SUPPOSED LARVA OF *CLAVIGER LONGICORNIS*, MULL.—In the *Entomologiske Meddelelser* [vol. x., pp. 70-73. Plt. 3, figs. 6-8 (1913)] E. C. Rosenberg describes and figures a coleopterous larva from moles' nests, which he queries as that of *Medon castaneus*, Steph. As the figure he gives is so very like that of the supposed larva of *Claviger longicornis*, figured by Dr. Chapman [*Ent. Record*, vol. xxv., Plt. 24, figs. 1-12 (1913)] it seems necessary to call attention to the fact. I have frequently found *Medon brunneus* at Box Hill, both under stones and in ants' nests, in the locality where the supposed *Claviger* larvæ were found, it is therefore probable that these larvæ belong to the *Medon*, and that of *Claviger* still remains unknown.—HORACE DONISTHORPE (F.E.S.), 58, Kensington Gardens, S.W.

## NOTES ON COLLECTING, Etc.

ACRONYCTA ALNI IN SUSSEX.—My brother, Mr. H. Leonard Sich, forwarded a larva of this species from East Hoathly. He saw it on sallow, growing on the roadside, on July 10th, 1914. In the covering letter he wrote, "My eye caught the hairs on it, or otherwise I should have mistaken it for a bird's dropping. I did not know that they went so low for protection's sake." The larva has now spun up in a section of a branch of elder from which the pith was partly removed.—ALFRED SICH (F.E.S.), Corney House, Chiswick.

COLIAS HYALE IN THE S.E. OF ENGLAND.—When at Folkestone, on September 13th, I saw a worn specimen of *Colias hyale*. No *C. edusa* were seen, and both *Pyrameis cardui* and *P. atalanta* were scarce.—L. W. NEWMAN (F.E.S.), Bexley, Kent.

BUTTERFLIES AT EASTBOURNE IN LATE SEPTEMBER.—I did not see many insects about except *Pyrameis cardui* and *P. atalanta*. There were only a very few *Aglais urticae* and a few *Agriades thetis* (*bellaryns*).—STANLEY EDWARDS (F.E.S.), 15, St. German's Place, Blackheath, S.E.

ORGYIA ANTIQUA IN DEVONSHIRE.—Whilst walking on Dartmoor yesterday (September 27th), and crossing the valley of the river Erme at a spot about three miles from its source, and 1,000ft. above the sea level, I was surprised at disturbing a number of male *Orgyia antiqua* from the bracken. I do not know whether you will consider this fact worth recording, but it struck me that it was an unusual situation to find the species and also a late date. I may add that it does not appear to be a very common moth in these parts, in fact I have observed very few specimens during the twelve years that I have resided here.—H. H. MAY, Black Friars House, Plymouth. [Barrett, *Lep. Brit. Is.*, vol. ii., says, "July to September; and in rare instances specimens of a partial second generation appear in October."]

COLIAS EDUSA IN SOMERSET.—When out shooting near Charlton Mackull, Somerset, on Saturday, September 26th, I saw a specimen of *Colias edusa*, the only one I have seen this year. Here at Chewton Mendip the second brood of *Celastrina argiolus* were unusually plentiful at the beginning of August. During September *Pyrameis atalanta* has been numerous in the garden, and a few *P. cardui* have also been seen.—WALDEGRAVE (F.E.S.), Chewton Priory, Bath. September 30th.

A RETROSPECT FOR 1914.—In the following account I am only

giving a list of the insects that I wanted, except in a very few instances, as I did not take notes of everything I saw whilst collecting.

One of my first expeditions was a trip to Wimbledon Common after *Apocheima hispidaria*, on February 25th, when I secured one male only, but I noticed that *Hybernia leucophaearia* and *Hybernia marginaria* (*progemmaria*) were in great numbers both of males and females. I also secured one *Phigalia pedaria* (*pilosaria*) female. On February 28th a trip to the same locality brought more success, and I took two males and a female of *A. hispidaria*, the latter unfortunately infertile, and although I placed her in my own garden for assembling, I had no luck.

I did not do any collecting at all during March, which was very cold, but on the 31st I bred a female *Polyplocia ridens* from a New Forest larva. On April 1st a fallow expedition in the Horley district yielded only the usual herd, *Taeniocompa pulverulenta* (*cruda*), *T. gothica*, *T. munda*, *T. gracilis*, *T. stablis*, *T. instabilis*, *Scopelosoma satellitia*, and *Cerastis vaccinii*. From April 11th to 14th was spent in the New Forest, but I did not get anything worthy of note except four *Cidaria siterata* (*psitticata*) and one *Lobophora rivetata* on fallow. From April 24th to 30th I bred a fine lot of *Eupithecia lareciata* from larvæ taken at Box Hill in August, 1913, two *Plastenis reclusa*, some *T. gracilis*, a red form, and *Panolis piniperla*, all also from larvæ obtained in the New Forest. On April 24th, at light, I took *Gonodontis bidentata*, *Lampropteryx suffumata*, and one *Eupithecia coronata*.

On May 3rd two more *G. bidentata* emerged from Box Hill larvæ, and a *Semiothisa notata* from a Worth Forest larva, and my pupa of *Aegeria culiciformis*, which I had taken a few days before in the latter locality began to emerge, while two *Cidaria cornulata* emerged on May 10th, also from Worth. At light in the latter forest, on May 16th, I secured a male *Notodonta trepida*, four *Tephrosia consonaria*, while *Drepana falcataria* (*falcula*) and *Drepana lacertinaria* (*lacertula*) were also noted. A visit to Box Hill, on May 22nd, produced *Ephyra linearia* (*trilinearis*), *Amphidasis betularia*, *Bapta temerata*, and another visit on the 30th gave me two *Agrotis cinerea*, *Bapta bimaculata* (*taminata*), *Eupithecia coronata*, *F. linearia* (*trilinearis*), and *Asthena candidata* mostly at light.

A few hours spent in Crowborough Warren on June 1st produced but one *Perizoma albulata* and one *Eupithecia pusillata*. At Box Hill, on June 5th, I took a male *Agrotis cinerea*, *Craspedia* (*Acidalia*) *ornata*, *Endrosa irrorella*, and two *Lithosia sororeula* (*aureola*). On June 7th I went to Lewes for *Adscita geryon* and *Rhagades globulariae*, but the weather was not propitious, and I only took two males of the former species. At Box Hill, on June 25th, I obtained *Plusia pulchrina*, *P. iota*, *Ephyra linearia* (*trilinearis*) worn, *Cucullia umbratica*, *Xylophasia sublustris*, *Pianthoecia cucubali*, *Eupithecia venosata*, *E. oblongata* (*centaureata*), *Botys hyalinalis*, *B. pandalis*, and a var. *bilinea* of *Grammesia trigrammica* (*trilinea*). I bred *Cucullia asteris* on June 30th from a Worth Forest larva, a *Triphaena fimbria* from the same locality, and the first of a brood of *Psilura monacha* from ova laid by a female taken at Oxshott. On June 13th, and again on June 17th, I bred an *Aegeria andrenaeformis*, the former from a Box Hill stick, and the latter from one cut at Bishop's Waltham, in Hants, on my way up from the New Forest, in April. Four *Palim-*

*psestis fluctuosa* in perfect condition came to light in Worth Forest on June 19th.

On June 21st I went to South Devon for a fortnight to a little place near Kingsbridge, and the following is a list of the insects taken: *Ebulea sambucalis*, *E. crocealis*, *Pionea forficalis*, *Eurrhynpara urticata* (*urticalis*), *Botys ruralis* (*verticalis*), *Eupithecia coronata*, *Perizoma affinitata*, *Bapta tenerata*, *Acidalia promutata*, *A. arersata*, *Anticlea rubidata*, *A. cucullata* (*sinnuata*), *Cidaria fulrata*, *Xanthorhoë galiata*, *Xanthorhoë unangulata*, *Hyppispetes furcata* (*elutata*), *Cosmotriche potatoria*, *Miltochrista miniata*, *Lithosia lurideola* (*complanula*), *Mamestra albicolarum*, *Agrotis lunigera*, one *A. suffusa*, and one *Leucania putrescens*. Besides these I took a good number of larvæ.

On my return journey from Devon I stayed for three or four days in the New Forest, July 16th to 18th. There I took *Miltochrista miniata*, *Lithosia griseola*, *Heterogena asella*, *Arentia flexula*, *Hyphenodes taenialis* (*albistrigalis*), *H. costastrigalis*, *Triphaena orbona* (*subsequa*), *Agrotis suffusa*, *Leucania turca*, *Perizoma alchemillata*, and a good number of larvæ. On July 24th, at Oxshott, I took *Calymnia pyralina*, *Ephyra punctaria*, and *E. pendularia*, while a visit to Box Hill, on July 26th, produced a good series of *Lithosia deplana* (*helreola*). This was my last evening's work this year, as since the war began I have not been poking around with a lamp at night, for people, always rather curious about a light at night, would possibly take one for a spy in these days, and I don't want a hole in my skin just yet.

During the last month I have done a little beating, but have not got very much for my trouble, some *Notodonta dictacoides*, *N. phoebe* (*dromedaris*), *Hylophila prasinana*, and a good number of Geometers which I have not yet identified, were obtained.

With regard to the butterflies, I have not taken a single specimen that I wanted, but a month ago I had sent to me four *Papilio machaon* larvæ from Norfolk.—H. BAKER SLY (F.E.S.), Maplesdon, Horley, Surrey.

## CURRENT NOTES AND SHORT NOTICES.

A note in the *Irish Nat.* for July reports that during the exceptional spell of calm, hot weather at Killarney in April, butterflies were numerous all over the district, especially tortoiseshells and peacocks, and that two freshly-born brimstones were seen sunning themselves on the hot rocks at the water's edge near the Lower Lake. Doubtless these last were hibernated specimens, as *Gonepteryx rhamni* is in the larval stage in the late spring, and does not emerge from the chrysalis until the late summer. Has anyone seen this species sun itself on the rocks? Many species have different habits in different surroundings, but *G. rhamni* both here and on the continent, in our experience, avoids the ground at all times.

To the *Ann. Soc. Ent. Belg.*, M. F. J. Ball contributes a very interesting and useful series of observations on the "Seasonal Dimorphism of the Androconial Scales of certain Rhopalocera." The writer had tested the androconial scales of all the *Agriades thersites* which were in the Brussels Museum, and had fully confirmed the observations of Dr. Chapman as to these differences. He wished to extend his

observations to other species of butterflies having two generations a year and of which the males possess androconial scales. The following species were examined: *Pieris brassicae* and aest. *lepidii*, *P. rapae* and vern. *metra*, *P. napi* and aest. *napaee*, *Pontia daplidice* and vern. *bellidice*, *Pararge aegeria* var. *aegerides* and aest. *tenniplumosa*, *P. megaera* and aest. *filipluma*, *Coccyonymphis pamphilus*, *Polyommatus icarus* and aest. *oralisquamosa*, *P. semiargus* and aest. *microconia*, *Celastrina argiolus* and aest. *latisquama* and *Ereves argiades* and vern. *polysperchon*. In all these species the seasonal dimorphism of the androconial scales is well developed, except that in *C. pamphilus* it is difficult to separate the generations, but if specimens be contrasted from early and late broods the differentiation is equally marked. In the course of the paper the author names the broods of those thus differing and which have received no varietal name hitherto. The following is a list of the new names introduced by M. Ball: *Agriaides thersites* f. aest. *chapmani*, *Pararge aegeria* var. *aegerides* f. aest. *tenniplumosa*, *P. megaera* f. aest. *filipluma*, *Polyommatus icarus* f. aest. *oralisquamosa*, *P. semiargus* f. aest. *microconia* and *C. argiolus* f. aest. *latisquama*. The notes are based almost exclusively on Belgian specimens, and figures of the scales are given in each species dealt with. No doubt further investigation will add to this list considerably.

On October 22nd the South London Entomological Society have an exhibition of *Anthroceridae* (*Zygaenidae*) with particular reference to the British species and their races and forms. Visitors are invited to bring forward all contributions to the meeting which would help to elucidate any particular question, such as the *hippocrepidis* form, etc.

We understand that the following entomologists have given up, we hope only temporarily, the net to take their share in the terrible European struggle. Mr. K. G. Blair, B.Sc., F.E.S., has joined the Seaforth Highlanders; Mr. N. D. Riley, F.E.S., is in Kitchener's Army; Mr. Austen, is a Captain in the Artists' Corps (Territorials); Mr. P. A. Buxton, F.E.S., and his brother Mr. D. A. J. Buxton are in the 1st East Anglia Field Ambulance. Two sons of Mr. T. W. Hall, the genial Treasurer of the South London Society, are at the front, and at least a dozen have volunteered from the Entomological Department of the South Kensington Natural History Museum.

Mr. C. B. Williams, F.E.S., of the Innes Institute, who has taken such an active part in the discovery of representatives of the new order *Protura* in Britain, has gone to the United States for some months. We hope that he will be able to add considerably to our knowledge of this primitive and obscure order from material which it is possible he may obtain on the Western Continent.

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## SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

July 23rd.—LARVÆ OF *C. GALII* AND *J. ALNI*.—Mr. Newman exhibited larvæ of *Celerio gallii* reared from ova and a larva of *Jocheaera alni*. DWARF *P. ICARUS*.—Mr. Curwen, a dwarf *Polyommatus icarus* measuring 20mm. in expanse from Piggott's Hole. BRED *S. PHEGEA*.—Mr. Morford, a bred series of *Syntomis phegea* from ova laid by a female taken at Iselle. PSYCHID LARVÆ.—Mr. Main, small Psychid

larvæ in their little cases which had emerged from a large case (cocoon) from Lugano, with some larvæ of the firefly, *Luciola italica*. BREEDING OF CRIOCERIS SPECIES.—Mr. Blair, bred specimens of the beetles *Crioceris lilii* (*merdigera*, F.), and of *C. merdigera* (*brunnea*, F.), the larvæ of the former on lilies of the latter on black bryony. Mr. Priske, living larvæ and pupæ of the beetle *Melasoma populi*. EXHIBIT OF SATURNIIDS.—Mr. Morford, the large Saturniids, *Philosamia cynthia* and *Autheraea perneyi*. A CURIOUS GALL GROWTH ON WILLOW.—Mr. Step, on behalf of Mr. West (Greenwich), a large mass of aberrant growth of twigs of willow, apparently caused by a species of gall.

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## REVIEWS AND NOTICES OF BOOKS.

A NATURAL HISTORY OF BOURNEMOUTH AND DISTRICT. By the members of the Natural Science Society. Published by the Society. 400 pp., 3 maps, and 19 plates. Price half-a-crown. Sold by Bright's, Ltd., The Arcade, Bournemouth.—This volume is very strong evidence of the valuable stimulus given to the work of local Science Societies by the organisation known as the South-Eastern Union of Scientific Societies. As already noted, the Union held their annual Congress at Bournemouth, in June last, by invitation of the Mayor and Corporation. This visit gave the members of the local Natural Science Society an opportunity not only to bring their Society's work before the general public, but to issue the present volume as a record of the natural peculiarities of Bournemouth and its surrounding neighbourhood.

More than half the book is pure natural history, zoology, botany, and geology, while another section deals with topography. The work is not a list of names merely for reference, but every chapter is quite readable by any lover of nature. Each section of a chapter is written by a specialist; no less than twenty-six different authors have contributed one or more articles under the able editorship of Sir Daniel Morris, K.C.M.G., the present President of the Society. One of the contributors to our pages, Mr. Parkinson Curtis, F.E.S., is responsible for the section devoted to the consideration of Lepidoptera and of Spiders, and also, in conjunction with his brother, Mr. Harker Curtis, for that contributed on Bird Life. Since the area described contains such well-known entomological localities as the Isle of Purbeck and the New Forest, the information given, not only in the purely natural history sections, but also in those devoted to Topography, will be of great value to students of nature visiting West Hampshire or East Dorset. We are reminded that *Lampides boeticus*, *Everes argiades*, *Agriades coridon* ab. *syngrapha*, and ab. *fowleri*, *Thymelicus acteon*, *Phryxus livornica*, *Coscinia cribrum*, *Deiopeia pulchella*, *Sterrhia sacraria*, *Anthrocera meliloti*, etc., have or do occur in this favoured and varied area. Of the Microlepidoptera but little mention is made: "many species have been added to the British list from the Bournemouth district. Several have been made known to science." Apparently much remains to be done in this group, and this is work which can be undertaken with little effect by the visitor, but must be carried out by a "scientific study of the locality," only possible to a resident. The volume concludes with a very full index of thirty-six pages and a most useful bibliography. This is one of the most interesting of books



dealing with local natural history with which we have met, and the price is quite incommensurate with the value and size.—H.J.T.

A MONOGRAPH OF THE GENUS *TERACOLUS*. By Emily Mary Bowdler Sharp. 156 pp., 44 coloured plates (450 figs.), 4vo. £3 3s. 0d. net. Messrs. L. Reeve and Co.—The issue of this work was originally commenced in parts in 1898, and so far as it was carried out by the author it is now published for the first time in one volume with title and index. To those who make a special study of the *Pieridae* this book, with its 44 plates of carefully executed and coloured figures of almost all the species with their local races and forms, should prove very useful. All the chief synonymic references are given, with descriptions of the male, female and local races, while particular attention is given to the Seasonal Dimorphism which is such a feature in the economy of many species of this genus. Long lists of localities are included with many extracts from the published writings of all the best authorities, such as Dr. Trimen, Dr. Butler, Col. Yerbury, Guy Marshall, Hon. Walt. Rothschild, De Nicéville, etc. The genus *Teracolus* (*sensu lato*), according to Kirby, *Handbook*, vol. i., p. 192, 1896, forms "a little group peculiar to Africa and South-western Asia as far as India, where they represent the Palæartic genus *Euchloë*. It is very numerous in species which, though differing very much in outward appearance, present few tangible characters by which they can be satisfactorily separated into genera, and hence they have been united into a single genus by Dr. Butler, in which he has been followed by Mr. Trimen, who formerly treated *Idmais* as distinct." Seitz *Macrolep., Fn. Afric.*, vol. xiii., 1910, recognises only one genus as does Miss Sharp. The price of the bound book is considerably less than when the parts were issued. It might also be mentioned that Messrs. Reeve are disposing of the remainders of such works as Barrett's *British Lepidoptera*, Fowler's *British Coleoptera*, Wilson's *Larvæ of British Lepidoptera*, Lang's *Butterflies of Europe*, etc., at much reduced prices, even in monthly volumes if wished. It may be mentioned that Barrett is the only modern author who deals with the British Tortrices in anything like detail.—H.J.T.

THE SOUTH-EASTERN NATURALIST, being the Transactions of the South-Eastern Union of Scientific Societies for 1914. 208 pp. and 1 plate. Price 3s. 6d. net. From H. Norman Gray, Hon. Assist. Sec., 334, Commercial Road, London, E.—This is the eighteenth annual volume which has been issued. The present issue is divided into four parts. The first deals with the activities of the Union during the year. This includes a record of work done by affiliated societies and their members, which we regret to see is lamentably imperfect, in that it contains no items from one of the most virile of local societies, *viz.*, The South London Entomological and Nat. Hist. Society. This society contains a large proportion of the most active and original workers, in Entomology at any rate, and the records of their work would go far to fill up the references in that section, which is thus deficient in the recorded activities of the Union. The second part is a daily record of events at the Congress, this year held at Bournemouth, and is most interesting reading, particularly to those of us who took part. This occupies nearly sixty pages, including accounts of the meetings of Council and Delegates, of the Field Meetings, of the Mayoral Reception, of the Discussion on the papers read, etc., and concluding with a description of the Museum and Loan Exhibition.

A curious method of procedure was adopted at the delegates' meeting which certainly, to say the least, should not have been allowed. One member "was asked to bring together a small committee, who should recommend to the delegates nominations for the council," to fill three irregular vacancies on that body. This gentleman subsequently proposed himself and two others who were elected *pro forma*. It is gratifying to see that the Union is at last commencing to sectionize its activities. At the instance of Dr. W. Martin, Prof. G. S. Boulger and others, a meeting of botanists was convened to "consider the co-ordination and re-invigoration of the Botanical work of the Union." This resulted in a Section being formed, with Committees and Sub-committees for special work. May it be suggested that a similar Section be formed for Zoology. This could well be done in 1915 at Brighton, a meeting place which will be quite accessible to members living in the South-Eastern area, of whom so many are interested in one branch or another of this subject. In the Loan Museum one large room was devoted to the exhibition of the whole of Mr. Percy Bright's wonderful collection of British Lepidoptera, Mimicry in Insects by Mr. Parkinson-Curtis, Dimorphism, seasonal and sexual, in insects by Mr. Tatchell, etc. It was a privilege to see the great number of wonderful aberrations accumulated in the first named exhibit. The third part of the volume is taken up with the Presidential Address and the Papers contributed to Congress. "Science and Life," by P. Chalmers Mitchell, M.A., President, "Vegetation of the Bournemouth District," by W. Munn Rankin, M.Sc., "Scenery of Bournemouth and its Geological History," by Wm. T. Ord, F.G.S., and "Flora of the New Forest," by Rev. J. E. Kelsall, are of more or less interest to entomologists. Sir Ronald Ross gave an address with lantern illustrations on "Some points in connection with Tropical Medicine." It seems a pity that the papers, which have been published in this volume, are not illustrated with some of the large number of excellent diagrams which were shown during the course of their delivery. This valuable report is an admirable monument to the untiring and able work of its Editor, Dr. Wm. Martin, M.A., F.S.A., the Hon. Secretary of the Society, and, in the interest of the Union's membership, it is a pity that from unexplained circumstances some at least of the members and associates are not to receive their copy of the Report.—H.J.T.

TRANSACTIONS OF THE CARDIFF NATURALISTS SOCIETY, vol. xlvi., 1913 (pp. 161 + 6, and 8 plates. Price 5s.)—This year's volume has, as is now usual, about one-third of its pages taken up with natural history matters, of which our colleague Mr. J. R. le B. Tomlin, M.A., F.E.S., occupies thirty-one with his second instalment of the "Catalogue of the Coleoptera of Glamorgan." The sections of this order dealt with, comprise many of the smaller species, the *Tachyporidae*, *Staphylinidae*, *Stenidae*, *Omalidae*, etc., and in many cases the author points out, "it is, unfortunately, impossible to ascertain to what species on our present lists the older records refer." He goes on to point out that not only is there the possibility of misidentification in the first instance with often two or more conceptions under the same specific name, but "we have the extensive segregations of critical species in the last 20 or 30 years split up into many species mainly on differences of the genitalia." Archeology, Geology, and Meteorological Records occupy most of the remainder of the volume.—H.J.T.

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AND  
JOURNAL OF VARIATION

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*Photo. T. A. Chapman.*

ENTRANCE TO THE VAL D' OSSOUE.



Gavarnie in 1914. (*With plate.*)

By T. A. CHAPMAN, M.D., F.E.S.

I am tempted to assert that I visited Gavarnie in 1914 on purpose to study *Latiiorina pyrenaica*, but I am restrained by more than a suspicion that the real attraction was a love of the mountains, that may be gratified at least as well at Gavarnie as elsewhere, giving *L. pyrenaica* a place, but only a second place in the determination. At any rate Mr. Champion and I arrived at Eaux Chaudes at noon on the 7th of July, and the next day changed our quarters to the Hotel des Pyrénées at Gabas (3,690 ft.) on the road leading by the Col du Pourtalet to Panticosa.

Here I found a very large brood of *Euraenassa antiopa*, about half-grown, feeding on birch. Of these I sent a small portion, some half-a-dozen dozens, to Mr. Tonge, on the 8th, with a fear that at their size they were too many to make so long a journey safely. It proved, however, that they arrived in good condition, fed up bravely, and produced only about a score of imagines, since to Mr. Tonge's disappointment more than two-thirds of them produced parasites.

On the 13th a somewhat worn *E. antiopa* was seen on the wing.

A little way up the valley towards and at Bious-Artigues, *Pieris manni* was not at all scarce. This species does not occur at Gavarnie.

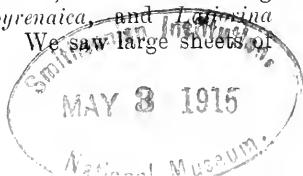
At the Col du Pourtalet (5,890 ft.), and at various points by the roadside, even some five kilometers nearer Gabas, *Erebia lefebvrii* was not at all uncommon, the majority of specimens being without any rust colour, the general appearance being almost identical with that of *E. melas*. Along with it there was usually a rather larger number of *E. stygne*, very difficult always to be sure of before capture, and one or two were taken that so far resembled *E. lefebvrii* as really to be puzzling. One specimen was entirely without rust colour on the hindwings. Other species seen at Gabas included *Pararge megera*, *P. maera*, *Erebia erias*, *E. epiphron*, *E. tyndarus*, and *Pieris rapae*. *Pontia daplidice* was specially common, and a specimen of *Anthocharis belia* (or *simplonia*) was seen.

On the 13th we left Gabas for Gavarnie (4,430 ft.), arriving there the same evening, calling on M. Rondou at Gèdre on the way. On the 14th a search for *Latiiorina pyrenaica* resulted in two males being seen, and it was concluded the species was hardly out. The day was very hot, and in the evening we were visited by a thunderstorm, with deluges of rain.

The next day (15th) we visited the slopes of the Piméné, in company with M. Rondou. During nearly the whole excursion we were in dense fog, so that even Mr. Rondou was not always very certain of where we were, and butterflies on the way were hopelessly absent. I had already concluded that the foodplant of *L. pyrenaica* was, with great probability, *Androsace villosa*, and I looked amongst a good deal of this plant, but without seeing any trace of a pupa or of a belated larva.

On this and other occasions M. Rondou told me many things about local insects that one regrets he has not published, such as his having bred *Polyommatus eros* from *Oxytropis pyrenaica*, and *Latiiorina orbitulus* from *Androsace* (*Gregoria*) *italiana*. We saw large sheets of

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the latter plant in places where M. Rondou told us *L. orbitulus* was frequent or common, though on such a day, of course, none were in evidence. In places this beautiful plant formed the greater part of the vegetation, being more dominant than I have seen it elsewhere.

We took another excursion with M. Rondou to the Val d'Estaubé, on the 24th, a very interesting excursion, apart from the wish to see *L. pyrenaica* in another locality. The valley of the Gave d'Héas drops rapidly into the Gave du Pau et Gèdre, but above this portion the slope is more gradual. Some little way up M. Rondou pointed out a small meadow of only an acre or two, on which he said *Erebia caecilia* was usually to be seen, and there, in fact, we found three specimens. M. Rondou was of opinion that that butterfly had no settlement there, but arrived from the mountain above, where it was common, descending (by accident or design) quite 2000 ft. (I have no exact measurement) of nearly precipitous cliff. I felt a difficulty in understanding if this was so, how it always hit this little meadow and nowhere else, and equally if it was native to the meadow, how it could maintain itself in so small a patch without spreading elsewhere.

I recollected, however, reading in some account of the species (where, I forget), how at a certain hour of the morning, in one of its localities (Cauterets?), it suddenly put in an appearance, all specimens progressing steadily downhill.

The Val d'Estaubé rises rather high up on the slope above the Gave d'Héas, and thereafter rises gradually, with several steps, as usual, in Alpine valleys, where no doubt the ancient glaciers had an icefall. Some little way up the valley is a slope below limestone cliffs, and here *L. pyrenaica* was found, but not so abundantly as M. Rondou says it often is there. A butterfly not uncommon in the Val d'Héas, and also in the Val d'Ossoue, and indeed elsewhere near Gavarnie, is *Polyommatus (Agriades) escheri*, its best known foodplant, *Astragalus monspessulanus*, being well distributed, especially in the calcareous areas. The form of *P. escheri* here, as is well known, has not the bold spotting of the underside so characteristic in localities in Dauphiny and Switzerland, but is much in tone like *P. icarus*, culminating in the ab. and var. *rondoui*, in which the underside spots are very small, and tending to obsolescence (*Bull. Soc. Ent. Fr.*, 1906, p. 57), actually the Alpine form of *escheri* in the Pyrenees. On the 27th and the 31st we went to the Col du Piméné, whence one looks down into the upper part of the Val d'Estaubé and sees something of the Cirque du Troumouse. On the way up *Anthrocera anthyllidis* was very abundant at a considerable elevation, though on the 27th the weather was bad, and on the 31st they were getting the worse for wear. On the first occasion Mr. Champion found various (more or less good, I suppose) beetles, fairly abundant (weather dull, atmosphere damp) but on the second visit, only four days later, when conditions were much more favourable for lepidoptera, the weather being dry and warm, he was decidedly disappointed, and considered the locality had not kept up its promise, and was no better than other places visited on fine (but not for Coleoptera) days. *Anthrocera contaminei* on my previous visit was not at all rare in several localities, but on this occasion a desire to renew my acquaintance was not cordially met, and I only saw two or three specimens.

The little lakes or ponds on the east of the direct (high level) route

from Gavarnie to the Val d'Ossoue swarmed with teneral imagines of *Sympetrum jacobulum*, many specimens being seen drying their wings with their empty nymph cases below; hundreds might easily have been taken. Other dragonflies were very few. On a later day of our stay the immature insects were less abundant, and mature ones were scarce at the ponds, but were in evidence for some miles in several directions, but now almost impossible to capture.

Almost anywhere above 6000 ft. *Erebia lappona* was common, or even abundant, almost all of the var. *sthenno*, but occasional specimens were not far from the type form.

Gavarnie, without a reference to *Erebia lefebvrei*, would be almost like Hamlet with the oft-suggested omission. We did not, however, visit any of the localities where I knew it to be most abundant, on the other hand, possibly because it was a good year for the species, we never made any excursion above about 5000 ft. without seeing a specimen or two, and no doubt, at the lower elevations, passed them by as being probably *E. stygne*, which was well in evidence practically everywhere. This very general distribution of *E. lefebvrei* did not agree with the impression I obtained at my last visit, which was that it occurred freely at a few places, more sparsely at a few others, but apart from such localities did not occur.

I must also refer to *Hesperia andromedae*, of which M. Oberthür took a specimen close to Gavarnie, I found a worn one at a higher elevation, and have a large fresh specimen taken above Gabas.

One of our greatest pleasures at Gavarnie, that took us somewhat by surprise, was to find M. C. Oberthür at the Hotel Vignemale, where we had many pleasant meetings and discussed various entomological and other subjects. His keenness as a collector seemed to be as acute as ever, he made good bags along the road to the Cirque, but the chase in the evening when moths flew to the brilliantly illuminated windows of the Hotel, and on one or two nights in shoals, was something to remember. M. Oberthür sat in the hall placing in chloroform bottles moths that arrived almost more quickly than he could deal with them, brought in nets, usually containing several specimens, by his grandson and by various volunteers, of whom, more than once, I was one, the moths being captured as they flew against the windows outside. Amongst them were many good things, including a large *Noctua* suspected to be a new species. One specimen I remember, a *Notolouta*, very close to *N. ziczac*, but with a large amount of white, giving it a remarkable appearance.

Just before M. Oberthür left, Mr. Harold Powell was added to his party for two days, and though the mountaineering of M. Oberthür's grandson was the *pièce de résistance*, collecting was vigorously pursued.

I have said little of *Latorina pyrenaica*, as I have hopes of working out something of its life-history. I have larvæ going into hibernation, little black fellows, looking very different not only from *L. orbitulus* at that stage, but from every other Lycaenid that I happen to know.

On the first of August we were contemplating going elsewhere for a few days before returning home, but on this date news got through to Gavarnie that made us decide to return home at once, starting the following morning. Our adventures in getting back were so similar to those of so many other people that they need not be further referred to except to remark that we had to stay on the way for four days at

Lourdes, and though the weather was poor, and long excursions vetoed by the hope of starting again on the first chance, we regarded the country around as worthy of an entomological investigation on a suitable opportunity.

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### Lepidoptera in Southern France, 1914.

By E. B. ASHBY, F.E.S.

(Concluded from page 221.)

ALPES MARITIMES AND RIVIERA.—The long journey from Digne to St. Martin Vésubie was very wearisome, it took rather more than seven hours. For those who come after I advise the morning train from Digne, as otherwise the slow journey by electric train in the pitch darkness from the junction at La Vésubie to St. Martin is more than trying, besides this part of the journey is very picturesque in daylight. At St. Martin I stayed at the Hotel Regina, which I found very comfortable.

On the morning of July 27th I collected on the very winding road that leads up to the little village of Venanson, meeting three German collectors on the way. The day was very windy, and I saw but few insects and took less. *Callimorpha hera* was flying on the lower level opposite to St. Martin and several were taken in perfect condition; apparently the species was here just emerging. In the afternoon I went along the Nice Road and tried to find the oak copse where *Lacosopia roboris* is supposed to occur, but I failed to find the insect and had to be content with several *Polygonia c-album*, and a view of *P. eyca* which was flying and settling on the face of a stone wall in the blazing sunlight too high up to secure. This was the first and only time I have seen the last named species on the wing.

The next morning I again essayed the Venanson road, this time going right past the village itself. As the day was again very windy, insects were difficult to obtain, the best were a couple of *Polygonmatus meleager*, *Callimorpha hera*, and a large moth similar to, but rather smaller than our English *Mania maura* and subsequently found to be *Apopestes spectrum*. Here at St. Martin the type form of the female of *P. meleager* is replaced by the brown form known as var. *et ab. steevenii*.

On the morning of July 29th I walked to Madone de Fenestre, a resort for pilgrims, consisting of a church, hotel and refuge in the mountains past the Italian boundary, at a height of over 6,000ft. Just as I reached the place, about 12.30, the sun went in and I was unable to really test the insect fauna. It was a long and tedious walk and pedestrians should leave St. Martin as early as possible. It would be, of course, better to stay a night at the hotel so as to get the early morning sun. However, below the summit in going and returning I took *Brenthis pales*, *Parnassius apollo*, *Erebia medusa* var. *hippo-medusa*, *E. gorge*, *E. epiphron*, *E. euryale*, *Chrysophanus hippothoë*, and *Heodes virgaureae*.

July 30th was spent in exploring the Val de Boréon, a very picturesque walk, part of which reminded me strongly of Canadian or Newfoundland scenery. This road is the nearest point from St. Martin to obtain species of the genus *Erebia*, of which *E. ligea* was in considerable numbers, and the males of *H. virgaureae* were at the same

time in excellent condition. This road also takes one across the Italian frontier at no great distance from St. Martin. Unfortunately the sun again went in early in the afternoon and spoilt what would in all probability have been a good day's collecting. *Parnassius apollo* was particularly in evidence but required careful picking.

My last morning was spent on the Madone de Fenestre road. Here Dr. Keynes kindly pointed out that *Satyrus actaea* was flying in company with its close relative *S. cordula*, a fact which otherwise I should have overlooked. I was thus able to take a nice series of the former species. It was, however, only with a great deal of patience that I secured them, as they flew evasively up and down the steep hillside through which the road passes. Here with great regret I said good-bye to Dr. and Mrs. Keynes little expecting to meet again only a few days later at Marseilles and again at Boulogne in the altered circumstances of the sudden outbreak of the war. Returning towards St. Martin, almost the last insect I took on the lower slopes of the road were the form *steerenii* ♀ of *Polyommatus meleager* and the one and only *Satyrus briseis* I saw in this locality.

I left St. Martin about mid-day and travelled to Monaco *via* La Vésubie and Nice, much enjoying the sight of the beautiful Rivierian flora along the banks of the railway of the Côte d'Azur. Surely this flora is really largely N. African rather than European. After visiting the Post Offices at Monaco for postage stamps, I explored the Castle Hill and dined and then returned to Cannes, where I found a very comfortable bed at the Hotel des Colonies just outside the station. Rising betimes I left Cannes by the 6.18 a.m. train on August 1st and arrived at Le Trayas, putting up at the Hotel de la Gare. After breakfast I climbed the hills round the station by the paths under the extensive pine woods, but found very few Lepidoptera about. In the spring I believe, *Thais rumina* var. *medesicaste* loves to frequent some of these paths, but to-day even at the summit practically nothing was flying, although the day was very hot and fine. Returning to the station level and having made friends with the "chef du gare, etc.," I collected about the station and along the line adjacent. A little further along the railway to the west I found an excellent spot below the line where insects were quite abundant. There I took *Limenitis camilla*, possibly of the 2nd brood, in excellent condition, *Epinephleida* somewhat worn, many male *Gonepteryx cleopatra* apparently just emerged, and, as I was returning to the hotel, quite fresh specimens of *Satyrus briseis* and *S. jida*. It was most enjoyable to have one's meals nicely served behind the small but comfortable hotel in sight of the blue Mediterranean waters with superb views of land and sea.

Next morning I awoke for my last morning's collecting abroad for 1914 before starting homeward. At breakfast I noticed several men in uniform appear and rather delay the meal, however my host simply informed me that they were "from the station" and I thought nothing of it. But when I went out to collect I soon found that I could neither collect on the line nor even cross it, every where there were French soldiers with fixed bayonets, very polite, but "No Monsieur, you cannot cross the line to-day." In this place which has no newspaper, church nor post-office, the truth did not reach me and I calmly went on collecting and got in a very satisfactory morning's work including a few more *Satyrus jida*. At déjeuner I found still

more soldiers, and still in ignorance I left for Cannes to catch the "rapide," as I thought, for Marseilles. While waiting for the local train at Le Trayas station I saw a lovely *Charaxes jasius*, no doubt a second brood specimen, quite safe from packed nets, float leisurely along in the torrid sunlight. In the train I learnt the news and realised that I was caught in the midst of the rush of the French mobilisation. At Cannes the station was packed and I sat on my luggage, there was nowhere else to rest, and wrote post cards. The crowd was earnest, patriotic and there were tear-strained faces in it. There was no chance whatever to get on the "rapide" I ought to have caught, but after waiting a further half-hour, I just managed to board the end of the next train, only however, to stand for the whole of the five hours' journey to Marseilles, except when for a short time I sat outside on the steps to dangle and rest my legs. It is not for me to record here my further adventures, suffice to say that I reached Folkestone Quay after three days and nights of incessant travelling and discomfort, serenely thankful to have escaped the much worse plight of thousands of other holiday folk with the added knowledge that my captures of the tour were quite intact.

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## Notes on Swiss Rhopalocera. II.

By the late MR. A. J. FISON.

(Communicated by Miss M. F. FISON.)

### II. WEESEN. 1902 AND 1904.

#### 1. *Lycaena arcas*, Rott.

1-15 vii. 02 and 04. Abundant but rather old.

Follow path under Suspension Bridge towards Filzbach through marsh. One or two generally close (beyond) to bridge; and more over ditch beyond second railway bridge.

#### 2. *Lycaena euphemus*, Hb.

With *L. arcas* along same path and railway ditch. Date and state of flies as *L. arcas*.

#### 3. *Coenonympha tiphon*, Rott.

On same Filzbach path, chiefly between the two railway bridges, and on further side of marsh. Most of my captures were taken from 8-20 vii. 02. I also took it near Einseideln, 6 vii. 04, and round Arth-Goldau, 20 vi. 04.

N.B.—The body of the ♀ is shorter and thicker than that of the ♂; also in the ♀ there is a second spot near anal angle, underside forewing.

#### 4. *Araschnia levana*, L.

In Kupfernasernuns—a tiny defile or gorge on path from Filzbach to Thalalpsee. Four on 18 and 20 vi. 02, and twenty on 23 and 28 vi. 04. Most were near summit of tiny pass—three hours from Weesen. They were on the road, or on yellow ragwort, or on a white *Senecio* of same height—1½ feet.

N.B.—Up same gorge I took some well-marked *Melitaea dictynna*, Esp., and some *Pieris rapae*, L., of large size. On summit I found *Parnassius mnemosyne*, L., and *Erebia stygne*, Ochs., the latter with small spots, 8 vii. 04. Also *Apatura iris*, L., on top and on bridge at end of Weesen Marsh, 8 vii. 04. One should reach the defile by 10 a.m. as after 1.30 p.m. the sun has left it.

I also took *A. lerana* in the Murgthal; thirteen there 29 vi. 04, and three 2 vii. 04. The Murgthal is about  $1\frac{1}{4}$  hours above Murg—the second station east of Weesen. The spot for the insect is where the char road ends in a steep, grassy track, up a small hill, with springs under the hill on left, and on summit—where there is a seat. At, and all round, this summit *A. lerana* may be found singly, even as far as torrent to the east. However, they were most abundant on a tiny ridge running up beside the wood—a little to west of seat. There they were on white *Vincetoxicum* flowers. I was always on the ground by 9 a.m.

#### 5. *Araschnia lerana*, L., var. *prorsa*, L.

I took 121 in the Murgthal—2 and 3 viii. 04—but did not go to Thalalpsee to look for them. On the 3rd it was not necessary to go so far as the hill, as, being a superb day, all I wanted were found on a long strip of wild sage flowers 200 yards short of the hill. Quite one half were ♀s. They flew best from 9-10.30 a.m. Only a few after 12.30 p.m. Five weeks after this great catch, on 3 ix. 04, I took two more on some wild sage. The weather then was bad, but occasional gleams of sun brought out two. They were *identical* with the earlier var. *prorsa*.

#### 6. *Brenthis thore*, Hb.

In gorge leading to Thalalpsee. 38 there on 16 and 18 vii. 02, and 24 from 23 vi.-8 vii. 04. Always between 10 a.m. and 1.30 p.m., when sun shines in defile.

A few were captured among some *Melitaea dictynna* half-way up, where steep, treeless, stony banks of nettles rise on either side. However, they were most abundant nearer summit on east side of gorge. A few on summit with *Parnassius mnemosyne* and *Erebia stygne*. One on cool side of Linththal, 1,200 feet above Mellis.

N.B.—Murgthal looks a likely spot for *Brenthis thore* if one could easily cross to cool east side of torrent.

### III. LE PRESE. 11-18 vii. 01.

July 11th.

At ALP GRUM. Going to it from Bernina Pass.

Ascending, I took *Erebia lappona*, Esp., not very abundant and going over; *Coenonympha satyrion*, Esp., var. *unicolor*, Wh., scarce but fresh; *Erebia gorge*, Esp., type rare, but var. *triopes*, Spr., plentiful, both forms quite fresh.

Descending, I captured *Melitaea cynthia*, Hb., in fair condition; two fresh *M. maturna*, L., var. *wolfensbergeri*, Frey; several *C. arcania*, L., var. *darwiniana*, Stgr.; many *Brenthis pales*, Schiff., type form; etc.

July 13th.

At CAVAGLIA.

I found *Brenthis ino*, Rott.; and lower down hundreds of *P. apollo*, L., probably good vars. and abs. amongst them. Saw many *Lycaenidae*.

July 13th.

At LE PRESE, lake side.

Two *Limenitis populi*, L.; \*two *M. maturna*, L., type; *Argynnis adippe*, L., and var. *cleodora*, Ochs., in fair condition; *C. arcania*, L., type form, and var. *insubrica*, Rätzer, fresh; two *Lowia alciphron*, Rott., var. *gordius*, Sulzer.

July 14th.

At BRUSIO. Seven or eight miles lower down.

A fine hunting-ground. Three fresh ♀ *Libythea celtis*, Laich.; several *Satyrus hermione*, L.; *Itimicia phlaeas*, L.; one fresh *Celastrina argiolus*, L.; several *A. niobe*, L., var. *eris*, Meigen.

N.B.—The three *celtis* were in the village on a wall or on road, and all close together. I saw no more, although I hunted that part thoroughly for them.

July 15th.

LE PRESE. On road by lake-side before 10 a.m. One *L. populi*, L.

July 16th.

BRUSIO, or going to it.

Five *A. adippe*, L., var. *cleodora*, Ochs., in fair condition; three *Epinephle jurtina*, L., var. *hispulla*, Hb.; two *C. argiolus*, L., one fine; one *S. cordula*, Fabr.; three *Scolitantides orion*, P., not quite fresh; ten *Lowia alciphron*, Rott., var. *gordius*, Sulzer; two beautifully fresh *I. phlaeas*, L.; and three fresh *Dryas paphia*, L.

July 17th.

BRUSIO.

I took a beautiful *Euranessa antiopa*, L.; one fresh *Klugia spini*, Schiff.; several *Nordmannia acaciae*, Fabr., and *N. ilicis*, Esp.; *S. orion*, P., was decidedly worn, but *S. hermione*, L., and *S. cordula* were beautifully fresh; *A. adippe*, L., var. *cleodora*, Ochs., and *L. alciphron*, Rott., var. *gordius*, Sulzer, were only in fair condition.

July 18th.

By BERNINA PASS (high road), and down to PONTRESINA. On top of pass I took 25 *E. gorge*, Esp., var. *triopes*, Spr.; several *E. alecto*, Hb., var. *glacialis*, Esp., and one type *E. gorge*, Esp. Lower, on north side, several *Melitaea cythia*, Hb., in fair condition, many *B. pales*, Schiff., type form, and *Melitaea aurinia*, Rott., var. *merope*, Prunner, all in good condition. *M. parthenie*, Brkh., var. *raria*, M.D., was very abundant. *Parussius delius*, Esp., and *Latiorina orbitulus*, Prunner, were less so.

N.B.—I also got one *L. populi* on the 12th and a damaged one on 16th. They pass soon, and I saw none after July 16th. My total at Le Prese was five *L. populi*, including one ♀. I chased another fine ♀ but it flew too high. They differ rather from those north of Alps.

\* I thought *M. maturna* type form did not exist in Switzerland.—L.M.F.

Miss Fison is correct; the type does not occur in Switzerland, but these south-east specimens are nearer to it than are the alpine form taken elsewhere.—G. WHEELER.



## The Mystery of *Lycaena arion*.

By T. A. CHAPMAN, M.D.

The mystery of *Lycaena arion* remains a mystery. I obtained eggs at Gavarnie this summer and reared some larvæ, of which I succeeded in getting about a score to the last instar (supposed hibernating stage). Though in their fourth and last instar they are only about as large as the larvæ of *Agriades coridon* or other ordinary blues when they go into hibernation. They no doubt do something, and without further moult appear (to very few people) the following June quite full grown. The mystery is, what do they do in the interval, where do they live, and what do they feed on? I hoped to get nearer this by aid of my score or so of caterpillars, but they behaved as they always had done with me previously, after not very many days they were all dead. Though I made no further discovery, by watching them more closely and considering them more seriously, I am able to advance a little nearer the enemies' trenches, but so far without the slightest confidence of being able to take them.

I offered my larvæ the companionship of the proper ant. Without showing enmity, neither ants nor larvæ fraternised in any way. I offered the larvæ various kinds of food, all the hopeful sorts of plants I could obtain, of these they seemed to sip the sap of kidney beans, but these they did not eat, nor did they increase in bulk; other things they would not look at. I had no young green peas available (the date late August), the food that Mr. Frohawk found they would deal with. I offered them mashed ant larvæ, which did not even rouse their curiosity. I gave them various hibernating facilities such as have suited other *Lycænid* larvæ, but they would not settle down until they were exhausted and, in fact, dying.

These are all facts that have been known for some years to Mr. Frohawk, The Hon. N. C. Rothschild, and myself, and are, one may say, now known to everybody. There are, however, several other points that, in a sense, are equally well-known, and yet, so far at least as I am concerned, were not, for really practical purposes, known so as to be properly appreciated and weighed.

The central fact of these is that, when the larva enters on this last instar, when it has taken its last moult, and sets out at once on its wanderings, it does not first eat any more of the flower-beads of the thyme. It starts its wanderings, therefore, without any of the stored nutriment that larvæ have when they go into hibernation. It wanders about and the real object of these journeys is no doubt to find food. As in captivity it always dies before many days, unquestionably of starvation, it follows that at large it succeeds in finding food within a similar limited period. This does not in the slightest answer the questions, where and what, but it implies that it ought not to be so difficult to somehow follow the larva at large for a few days and see what it does. The structure and small size of the head imply that the food is vegetable and not difficult of mastication. This does not negative the idea that it becomes the guest of ants, but the neutrality observed between the larvæ and the ants is strongly against it, the importance to the larvæ of an early supply of food would necessitate a prompt treaty between the ants and their guests, if this is how its wants are supplied.

I have had the advantage of a talk with Mr. Rothschild over my observations and some he has made this summer. I do not agree with him in regarding the ants' nest hypothesis as altogether improbable, but I think there is more to be said in favour of a vegetable diet found by the larva itself than I had previously appreciated.

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### Switzerland and Tyrol in 1914.

By D. H. PEARSON, F.E.S.

It is very difficult in these days of war and trouble to carry one's mind back to the summer holiday, or even to believe that it was taken in 1914, but as so many people either missed their holiday altogether or had it unduly prolonged, a few notes from one who was fortunate enough to be early and to pick up a few "worms," may be of interest.

We left London on June 24th, and travelled straight through to Alvanu Bad on the Albula, where we broke our journey to Pontresina, as I was very anxious to find *Brenthis thore* and *Limenitis populi*, which Dr. Keynes's interesting article had led me to expect there. The weather was beautiful, but we were told that for about a fortnight previously it had been persistently wet and cold, and this no doubt accounted for the scarcity of butterflies, though it did not reduce the number of "clegs" and other biting flies, whose appetites were sharpened by the enforced fast. Dr. Keynes had very kindly given directions for the spot for *B. thore*, but careful working for two or three days failed to turn up a single specimen on the ground indicated, i.e., in the meadows towards Tiefencastel, though I managed to take a short series, mostly in good condition, in the opposite direction, towards Filisur, where Dr. Keynes had worked in vain. A large stone slide had swept away a number of trees near the saw-mill, and it is possible that his favourite patch of ground was destroyed; but something had induced this very local insect to move its quarters. Of *Limenitis populi* nothing was seen at all, and possibly it was not yet out. In the meadows of the river a nice little series of *Melitaea aurelia* was taken at a lower elevation than I had previously met with it. *Polyommatus escheri* was taken close to the hotel doors, and one *P. hylas*, but the higher ground near Alvanu produced practically nothing beyond a few *Coenonympha iphis*.

On June 27th we took the train to Preda, walked on to the Weissenstein Inn, and then down to Bergün, but though the day was fine and the walk an interesting one, scarcely an insect was seen. One *Lycæna arion* ab. *unicolor* was captured.

On the 29th we moved on to Pontresina, where we stayed until July 8th. A walk to the top of the Schafberg produced *Erebia gorge* var. *triopes*, one *E. alecto*, one *E. erias*, several *Pontia callidice* and other trifles, but the top was still deep in snow.

On July 1st we took the train to Alp Grum and walked down to Poschiavo, meeting with some interesting insects on the way. In a railway cutting below Alp Grum *E. gorge* var. *triopes* was not uncommon, and could be comfortably swept off the wall face instead of being chased over the usual scree; some of the specimens were large and very strongly marked. Several *Erebia erias* were taken, but all were somewhat worn, and this was also the case with *E. medusa* var. *hippo-*

*medusa*, though a few quite fresh females were met with. A large family of *Vanessa io*, in good condition, were noted in one corner and were very partial to the flowers of the *Rhododendron*. How is it that in recent years this insect has in many districts become so scarce? In my own garden (in Notts) this year we had many *Aglais urticae*, but not a single *V. io*, and I have not seen it in the district for years, though it used to be plentiful. The last part of the walk to Poschiavo was steep, rough, and very hot, and also unproductive, and we should have done better to confine our attentions to Alp Grum, which is also set in beautiful scenery. Visits to St. Moritz and Campfer were marred by rain, but a few *Erebia tyndarus* and other small fry were netted.

The best thing taken at Pontresina was *Brenthis pales* ab. *napaea*, and of this I got some very interesting forms, some being nearly black, and some with a fine suffusion of purple or almost pink, though this was lost to a considerable extent after death. These were found on some rough ground within half a mile of the town, but owing to cloudy weather a good deal of hard work was required to get a series together. When the sun broke through, the males, which were large and fine, flew in profusion, and were very fond of settling with wings outspread on the flowers of *Crepus aurea*, which they almost exactly matched in colour. The females, which only flew occasionally, never settled with outspread wings, but clung to the rough grass stems, where they were well protected by their dull and mottled undersides. It was slow work to carefully examine the grass tassocks, but a nice little series was got together and well repaid any aches in the back endured in the process. However, I did not feel satisfied with the "bag," and on our return from Trafoi managed to spend another day at Pontresina on July 19th. Many of the males were still in good condition, but the females had increased tenfold and provided a very interesting series. A few *Parnassius delius* were also on the wing, including two ab. *inornata*. *Brenthis pales* var. *arsilache* was not met with, and I am still waiting for a type of this insect, being probably always too early for it, as I understand it usually appears when *B. pales* is going over. *Polyommatus donzelii* is another insect which I have failed to turn up at Pontresina, though the exact locality for it is given in this month's *Ent. Record*.

July 7th began with a steady rain which changed to snow about mid-day, and by night all the meadows were nearly four inches deep in snow, which did not look promising for insects. We therefore took the train to Tirano, finding bright weather and no snow directly after passing Alp Grum, and motored from Tirano to the Baths of Bormio at the foot of the Stelvio Pass, where we spent two nights. Insects were again scarce, but we took two *Lycæna alcon*, two *Erebia nerine*, and a few large *Albulina pheretes*, some of the females measuring 34mm.

On July 10th we had a very fine drive over the Stelvio Pass to Trafoi. The road on the top of the pass was cut through snow about twice the height of the horses' heads and one of the leaders would persist in snatching mouthfuls of snow though the driver explained to him that it was not good for his "tun." Though I walked across many of the zig-zags scarcely anything was seen beyond an occasional *Erebia gorge* or *E. ceto*, but the scenery was very fine, and under its

mantle of newly fallen snow everything looked its best. We stayed at Trafoi from July 10th to 17th and did fairly well there. *Brenthis thore*, large and fresh, was found in a wood on the way to the three Holy Springs, but was very scarce, only about a dozen being seen altogether and they nearly all males. With them were flying *B. amathusia* and some *B. euphrosyne*, which often managed to make themselves look like *B. thore*, but did not seem to have the *thore* habit of settling up in the fir trees out of reach. *Erebia medusa* was not uncommon but mostly very badly worn, and it was difficult to pick out a few decent specimens. In the meadows *Lorcia dorilis* was flying freely, principally of the var. *brunnea*, and varying considerably in the amount of orange spotting. *Chrysophanus hippothoë* was also common and among them a few of the var. *eurjbia*.

We were delighted to find here a plant of *Cypripedium calceolus* still in bloom, as we had hunted for this flower for some years in vain.

A visit to the Edelweiss Hutte produced two *Erebia abecto* var. *glacialis*, which were all we were able to turn up at Trafoi. On a steep bank near Gomagoi *Erebia nerine* was flying sparingly, and this being my first encounter with it a very exciting hour was spent. They were evidently newly out and nearly all males, and had the continuous red band of the var. *stelriana*. Solitary specimens of *Erebia aethiops* and *Polyommatus amanda* were also taken. On the 17th we motored down to Spondinig and took the diligence to St. Maria in Münster, and the next day drove over the Ofen Pass to Zernetz and took train to Samaden. Much of the ground on the Ofen Pass looked promising, but practically nothing was seen during the whole day, and after a call at Pontresina we returned home to a "peck of troubles," but with the feeling that we had at least got something out of Austria.

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### Coleophora bicolorella, Stt., and C. politella, Scott.

By ALFRED SICH, F.E.S.

In a recent and very interesting article on the larval habits of *C. bicolorella*, Stt. (*Ent. Rec.*, vol. xxvi., p. 193), Mr. Turner shows that he took it for granted that the alder-feeding *bicolorella* and the hazel-feeding insect, named *politella* by Scott, are one and the same species. I had my doubts on this point and Mr. Turner's note induced me to attempt to clear the matter up. The following notes will, I think, show that Mr. Turner's view of the matter is correct. On August 6th, 1869, John Scott read a paper (*Trans. Ent. Soc. London*, vol. v., 1858-1861, p. 410), before the Entomological Society of London in which he described five new species of the genus *Coleophora*. Among these is his *politella*. After giving a very good description of the imago, he adds: "This insect is allied to and very much resembles *fuscedinella*, but the wings are much narrower than in that species, and are besides falcate at the tips." "The larva lives in a singularly stumpy case reminding one of a miniature *riminetella*, but it is rather stouter and only about one half its length." The larvæ were found on nut trees. On August 11th, 1860, Stainton published in the *Ent. Weekly Intelligence* (vol. viii., p. 149) a note on a new species of *Coleophora* which he named *bicolorella*. He does not give a set description of the imago but states that it strongly resembles *fuscedinella* but has longer wings; of the larval case, he says: "It is something in the style of the case of

*riminetella* and distinctly of two colours, but it is much stumper and stouter than any *riminetella* case I ever met with." It is here stated that the larvæ were found on elm, but subsequently in the same volume (p. 157) it is pointed out that a mistake had been made by Mr. Sayer and that alder was the foodplant. In the *Ent. Annual* for 1861, Stainton again mentions *bicolorella*, saying (p. 90) that Scott had proposed the name *politella* for a nut-feeding *Coleophora* and adds: "Further investigations are necessary to establish the identity or the distinctness of *politella* and *bicolorella*."

In July, 1901, I bred some moths from alder, from East Hoathly, and labelled them *bicolorella*. In 1907 I found similar cases on nut in Chiswick, the moths bred were different in appearance and I labelled them ? *politella*. These were smaller and darker, very much like the Chiswick specimens of *fuscinedinella*, while the others were larger and of an ochreous tint. However, in 1912, a larva, found on hazel at Darenth Wood, produced an ochreous specimen exactly like the above-mentioned moths bred from alder. On comparing the ochreous specimens with Scott's description of *politella*, it was found that they agreed in every particular, except that the apex of the forewings did not appear to be any more falcate than that of *fuscinedinella*. It seemed certain that my specimens labelled *bicolorella* = Scott's *politella*; what then was Stainton's *bicolorella*? To test this point it appeared only necessary to consult the Stainton collection and see the specimens he had labelled *bicolorella*. Unfortunately, no such specimens could be found in the collection. There is a series of ochreous specimens which agree with Scott's description of his *politella*, but they bear no name. In the absence of any type one must rely on description. There is nothing in Stainton's meagre description of the imago to separate it from Scott's insect. His description of the larval case is almost in the same words as that of Scott. The difference in the foodplants need not be considered, as both belong to the same order. In the light of our present knowledge it therefore appears that Scott's and Stainton's insects are one and the same species.

Mr. Turner kindly lent me the specimens he had bred, for comparison with my own, and after careful examination, there appears to be little doubt that my fuscous nut-fed specimens are the same species as the ochreous moths bred from alder. One of the former distinctly shows the ochreous tint, and in Mr. Turner's series there are intermediate specimens. The species varies both in size and in coloration.

With regard to priority, the case appears to be as follows: in the year 1860, Stainton and his friends were especially interested in the genus *Coleophora*. Volume v. of the *Nat. Hist. Tin.*, the second volume dealing with the genus, was published in that year. On August 4th Mr. Sayer brought a series of moths and some larval cases to Stainton, who recognised in them a new species. Two days later, August 6th, Scott read his paper, as mentioned above. Five days afterwards, August 11th, 1860, Stainton published the instalment of the *Intelligencer*, in which he describes the insect brought to him by Sayers and names it *bicolorella* on account of its party-coloured larval case. As Scott's paper was not published till after January, 1861, Stainton's name for this species has priority. *Bicolorella* is, of course, abundantly distinct from *C. fuscinedinella*. We now know that it differs from the last, not only in its larval case, but also in the ovum, larva, and imago.

## Notes on a holiday in South-Eastern France.

By J. A. SIMES, F.E.S.

In July, 1912, my wife and I made a short tour in Dauphiny and the Basses Alpes. Our route was a well-known one to British students of the European butterflies—out to Grenoble and Bourg d'Oisans and then via La Grave, the Lauteret and Briançon to Mont Dauphin, Guillestre and Abriès, whence we proceeded to Digne via Embrun and Veynes. I do not propose to write a lengthy account of all the species met with—the route is too well known to warrant that; but I made a few observations which even at this late date I think it may be as well to put on record.

I have no notes of anything out of the common until we entered the Valley of the Guil. In the lower part of the valley—*i.e.*, below Guillestre—little was to be seen except a French Army Corps on manoeuvres; but after that insects of the commoner kinds became abundant, especially at and about the blossoms of lavender. Close by the Maison du Roi we took a large ♀ of *Limnitis populi*—an insect I was far from expecting to meet with at such a place near the middle of July. For the next few miles the dominant species was *Aporia crataegi*, which in all my experience I have never seen in such prodigious numbers. Round every little puddle on the road there were assemblages of 40 to 60 examples; along the whole course of a little runnel by the roadside there were legions—so many, in fact, that in places a newcomer had difficulty in alighting; but nevertheless the air was full of the flying insects, the vast majority of which were flying downhill. The numbers thinned out rapidly above Château Queyras, and I do not think I encountered a dozen examples during a stay of ten days at Abriès. Between the Maison du Roi and the Chateau I found *Polyommatus meleager* (males) in some numbers, and an example of *Hirsutina admetus* var. *ripartii* a short distance below Queyras was a surprise. *Erynnis laraterae* was numerous right up to Abriès. (I had previously taken a couple near the summit of the Lauteret on the La Grave side). *Polyommatus eros* was abundant throughout the valley, but there were very few females. At Abriès itself insects were not in vast numbers, nor was there much in the way of quality to make up for the shortage. On the Collette de Gily I found *Erebia gorge* in some force, and with it *E. glacialis*. It was on July 15th on this mountain that I saw two females of *E. glacialis* deposit each an ovum on a loose stone on the scree slope as briefly recorded on p. 312, vol. xxiv. The operation in each case was carried out in such a business-like fashion that I feel confident that what I saw was a regular method of oviposition of this species. I hope, however, that further observations will be made to confirm or disprove this in the near future. It should not be a difficult matter to follow up, as *E. glacialis* is at all times a species which is much more easily observed than caught. I am wondering now whether *E. gorge* may not also oviposit in a similar manner.

Three days later I witnessed the earlier stages of the courtship of a pair of *Aglais urticae*, the incidents of which closely followed those recorded by Dr. Chapman on p. 208 *et seq.* in vol. xxiii. We came upon the insects about 3.30 p.m. on a sunny bank by the side of a mountain path about 500 feet above Abriès. The behaviour of this

pair, so long as we were able to observe it, differed in certain respects from that of the pair observed by Dr. Chapman. My notes made at the time indicate that when I wrote them I was of opinion that the male was courted by the female. At any rate the pursuer was a larger and paler insect than the pursued, and so far as I could judge its abdomen strongly pointed to its being the female. I do not lay claim to infallibility on this point—I merely state my impressions at the time. This larger and paler insect took up a position in regard to its partner similar to that assigned to the male in Dr. Chapman's pair; but its antennæ, diverging at an angle of  $45^{\circ}$ , fell over the outspread hindwings of the butterfly in front, and by a series of nervous spasms, continuing as if by clockwork, struck the hindwings perfectly audible blows with great regularity. I counted these blows by my watch for several minutes and found them to average about seventeen to the minute. We watched this pair for 25 minutes, during which period it rose in the air three times and took up a fresh basking position; finally, however, it disappeared over a hedge and I was unable to follow it.

I was much struck with the scarcity at Abriès of *Leptosia sinapis*: in a ten days' stay I do not think I saw a score. Of *Albulina pheretes* I came across only one example on the Crête de la Reyebasse, but *Latorina orbitulus* was numerous at its proper elevation on most of the mountains. In the main valley above Abriès I found *Coenonympha iphis* in plenty on July 19th, and on the same date I took some 30 larvæ of *Callophrys rubi* on *Hippophaë*. They proved to be terrible cannibals, being especially fond of soft pupæ. The bushes of *Hippophaë* were swarming, especially on their lower branches, with larvæ of *Saturnia paronia* (*carpini*).

The journey from Mont Dauphin to Digne, with its lengthy breaks at Gap, Veynes and St. Auban, was wearisome and tedious in the extreme. After an unpalatable meal at Veynes station we sallied forth into the countryside for an hour and managed to take our first example of *Satyrus circe*. At Digne our experience was much like that of other entomologists and there is little of interest to be recorded. Our principal hunting ground was the famous gorge on the left bank of the Eaux Chaudes, above the Baths, and here we took most of the usual butterflies. *Zephyrus quercus* was frequent in the early morning on the path over which ran a stream of water. *Coenonympha dorus* frequented the blossoms of *Melissa* and other Labiates in great numbers; *Satyrus cordula* was very nearly over, even the females being in tatters but *S. actaea* was just coming out and in grand condition. *S. circe*, *S. briseis*, *S. hermione*, and *Hipparchia semele* were fairly numerous; of *S. julia* we took about a score from the heads of *Eryngium*, of which the species is excessively fond, but *Hipparchia arethusa* was only just emerging at the time of our departure on July 30th. I took a large female *Apatura ilia* var. *clytie* from a tree in front of the Baths on July 25th, and, thanks to a note by Mr. Sheldon, which appeared shortly before I left home, I managed to get a short series of the summer form of *Leptosia daponcheli* (July 23rd-July 28th). At that time *L. sinapis* was very worn. One or two fairly good examples of *Papilio alexanor* were to be met with and the larvæ of all sizes could be found in some numbers. I have read somewhere that one never finds more than one larva on a plant

and that once the collector has found a larva he may just as well move off to a distance before searching again. This is quite incorrect. I have repeatedly found two or three larvæ on a plant—though I admit I cannot conceive how they could have found enough food upon it; and on one occasion, on some plants growing together in a mass at the foot of a gully running down the mountain-side to the road, I found no fewer than thirteen larvæ all together. This by no means surprised me for I had noted how fond *P. alexanor* was of descending the mountain-side by means of these gullies or “chimneys,” and what could be more natural than that each female who chanced to make the descent should, after sipping the honey from the scabious blossoms, proceed to deposit on one of the adjoining stems of *Seseli montanum* one of its pearly ova? It is doubtless well known that in confinement the larva of *P. alexanor* thrives on carrot leaves.

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## SCIENTIFIC NOTES AND OBSERVATIONS.

DATE OF APPEARANCE OF MELANARGIA ARGE.—Since the appearance of my “Notes on the Lepidoptera of Brindisi,” in vol. xxii., p. 231, *et seq.*, it has been suggested to me by friends on two or three occasions that the date on which I found *Melanargia arge* so abundant in 1910 (May 9th) must have been abnormally early. I therefore gladly availed myself of an opportunity which presented itself in May last to test my earlier experiences. My first day at Brindisi this year was May 11th; the weather was overcast, and little was on the wing, but I discovered a few examples of *M. arge* of both sexes at rest. The following two days were bright and sunny, and I was able to observe *M. arge* as much as I wished. The result was to show that the species was fully out, the males in many cases being distinctly past their best, while the females were abundant and in perfect condition. I failed to find any of the ab. *caeca* among them.

The ground described in my earlier notes as the home of *M. arge* has, I regret to find, decreased in area since my last visit. A large factory has been erected on the part of it which lies nearest to the town, and another large area has been reclaimed and converted into vineyards. The process of reclamation is still going on apace, and I feel apprehensive of the disappearance of the Brindisi headquarters of this beautiful *Melanargia*. To make matters worse, Brindisi is now an important naval port, and a wireless station lies at the edge of the coast waste that *M. arge* has made its own. The erection of the wireless station will, I fear, be followed by the exclusion of foreigners from the land lying round the mouth of the harbour.—J. A. SIMES (F.E.S.).

A GYNANDROMORPHOUS SPECIMEN OF EPINEPHELE LYCAON.—Mr. Cockayne's excellent article on the gynandromorphism of a number of *Agricides coridon* encourages me to put on paper an interesting case I examined a few days ago, a curious gynandromorphous specimen of *Epinephele lycaon* taken by me at Montiers some years ago. This butterfly is fully provided with every characteristic of the male *lycaon*, and I should not, perhaps, have noticed its swollen abdomen had I not taken a gynandromorphous *Lycaena* a few hours before, so naturally enough was inclined to see everything *couleur de rose* and gynandromorphs everywhere.



It is not very easy to examine the non-chitinous portions of a ♀ abdomen when this happens to be five years old, so, while I can guarantee the existence of all that I saw, I cannot be sure that other organs which I did not see were not present. To begin with the abdomen itself, the segments are curiously mixed, several appear to be continuous so that I am unable to count the full number found in a female abdomen. Inside the abdomen is a long diaphragm which separated the male and female organs. The ovaries were normal in size and symmetrical, ova were present in oviduct, the receptaculum seminis was clearly visible, but I could find no ductus seminalis, glands nor other female organs. The male genitalia are complete but crippled; uncus shorter and thicker, processes of uncus normal; harpes extremely asymmetrical, one twice—at the extremity three times—as broad as the other, both greatly crippled and in the same way, *i.e.*, terminating in a heavy club preceded by a narrow neck instead of the usual unbroken line of the spindle-shaped harpe; ædeagus regular but rather heavy; vesica and anus normal; seminal duct normal, but I was unable to trace it so far as the testes, which latter I was unable to discover.

This is a curious case of genetic hermaphroditism. The germ-plasm of both sexes is present, the primary sexual characters of both seem to be fairly equally proportioned, but the secondary sexual characters of the male have completely swamped—as Dr. Cockayne says—those of the female.—P. A. H. MUSCHAMP (F.E.S.), Stäfa, Lake Geneva. October 25th, 1914.

COPULATION OF *P. ATALANTA* IN OCTOBER.—Early in September I captured ten *Pyrameis atalanta* (some of both sexes) and placed them in cage for laying. This they refused to do. On October 7th I started my hot house to force out some *Manduca atropos* pupæ, and brought the cage with *P. atalanta* into this house and placed it over the hot water pipes. The heat in this house varies from 60° to 80°, seldom the latter. The imagines were kept well fed, and on passing the cage on October 12th I noticed a pair *in cop.* This was at 2:15 p.m. and they parted at 4:30, the temperature at 2:15 in the house was 75°, and I noticed it was not sunny. I shall try to carry these specimens through the winter in the warm as I have done before. I thought this worth recording as I believe little is known of the pairing of the species. Since writing the above the female laid freely for two days, when I took the nettle away to stop her depositing more. She seemed very unhappy for a few days without food to lay on, but has now (October 22nd) settled down. I am in hopes of keeping her alive till the spring.—L. W. NEWMAN. Bexley, Kent.

LEPIDOPTERA PAIRING MORE THAN ONCE.—As the question has sometimes been asked whether moths pair more than once, the following notes may be of interest.

On April 26th, 1914, two specimens of *Drepana falcataria* were seen paired in a cage at 11 a.m. They remained paired for several hours but at 11 a.m. next morning they had separated and the male was placed with another female. Within two hours he had paired with the 2nd female and was still paired at 7.30 p.m. On the 28th, at 1.40 a.m. he was free and lively, and though opportunity was given he did not pair again. I regret that I did not ascertain whether the ova laid by these females were fertile, nor even whether the 2nd female laid ova.

On June 4th, 1914, I placed a male and female *Tortrix rividana* in a box. At 7.30 p.m. they were paired but at 11 p.m. they had separated. June 5th at 6 p.m. they were paired again and were still together at 1.15 a.m. on the 6th. They separated later and were seen paired for the 3rd time at 7.30 p.m. and were still in the same position at 1.45 on the 7th. They were sitting apart later. This female did not lay any ova. The moths were only given water.—ALFRED SICH, (F.E.S.), Corney House, Chiswick.

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## NOTES ON COLLECTING, Etc.

ARGYNNIS AGLAIA NEAR LONDON.—I had thought that the larger *Argynnidæ* had long since retired beyond the twelve mile radius from London; it was, therefore, a great surprise and pleasure to me to find this species last August, at a spot well within the above named radius, and in this district. The locality is a small one of five or six acres in extent, that has been allowed to revert to primitive conditions during the past twenty years, and here the butterfly was quite abundant. I am, of course, aware that it is still to be found in various places on the southern slopes of the North Downs, some eight or ten miles further from London than the spot I have indicated.—W. E. SHELDON (F.E.S.), Youlgreave, South Croydon.

COLIAS EDUSA. — I have seen two examples of this species in England during the course of the present year; the first specimen, a female, in Dorsetshire, on August 2nd; the other whilst playing golf on the Purley Downs links, which are situated within a mile of this house, on October 3rd. It settled quite close to where I was standing, and I was able to see that it was a perfectly fresh male, presumably, from the date, and its condition, an example of a third brood.—IBID.

SIREX GIGAS AT CHICHESTER.—A female *Sirex gigas* was taken here on July 30th of this year. During a period of twenty years, or more, I have only known of the occurrence of three specimens of *Sirex noctilio* (*jurencus*), two of which are in my cabinet. It is a little singular that these, as well as the *Sirex gigas* now recorded, were found in the west part of the city.—JOSEPH ANDERSON, Alre Villa, Chichester.

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## CURRENT NOTES AND SHORT NOTICES.

Coleopterists will be interested to hear that Mr. Donisthorpe has received a post card from Captain J. St. Claire Deville, it reads:—

“ Mon cher Ami,—

“ Je suis encore bien vivant et en excellent santé, mon régime a encore peu travaillé. Vive Tommy Atkins qui est bien populaire chez nous et dont le coup d'épaulé a été décisif!

“ Votre dévoué,

“ J. ST. CLAIRE DEVILLE.”

The post card arrived on the 19th, but naturally no address nor date is given. Round the stamp is printed “Franchise Militaire,” and on the back, “Carte-Réponse expédiée de la Zone des Armées,” and an official note, “Cette carte-réponse sera transmise immédiatement à la famille à la condition expresse de ne mentionner ni origine, ni localité, ni mouvement passé ou futur de troupes, mais seulement

des nouvelles personelles du signatoire ou d'autres militaires du même corps. (Ministère de la Guerre).”—H.St.J.K.D.

Mr. Noel S. Sennett, F.E.S., has enlisted in the Sportsman's Battalion attached to the Royal Fusiliers, and leaves for camp, at Hornchurch, near Romford, on 24th.—H.St.J.K.D.

M. Oberthür, the well-known French entomologist, has three sons serving in the French army. The eldest, M. Charles Oberthür, had taken part in all the battles on the left, and was, when I last heard from his father, still well and unwounded. He had caught on the battlefield of the Marne, while the Germans were in full retreat, an excellent specimen of *Vanessa io*, which he had managed to get conveyed home for his father's collection—not the least valued specimen the famous collection contains we may be sure.—G.W.

Now that Mr. F. A. Pierce has completed his work on the British *Geometridae*, he is going on at once with a similar work on the Tortrices. In this he is being ably aided by the Rev. J. W. Metcalfe of Exeter, who has taken up the work enthusiastically, and had some time ago made drawings of some two hundred of the microscopical preparations sent him. Mr. Pierce would be only too pleased to have authentically named specimens sent him. Many collectors have greasy, sprung and damaged insects, which would be of the greatest value for this purpose. Female examples are generally much scarcer than the males, and are therefore always of use.

The Annual Exhibition of Varieties and Notable Captures of the year held by the South London Entomological and Natural History Society will this year take place on November 26th, in the Society's rooms, at Hibernia Chambers, London Bridge, at 7.30 o'clock. Visitors are cordially invited to take part in the meeting. It is requested that all those exhibiting will hand full notes of their remarks to Mr. Hy. J. Turner, the Hon. Report Secretary, before leaving the meeting. Among other exhibits, Mr. Sheldon will show the butterflies which he collected this year in the Crimea and at Sarepta in South-East Russia; Mr. D. H. Pearson will exhibit his captures recently taken in Pontresina, Engadine and at Trafoi, Tyrol; Mr. W. C. Crawley will probably have one or more of his ant colonies at the meeting; Mr. L. W. Newman will have a large exhibit of aberrations bred by himself. Several members will show photographs of items in the life-history of various species.

The son of Mr. H. Donisthorpe has had leave of absence from his college—the City and Guilds of London Engineering College, University of London—during the war, to serve on the engineering staff of the Marconi Wireless Company. Mr. Donisthorpe's brother, formerly a captain in the 1st V.B. Royal Fusiliers, has been selected as one of the two officers from the county of Bucks National Reserves to serve in the Bucks and Oxford Light Infantry under Colonel Tighe.

The London Natural History Society, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Mr. L. B. Prout is contributing an account of the *Geometridae* of Formosa to the *Ent. Mitt.*, mainly based upon the collections made in

recent years by Dr. Moltrecht and Mr. A. E. Wileman, and containing descriptions of 23 species which are new to science. He states that nearly all the species are essentially Indo-Australian in their character, and that the connection of the Formosan with the distinctively Palæartic fauna is so slight as to be almost negligible.

The Smithsonian Institute, Washington, has just issued a *Monograph of the Jumping Plant-lice or Psyllidae of the New World*, by David L. Crawford, comprised in 182 pages, with 30 plates containing some 500 diagrams of wings, heads, genitalia, thoraces, etc. In the introductory matter considerable explanation of the morphology of head, thorax, appendages and abdomen is given, as well as remarks on the relation of the *Psyllidae* to other Homoptera, their peculiar locomotion, and on the immature stages.

The Canadian authorities have now decided to found a National Collection of Insects, and with a view to this object Dr. C. Gordon Hewitt has been appointed Honorary Curator of Entomology in the Canadian Museum, Ottawa, and several collections have already been acquired as a nucleus. They will be stored in cabinets like those in the United States National Museum, and will be housed in a fire-proof building. Especially is it desired that rare and local species may be donated, and that types of Canadian species shall be deposited in the collection.

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## (3) B I T U A R Y .

### Dr. J. H. Wood, M.D.

It is with deep regret we announce the death of a well-known and highly esteemed entomologist, *viz.*, Dr. John H. Wood, of Tarrington.

For several months past his strength had been failing, as the result of an attack of influenza in February last, and despite all the tender care of his family at Ledbury, he passed peacefully away at his old home there.

He was in his 74th year, and son of the late Dr. M. A. Wood, of Ledbury. There were four brothers of whom Dr. Wood was the eldest. The second brother is Dr. Miles A. Wood, F.R.C.S., of Ledbury, the third Major-General Sir Elliott Wood, who was Chief Royal Engineer with Earl Roberts all through the Boer War, and the fourth Colonel C. K. Wood, who was Chief Royal Engineer with General Buller from beginning to end of the war, including the relief of Ladysmith. It was sometimes said that "two of them were to cure and two to kill." Dr. Wood received his medical education at King's College, London, and in 1864 took the degree of M.B. at the London University, and soon afterwards went to reside at Tarrington, where for nearly fifty years he practised his profession with great success. He enjoyed the full confidence of his patients, and his tender, kindly and cheerful manner made him greatly beloved by all who knew him. His generous treatment of the poor is affectionately remembered by his old patients. He was an earnest Churchman of evangelical leaning, and a most genial and charming companion, for whatever subject was started he was generally able to throw light upon it from his great store of knowledge. In politics he was a staunch Conservative. He was

a great book-lover, taking pleasure chiefly in scientific and standard works; while, at the same time, he was an ardent lover of nature in its various phases, pursuing his hobbies of entomology and botany within the limits of his native county, Herefordshire. Possessed of untiring energy and activity, he was a bold and accomplished horseman, and his prowess in the hunting field will long be remembered—but entomology was his great study, chiefly the branches of the Diptera and Micro-lepidoptera. His researches among these tiny insects required the use of lenses of considerable power, and have been the means of adding largely to the discoveries in that branch of the science. Men in various parts of Europe, eminent in this study, were in frequent correspondence with him, when his slight knowledge of German and French was put to the test.

By his investigations in the county of Hereford large numbers of insects, previously unknown to science, have been discovered; and he leaves a most beautifully set up collection, which he has bequeathed to the Woolhope Naturalists' Club, to be preserved at the Hereford Museum.

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The following list of Dr. Wood's contributions to entomological science has been kindly supplied by his friend and co-worker for many years, Dr. T. A. Chapman.

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To the *Entomologist's Record*.

15. xi. 93.	An Explanatory Suggestion of the Plumose Antennæ in the Female Lepidopterous Pupa . . . . .	237
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To the *Woolhope Transactions*.

1876.	Herefordshire Clearwings.
1891.	<i>Nepticulae</i> of Herefordshire.
1904.	Herefordshire Diptera.

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### William Warren, M.A., F.E.S.

By the death of Mr. William Warren, on October 18th, after a short but painful illness, there has passed away from us one who, in various spheres of lepidopterological work, has been a prominent figure for nearly half a century. Although in the ordinary course of nature it could not have been expected that he would be spared for many years' further labour, seeing that he had reached the ripe age of 75, yet the end has come as something of a shock, for he was still actively "in harness" until the final seizure, and his last paper on "New species of *Drepanulidae*, *Noctuidae*, and *Geometridae* in the Tring Museum," has appeared posthumously (*Norit. Zool.*, xxi., pp. 401-25).

Mr. Warren first made a name for himself in entomological circles in his Cambridge days, and especially as a careful worker at the life-histories of the so-called Micro-lepidoptera. As long ago as 1878 we find him contributing to the *Ent. Mo. Mag.* notes on the early stages of *Ephippiphora nigricostana* and *Elachista stabilis*, and from that date to 1889 he was a regular contributor of similar notes to that journal, and occasionally to the *Entomologist*. Some species were also added to the British list through his labours, and Macro-lepidopterists will scarcely need to be reminded that he was the author of the interesting race *impar* of *Bryophila muralis* and one of the first to notice the larvæ of the rare *Eupithecia innotata* in England.

But it is as a voluminous describer of new exotic species, particularly in the *Geometridae* and *Pyralidae*, that his name will chiefly go down to posterity; most of all as the world's first specialist in *Geometridae*. We owe him a deep debt of gratitude for the prodigious amount of pioneer work which he did in these directions, and although he never evolved any consistent systems of classification, such as those which have made the reputation of Hampson and Meyrick, his keen eye for specific distinctions—in large measure the result, as he used to say, of his early devotion to the smallest Lepidoptera—stood him in good stead and enabled him to lay foundations upon which it is left to others to build. Prior to his work for the Tring Museum, which has engrossed his energies for more than 20 years and to the extent of which his numerous important papers in the *Noritates Zoologicae* bear witness, he was engaged in arranging the *Geometridae* and *Pyralidae* of the British Museum Collections and to him certainly belongs the credit of rescuing them from absolute chaos into some kind of order, however much remained still to be done. Some papers describing the new genera and species of the *Pyralidae* appeared in the *Annals and Magazine of Natural History*, series 6, vols. vii. to ix. (1891-92), but no corresponding articles were published on the *Geometridae* and numerous MS. names in the Museum Collection have remained to cause occasional perplexity.

To a knowledge of the Indian Geometrid fauna Mr. Warren contributed two large papers prior to the Tring work (*Proc. Zool. Soc. Lond.*, 1888, pp. 292-339, 1893, pp. 341-434). On the *Geometridae* of New Guinea—almost unknown until a few years ago—it is scarcely too much to describe him as the sole writer up to the present; particularly important are his three voluminous papers on those of the Upper Aroa, Angabunga and Biagi Rivers (*Norit. Zool.*, x., pp. 343-414; xiii., pp. 61-161; xiv., pp. 97-186). Of the apparently endlessly rich fauna of tropical South America he has worked out a prodigious number of new forms, either alone (for the Tring Museum) or in collaboration with Messrs. Schaus and Dognin; most of the genera of this fauna are of his own creating. Similar remarks might be made regarding the Geometrids of the Æthiopian Region, except that here our knowledge still remains somewhat more fragmentary.

For the last five or six years Mr. Warren's principal work has been at the *Noctuidae*, in connection with Seitz's great undertaking *The Macrolepidoptera of the World*. Excepting a few pages at the beginning, the whole of volume 3 (pp. 9-511), dealing with the Palearctic Noctuids, is from his pen, and he was hard at work on the Indo-Australian at the time of his death. He also contributed to volume 2 of the same work the short section dealing with the Palearctic *Cymatophoridae*.

The more general biological problems seem to have possessed little attraction for him, or perhaps he had no time for them or thought them inconsistent with his other labours. On the rare occasions, for instance, when he mentions the word "mimic," it is nearly always in a non-technical sense, as when we are told that a South American Moth closely "mimics" an African genus. Descriptive work, pure and simple, was his *forte*, and this is in general so concise, and withal so adequate, that the recognition of his species, in spite of an occasional paucity of structural clues, is as a rule a matter of no great

difficulty. There is still room in the world for many Warrens before the spade-work of descriptive lepidopterology will be complete.—L.B.P.

## REVIEWS AND NOTICES OF BOOKS.

*The Annual Report and Proceedings of the Lancashire and Cheshire Entomological Society, 1914*, with three plates.—This Society still continues to keep up an active interest in entomology among its 95 members although its meetings are only held during the six winter months. There has been a special feature at each meeting of the session. Mr. H. Donisthorpe communicated a paper entitled, "Some Associations between Ants of different Species"; Mr. Wm. Mansbridge opened a discussion "On the Increase on Melanism during recent years"; Prof. Robt. Newstead gave a lecture "The Bionomics and Morphology of some Bloodsucking Flies"; Mr. R. Wilding read "Notes on some rare and local Coleoptera"; Dr. P. F. Finne read a paper, "Insects concerned in the Pollination of Plants"; and Mr. F. N. Pierce read his Presidential Address, his subject being "The Hairs and Scales of Lepidoptera." This last is printed and illustrated with a plate. The subject is really a bye-product of Mr. Pierce's work in the investigation of the genitalia of the British Lepidoptera, and is a most interesting chapter in natural history. In another paper printed in the "Proceedings" Mr. W. Mansbridge deals with the variation which occurs in *Tortrix costana*, and introduces two new forms, one an extreme melanic form taken and bred sparingly in Lancashire he names ab. *liverana*, and the other an intermediate form between ab. *liverana* and the type, which he names ab. *intermedia*. Mr. Mansbridge is compiling and bringing up to date, a new edition of Dr. Ellis' List, "The Lepidopterous Fauna of Lancashire and Cheshire," the first portion of which, comprising the Rhopalocera, is included in the present Report. We do not wish to criticise too strongly, but if a List is to be brought up to date as regards its facts, why not have its nomenclature also revised in accordance with more modern views and not perpetuate the unauthorised alterations, misspellings and so-called "corrections" of the latter part of the Mid-Victorian period of Entomology, e.g., *Euchloe* should be *Euchloë*, *Leucophasia* is now *Leptosia*, the old omnibus *Argynnis* even in Hubner's time a hundred years ago did not include *paphia*, nor did *Vanessa* include such incongruous species as *c-album* and *antiopa*. *Galatea* was originally *galathea*, *egeria* was *aegeria*, *hyperanthes* was *hyperantus*, *typhon* was *tiphon*, *phloeas* should be *phlaeas*, *Lycoena* should be *Lycaena*, a genus which, with its type *arion*, certainly cannot contain *argus* (*aegon*); this omnibus genus has been divided for many years past. *Egon* might have the synonym *argus* which is now widely considered to be the proper name, and *thauwas* should be *stara*. The new facts in the List and the comments on the old records will be of the utmost use to all future students, and the more of this kind of work which we get, the more light is thrown upon the complicated problem of the distribution of the species.—H.J.T.

CORRECTIONS.—Report of London Natural History Society, page 212. I did not call these asymmetrical females of *Agriades coridon* ab. *inaequalis*, and I am not at all satisfied with them under this heading.—C. P. PICKETT (F.E.S.), 28, Colworth Road, Leytonstone.



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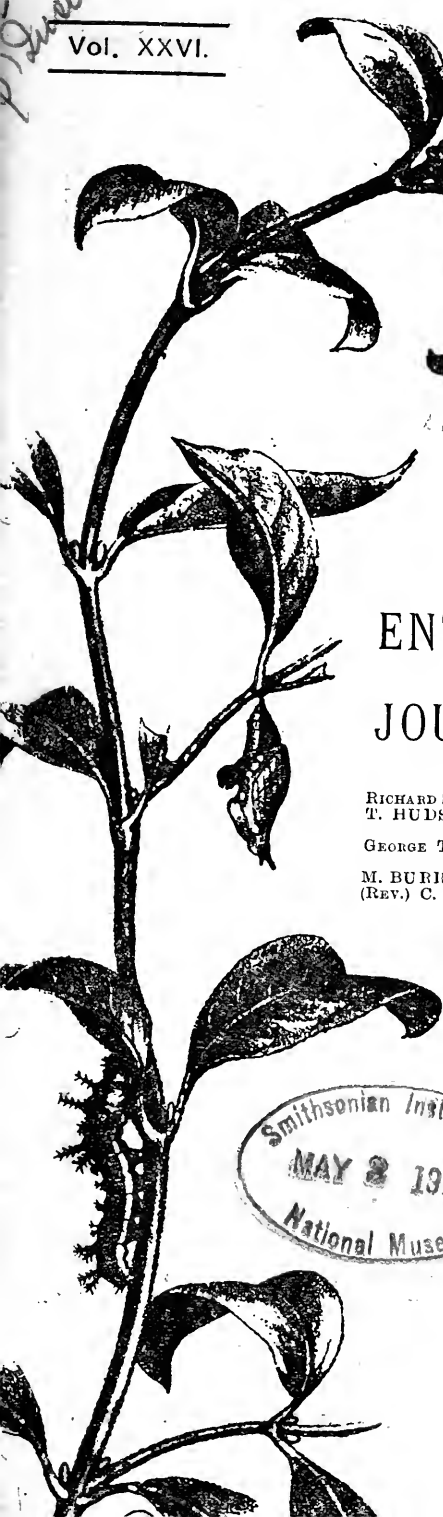
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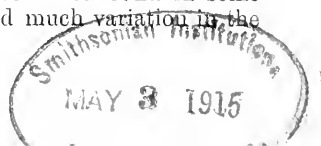
By H<sup>r</sup>. J. TURNER, F.E.S.

The South London Society has for many years past been one of the most virile associations of entomologists in the country. It holds its meetings twice per month and very rarely does it happen that the attendance is less than the average of over 30 members per meeting. One of the most attractive meetings of the autumn for many years has been that held on the fourth Thursday in November, when members and friends unite to bring together all that is new and interesting in their captures and studies. The present meeting was no exception to previous ones, as those who were present warmly testify. There were more than a hundred members and friends and some forty had brought exhibits. With such a wealth of treasures it is almost invidious to select for special attention, but possibly the appended very full report will give sufficient for our readers to select aught they particularly take interest in.

At the same time we would like to remind our readers that this Society possesses very complete collections for reference. The only collection of European butterflies in London, which is accessible for reference, is in its possession. Not even in South Kensington Museum are the European Rhopalocera kept separate and so readily consultable. Recently the British Lepidoptera series have been amplified by the Dawson donations, Macro- and Micro-Lepidoptera, and are practically complete. There is a capital collection of Coleoptera which Mr. West, the Hon. Curator for so many years past, has made every endeavour to complete and perfect. The Collections of Hemiptera (Heteroptera and Homoptera), as well as of Odonata and Neuroptera, are becoming more and more complete each year, while there are small collections of British Bees, British Diptera, and Canadian Lepidoptera. The Society has a large and practically complete Herbarium in the bequest of the late Mr. Tugwell, and more recently a valuable collection of Mosses has been obtained through the kindness of the present occupant of the chair, Mr. B. H. Smith, B.A., F.E.S. Added to the above advantages which membership of this Society brings is the opportunity to consult the valuable and extensive reference library which is constantly being increased by the donation of books and magazines.

Mr. Robert Adkin exhibited long series of *Agriades thetis* (= *Lycaena bellargus*) chiefly from the Sussex South Downs and the Kent and Surrey North Downs. Among the males there were specimens, having a row of distinct black spots within the margin of the hindwings, examples of the so-called "green" form and others of the form that had been variously called "lilac," "lead-colour," "French grey" and "black," and which it had been asserted by one and another was a hybrid between *bellargus* and *coridon* and *bellargus* and *icarus*, but he was aware of no evidence to support these suggestions and he thought it far more likely that if the question were thoroughly worked out a solution, both in this and the "green" form would be found in some constitutional character. The females showed much variation in the

DECEMBER 15TH, 1914.



amount of blue scaling of fore- and hindwings and in the intensity of the marginal red lunules, they being in some specimens practically absent while in others they were so [strongly produced as to form almost uninterrupted broad red bands. There was also much variation in the spotting of the undersides in both sexes. In this species as in *A. coridon*, variation appeared to be greater in the specimens from the North Downs than in those from the South Downs.

Mr. W. J. Kaye exhibited a cabinet drawer containing series of the three known species of the genus *Acherontia*, viz., *atropos*, *styx*, and *lachesis* together with coloured maps showing the distribution of each, also preserved larvæ and pupa case of *atropos*. It was remarked that *lachesis* and *styx* occurred together sometimes. All three species in the larval stage were greatly attached to the *Solanaceæ*, although in the case of *atropos* a very great number of plants of different orders had been recorded as foodplants. Although *atropos* was occasionally taken in some numbers in Britain, it was essentially an African species. Dr. Jordan, in Seitz' *Macro-Lepidoptera* says that while the larvæ are often infested with Tachinids they seem to be avoided by European Ichneumonids. This remark is probably reprinted from Bartel, for Tutt, in vol. iv. of *British Lepidoptera*, p. 434, gives a number of species of *Ichneumonidae* including *Ichneumon grossorius*, *Amblyteles laminatorius*, *Amblyteles palliatorius*, *Amblyteles cerinthius* and *Trogus lutorius*, which have been bred in this country from *A. atropos*.

Mr. H. Worsley-Wood exhibited a long series of *Callimorpha quadripunctaria* (*hera*) bred this year and including many of the form *ab. lutescens*, and also several intermediate forms.

The Rev. G. Wheeler exhibited:—

(a) A series of *Plebeius argyrognomon* var. *armoricanus* from N. Brittany taken early in June, 1914; remarkable for the dark ground colour and pronounced orange bands of the underside, one of the ♂s showed obsolescent spotting, and all three ♀s had the spots either elongated or to some extent confluent.

(b) A series of *Hesperia alveolus* *ab. taras* from the Rhone Valley.

(c) A corresponding aberration of *H. malvoides* from the Laquinthal.

(d) A gynandromorph of *P. argyrognomon*, right side ♀, left ♂, from the Val Maggia, July, 1914: the body also halved, the ♂ portion protruding beyond the ♀.

(e) A specimen of *Polyommatus icarus* with only the discoidals on the forewing and the discoidals and faint marginal spots on the hindwing, taken at Altmatt, July, 1914.

(f) A ♂ *Pararge maera* with the costa of the forewings strongly concave and quite symmetrical, taken on the Via Mala, July, 1914.

Mr. R. M. Prideaux exhibited:—

*Melitæa aurelia* and } both from Wiesbaden, 1888, melanistic  
*M. athalia* } specimens.

*M. didyma*, from Switzerland, 1905, spotting obsolescent.

*Trichiura crataegi*, gynandromorphous specimen, bred, New Forest, 1895.

*Strenia clathrata*, albinistic specimen, Switzerland, 1907.

Two *Melanargia galathea*, melanistic specimens, Rhone Valley, 1905.

*Agriades coridon*, ♀, pale discoidal, and silver-tipped peacock-eyes on hindwings, upperside, Oxted, Surrey, 1914.

*Xanthorhœ sociata*, banded specimen, Isle of Wight, 1895.

Mr. G. Talbot exhibited on behalf of Mr. J. J. Joicey, two drawers containing rare Exotic Lepidoptera:—

*Ornithoptera alexandrae*, Roths., a pair, and also a pupa case. *O. rothschildi*, Kenr., a male. *Papilio weiskei*, Roths., a male from New Guinea, and its ally *P. macleanianus*, Leach, from Queensland. A similar species has just been discovered on Ceram, and described by Mr. Rothschild as *P. stresemanni*. *P. weiskei* probably represents a later development of the older green form. *Agrias phalaeidon*, Hew., from the Amazon. *Agrias amydon*, Hew., from Colombia. *Callithea sapphira*, Hübn., a pair from the Amazon. *Perisama emineus*, Ob., a very rare species of this genus from Peru.

HEPIALIDÆ from Australia.—*Charagia ramsayi*, Scott, a pair, including a Tineid moth which feeds on the larva of *ramsayi*. *Charagia cyanochlora*, Low., a pair. *Charagia mirabilis*, Roths., a pair. *C. lewinii*, Wlk., a small species of the genus, a pair. *Xylotypia stacyi*, Scott, the largest Hepialid, a pair; the ♀ measures over 9 inches across the wings.

COSSIDÆ from Australia.—*Xylentes affinis*, Roths., a pair, also larva, pupa case and the lid which covers hole in tree from which the imago emerges. This lid is cut round by sharp processes found beneath the shoulder flaps of the insect, and when free it is pushed off upon emergence of insect. *Xylentes lituratus*, Donovan., a pair, showing great disparity in size of the sexes, also a pupa of ♂ and one of ♀.

Mr. A. E. Gibbs exhibited some new world *Papilionidæ* recently obtained by him and made the following remarks on them:—*P. ornythion*, Boisduval. Twelve months ago my friend Dr. Davis and I sent our collector to Guatemala. He spent most of his time in a coffee plantation on the Pacific slope, but on his way home he stopped at a place called Gualan on the Atlantic side about half-way between the capital and the coast. From Gualan he sent me a specimen of *P. ornythion* which is apparently a rare insect. There are two specimens in the Godman collection now at South Kensington, one from Mexico, and one from Guatemala and also a drawing of Boisduval's type specimen in the Bordeaux Museum. When Rothschild and Jordan published their *Revision of the American Papilios* in 1906, there were also two Mexican specimens at Tring. It approaches rather closely the central American form of *P. lycophron*, known as *pallas*, but it has several points of distinction, one of which is the very much narrower yellow median bands, and there is also an additional row of spots in the black band on the underside of the forewing which is well seen in my example. Below it is a specimen of *P. lycophron* var. *pallas* for comparison.

*P. montezuma*, Westw. This specimen was also taken at Gualan on the same journey.

*P. columbus*, H. Sch. (*gundlachianus*, Feld.). This is one of the most beautiful of the new world *Papilios*, the brilliant blue band on the forewing and the red distal area on the hindwing adding greatly to its attractions. It is confined to the island of Cuba, and, I believe, to the eastern end of it. Following the order of priority we must use Herrich-Schäffer's name of *columbus*, bestowed upon it in 1862, rather than Felder's more generally used name of *gundlachianus* (which he gave it two years' later, notwithstanding the fact that Kollar gave the

same name of *columbus* to another *Papilio* of a quite different group and which is still in use.

*P. sesostris* var. *zestos*, Gray. This is a fairly common species in the northern half of Central America and may be distinguished from more southern sub-species by the red patch on the inner margin of the hindwing.

*P. lycimenes*, two of which I show (♂ and ♀), is another *Papilio* which comes in numbers from Guatemala and other Central American countries.

*P. torquatus*, Cr., is a Brazilian insect.

*P. homerus*, F. This fine species is, I believe, found only in Jamaica and Santo Domingo and is probably the largest of the new world species. It was formerly regarded as a great rarity but is now to be found in most collections as its habits are better known and collectors have learned how to take it. It is a forest insect and a very high flyer, its headquarters being the Blue Mountains in Jamaica.

*P. glaucus*, L., is an interesting insect being dichromatic in the ♀ in the Southern part of its range, where it is double-brooded. I believe American collectors generally apply the name of *turnus* to the yellow form and *glaucus* to the blackish-brown ♀ form. The large "*turnus*" specimen is of the Southern summer form from Alabama and so is the "*glaucus*" ♀. The spring form is, I believe, smaller and more like the northern form which I show under the subspecific name of *canadensis*, R. and J., and which is found in British North America.

*P. marchandi*, Bdv. This rather uncommon species I have received both from British Honduras and Guatemala.

*P. salvini*, Bates. I was glad to receive this rare species from Punta-Gorda in British Honduras in March last.

*P. cacicus* var. *inca*, R. and J. This also is a rarity and comes from Peru.

*P. zagreus*, *P. bathus* var. *chrysomelas*, and *P. ascolius*, belong to a most interesting mimetic group of *Papilios* which resemble certain *Danaines* of the genus *Tithorea* and also have a certain mimetic resemblance to some *Heliconia* species.

The Rev. A. T. Stiff, M.A., exhibited:—

(1) A series of *Epinephele tithonus* from Tavistock, showing a considerable range of colour variation, and including one male with cream ground-colour, two females with golden-yellow ground-colour, two very dark males, one male with the usually fuscous border of a pale mouse-grey, and many showing extra spots.

(2) A series of *Ematurga atomaria* from the Isle of Man, the New Forest, Tavistock, Wye and Folkestone, and including fine yellow forms of the male, several yellowish females, two heavily bordered males, two heavily barred females, and one female with male colouration and marking.

Mr. W. J. Ashdown exhibited British and Swiss *Aphantopus hyperantus* including ab. *arete* and ab. *caeca* and several specimens with asymmetrical spotting on the undersides of the hindwings.

Mr. Hy. J. Turner exhibited a striking and almost perfect aberration of *Argynnis niobe*, captured on August 2nd of this year, at St. Moritz, Engadine. On the upper side the usual black markings are symmetrically run together and extended in area to form an irregular transverse black banding across all four wings, the submarginal orange



lunules barely and most indefinitely defined, the black veining, wherever it is at all apparent, widely emphasised, and the usually wide band of orange inside the lunules only marked by small unconnected remnants. On the underside the forewings with the black spots run together to form a very irregular transverse band, no remnants of black lunules on the hind margin, no trace of silver at the apex of wing; on the underside of the lower wing the basal spots are united radially into three large silver blotches, the middle transverse row of silver spots are completely suppressed, the silver lunules of the outer margin are more or less extended basally into streaks, and only a slight indication of black scaling to the outer edge of these silver spots.

Mr. L. W. Newman exhibited a large selection of specimens bred from Irish parents, including series of *Pieris napi*, with very dark and yellow flushed examples, *P. rapae*, *Polyommatus icarus* with brilliant blue females, *Dryas paphia*, *Melitaea aurinia*, *Hipparchia semele* with many very pale examples, etc.; four specimens of *Neuria reticulata* (*saponariae*) bred from Cork larvæ, in which the usual dull ochreous ground colour is replaced with a lovely pink suffusion; a series of bred *Dianthocia luteago* var. *barrettii*, bred from Cork and Devon larvæ and dug pupæ; a very beautiful varied series of *Pachyobia hyperborea* (*alpina*), bred from dug pupæ at Rannoch; series of *Agriades coridon* females from Herts, including the var. *semisyngropha*, intermediates and other extreme forms; a bred series of the yellow var. *rossica* of *Callimorpha dominula* from Kent; a series of bred *Styrmon pruni* from Huntingdon; wild collected cocoons with living pupæ of *Phaetra euphorbiae* (*myricae*) and *Dicranura bicuspis*, showing the wonderful protective resemblance in the environment; eight out of the ten specimens of *Gastropacha ilicifolia* bred from ova laid by the ♀ captured at Cannock Chase last year, with preserved larvæ of the species; bred series of *Agrotis ashworthii*, *A. agathina*, *A. lunigera*, *Ptychopoda* (*Acidalia*) *contingaria*, and *Boarmia repandata* from Wales; a bred series, 2nd brood, of *Eupithecia imotata* from Durham; series of *Cinophos myrtilata* (*obfuscaria*) and *Anarta cordigera* from Braemar and Rannoch respectively; a series of *Heliothis peltigera*, showing the different facies of the spring (June), probably immigrant, specimens and those bred and captured in autumn (September); and the two remarkable examples of *Anthrocera filipendulae* ab. *chrysanthemi*, bred at St. Anne's-on-Sea, in 1914, in which the red coloration is mostly obscured by dark brown or black suffusion.

Mr. A. H. Jones exhibited a ♂ aberration of *Melanargia galathea* taken at Folkestone, showing decrease of black marking on the upper-side, so that the central transverse white area was regular and continuous; a ♀ example of the same species from the Splügen Pass in which the markings on the underside of the hindwings had coalesced to form a complete band; an *Agriades coridon* taken at Deal by Mr. Charles Fenn, a ♀ of the very pale brown form known as ab. *pallida*; an ab. *pallida* of *Coenonympha pamphilus* from Otford; and three examples from Eltham showing the recent spread of melanism, *Amphidasis betularia* var. *doubledayaria*, *Thera variata*, a modified var. *obliterata*, and *Cularia immanata*, a dusky form.

Mr. W. Schmassmann exhibited very fine examples of the following species of *Ornithoptera*:—

*Ornithoptera lydius*, three ♂ forms; *O. croesus*, ♂; *O. bornemannii*,

three male forms; *O. poseidon* ab. *valentina*, ♂; *O. poseidon*, ♀ form *kirschi*; *O. poseidon* ♀ form *brunneus*; *O. paradisea*, ♂; and *O. paradisea*, a variety not showing the golden streak situated towards tail of hindwing and having in consequence green marginal area of hindwing much increased.

He also exhibited the following species of *Morpho*, *M. hecuba*, *M. justitiae*, *M. amphitrion*, *M. cacica*, *M. rutenor*, and *M. aureola*.

Mr. W. West (Hon. Curator of the Society) exhibited the fourteen drawers of the type reference collection of the Society which have been completely rearranged since the large additions made by the donation of Mr. W. G. Dawson, of Abbots Morton, Worcester.

Mr. C. P. Pickett exhibited four cabinet drawers of his wonderful collection of the forms of *Angerona prunaria*, the results of seventeen years of inbreeding and of four years of experiments in exposing the larvæ to various colour environments. The results obtained under the latter conditions are somewhat remarkable as the following summary shows:

Larvæ fed up under pink muslin:—There was a tendency to reduce the size of the bands and many specimens are paler.

Larvæ fed up under red muslin:—There was a tendency to greatly increase the size of the bands and many specimens are darker.

Larvæ fed up under yellow muslin:—There was a tendency to produce a deeper yellow ground.

Larvæ fed up under green muslin:—There was a tendency to kill the yellow and orange, the former colour becoming more whitish and the latter more orange yellow.

During the seventeen years of the experiments there have been 112 broods, from 15,955 ova, producing 13,476 larvæ and 10,095 imagines.

Mr. Pickett also exhibited very long series of *Agriades coridon* taken during the last four seasons in the Herts district, and showing much extreme variation. There were included lovely specimens of the ab. *semisyngropha*, ab. *inæqualis*, ab. *striata*, ab. *obsoleta* and the newly differentiated asymmetrical gynandromorphic females with one side smaller than the other, the smaller side always containing some amount of androconial scales. One extreme aberration was a remarkable albino ♂ whitish over the entire upper-surface without dark margin, and another extreme aberration a ♂ with the black margin extending uniformly and wide round the margins of the hindwings as well as of the forewings.

The Rev. F. D. Morice exhibited a collection of British *Chrysididae* and a collection of the more conspicuous species of Palearctic *Chrysididae* (non-British) and stated that this group of brilliantly coloured Hymenoptera were parasitical on the wood-burrowing bees and sand wasps. It was somewhat remarkable that the British and many Palearctic species were much more brilliantly coloured than their tropical relatives.

Mr. B. S. Curwen exhibited series of European Parnassiids *Doritis apollinus*, *Parnassius apollo*, *P. delius* and *P. mnemosyne* with several aberrations; series of *Lycaena arion*, *L. arcais*, *L. euphemus*, *L. alcon* and *L. iolas* with *Polyommatus amanda*: and several aberrations of *Apatura ilia* including ab. *iliades* taken near Laon in early July of 1914.

Mr. A. W. Mera exhibited a series showing the variation obtainable in *Psilura monacha*. The series included examples ranging from

typical forms to black specimens. They were bred from a typical ♀ crossed with a black ♂. The strain was originally from Ringwood and North Kent and has been interbred and selected for some years.

Mr. A. E. Tonge exhibited *Agriades thetis* from Folkestone including a ♀ with large yellow lunules on the hindwings and from Reigate a very small male measuring only 22mm.; specimens of *Polyommatus icarus* from Deal, Reigate, etc., including strong blue females, ab. *icarinus*, ab. *striata*, etc.; two salmon pink forms and a melanic form of *Bryophila perla* from Deal; and four different forms of *Bryophila muralis (glandifera)* from the same locality.

Mr. Harold B. Williams exhibited:—

*Euchloë cardamines*: a ♂ and ♀ with extra spot on underside of forewings.

*Coenonympha pamphilus* ab. *pallida*, Tutt., specimens from North Herts, 1914.

*Aricia medon*: specimens from Surrey, spring brood, including ab. *albimaculata*, Harr., and summer specimens for comparison.

*Rumicia phlaeas*: ab. *radiata*, Tutt, and ab. *obsoleta*, Tutt, from Wimbledon, and a var. with greater part of left forewing white, from North Herts, 1914.

*Polyommatus icarus*: specimens of spring brood from Surrey, showing the strong tendency to obsolescence in spotting of underside observed in this brood, also ab. *obsoleta*, Clark, ab. *subobsoleta*, Tutt, ab. *antico-striata*, Tutt, and other forms. 1914.

*Amorpha populi*: two gynandromorphs, bred August, 1914.

*Agriades coridon*: specimens from North Herts., 1914, including ab. *semisyngrapha*, ab. *obsoleta*, etc., and a fine "khaki" coloured aberration of the ♀, ab. *pallida*, with a few ab. *inaequalis*, Tutt, and other interesting female forms.

*Epinephele jurtina (janira)*: two bleached forms.

The Rev. J. E. Tarbat exhibited two unusually large females of a very dark form of *Agrotis puta* taken at Portsdown, and a very small 3rd brood ♀ of *Pieris rapae* measuring only 38mm. in expanse of wings.

Mr. G. Brooks exhibited an aberration of *Abraeus grossulariata* bred from a wild larva taken at Dunstall in 1910. The whole of the ground colour was a pale orange suffusion, and the usually bright orange band of the forewings was obsolete.

Mr. J. Platt Barrett exhibited the three European alpine species of *Parnassius* taken by him in the same neighbourhood in Switzerland, *P. apollo*, *P. delius* and *P. mnemosyne*, and remarked on the small amount of variation he had seen in this year's specimens.

Mr. F. H. Stallman exhibited a short series of *Xanthorhoe (Melanippe) fluctuata*, taken in a garden at Dulwich during 1914, varying from darksuffused to pale, and including two var. *costorata*. Also a richly coloured var. *costorata* taken at Dulwich in 1913.

*Rumicia phlaeas*: with the red band on hindwings only represented by slight red dashes on the nervures. Oxshott, May 17th, 1914.

*Noctua augur*: two forms bred from wild larvæ; one June, 1914, and the other June, 1913, the latter having a very "Agrotid" appearance.

*Triphaena comes*: a "washed-out" looking specimen bred from Wicken Fen larva 1913; and a specimen bred in 1913 from Wimbledon

larva without the black band on hindwings, but with the usual blackish suffusion at the base and apex of these wings present.

*Mellinia circellaris* (*ferruginea*): a rich red form and a pale slaty form; also a variety with ground colour light orange and all transverse lines a dull black; the nervures towards the outer margin are also marked with black giving the insect a streaky appearance. The black lower portion of the reniform is not so distinct as in the typical specimens. All Box Hill, 1914.

Mr. Stanley Edwards exhibited two boxes of butterflies of the genus *Papilio* from the Indian and Austro-Malayan Regions including *P. Hector*, *P. theseus*, *P. diphilus*, *P. antiphus*, *P. aristolochiae*, *P. polydaemon*, *P. polytes* and its allied forms, *P. nicanor*, *P. polydorus*, and *P. alphenor*.

Mr. B. S. Williams exhibited a typical ♂ and a totally melanic ♀ of *Biston hirtaria*, bred from a dug pupa, Finchley, 1914. Mr. Prout has identified the form as var. *fumaria*, Haw., of which only two other specimens are known, one taken in Silesia and the other is in the National Collection, the latter being brown instead of black.

Mr. W. G. Sheldon exhibited the lepidoptera taken by him during a two months' stay in Russia in the early summer of 1914, of which an account has been given in the *Entomologist*, p. 233 *et seq.* (1914).

I. Species that do not occur further west than Russia:

*Scolitantides pylaon*, *Glaucopsyche coelestina*, *Satyrus anthe*, and *Hesperia tessellum*.

II. Species that are only rare in districts further west than Eastern Russia:

*Colias erate*, *Polyommatus eroides*, *Neptis lucilla*, *Erebia afer*, *Hesperia cribrillum*, *Coenonympha leander*, and *Pararge clymene*.

III. Species that occur in Central Europe and which present different forms in Russia:—

*Anthocharis belia*, *Euchloë cardamines* var. *volgensis*, Sheld., *Zegris eupheme*, *Callophrys rubi* var. *schamyl*, Sheld., *Polyommatus amanda* var. *lydia*, *Melitaea aurinia* var. *sareptana*, *M. cinxia* var. *obscurior*, *M. phoebe* var. *aetheria*, *M. aurelia* var. *seminigra*, *M. didyma*, *M. trivia* var. *fascelis*, *Argynnis niobe* var. *kuhlmanni*, *Melanargia iapygia* var. *swarovius*, and *Satyrus hermione* var. *tetrica*.

Mr. D. H. Pearson exhibited aberrant examples of Rhopalocera taken by himself this year in Switzerland and the Tyrol including—

*Brenthis pales*: the small mountain form and the ab. *napaea* from Pontresina, showing considerable variation towards melanism, and some specimens with purple suffusion.

*Erebia medusa* var. *hippomedusa*: from below Alp Grum towards Poschiavo.

*Albulina pheretes*: very large examples from near Bormio.

*Brenthis thore*: from Alvanen Bad.

*Erebia lappona*: bleached specimen from Pontresina, and an aberration from Mont Cenis in which there is a continuous wide band of dark markings on the underside of the lower wings.

*Erebia ceto*: strongly marked form from Binn and var. *obscura*, with a specimen from Trafoi with well defined white centres to spots.

*Melitaea aurelia*: variegated form from Susa and another from Alvanen Bad.

*Melitaea varia*: fine underside aberration.

*Parnassius apollo*: with extremely large red spots on the costa and disc of the hindwings. Bozen.

Mr. T. W. Hall exhibited three cabinet drawers containing his collection of *Polyommatus icarus*, *Agriades coridon*, and *A. thetis* (*bellaryus*). Amongst the series of the first-named species were some brilliantly blue and large females from Sligo. In the series of *A. coridon* were examples of ab. *sygrapha* and ab. *semisygrapha* with several gynandromorphous specimens and streaked females. The *A. thetis* included a brilliant, streaked female and many underside aberrations.

Dr. E. A. Cockayne exhibited the series of *Agriades coridon* already described in the *Ent. Record* on page 222, and stated that he had since succeeded in finding *androconia* in all the six specimens dissected. He also showed two further gynandromorphs, the species being *Polyommatus icarus*, of which the following are the descriptions and details:—

- (1) Gynandromorphous *P. icarus*, Sligo, 1914.

Upperside like a male in shape and colour, but with two small orange lunules on each forewing and a row of orange lunules on each hindwing.

*Mic.*—Small groups of brown scales scattered all over the wing amongst the blue ones. *Androconia* numerous on both forewings.

Undersides like a female.

*Mic.*—Small groups of scales of male colour scattered amongst those of female colour.

Abdomen male in appearance.

This is a symmetrical mixed gynandromorph with male element preponderating on upper, female on underside.

- (2) Gynandromorphous *P. icarus*, Clare, 1914.

General appearance female, approaching ab. *coerulea*. Small streaks of male colour on right forewing and on both hindwings. On these areas *androconia* are as numerous as on areas of the same size and situation in a normal male.

Abdomen female in appearance. It contained two ovaries. External genitalia male.

In addition Dr. Cockayne gave the following descriptions and details of the gynandromorphs exhibited by Mr. T. W. Hall:—

- (3) Mr. Hall's *P. icarus*. ? Gynandromorphous.

Upperside of a brilliant blue, like that of *Agriades thetis*. Streak of brown on left forewing running from base to margin, a broad band of similar colour along costa of left hindwing. Orange lunules on upperside like a normal female. No *androconia* could be found.

*Mic.*—Underside showed that a large part was covered by scales similar in structure and colour to those normally found only at base. They were distributed irregularly in long streaks on all four wings, especially on right forewing, where they extended almost to the margin. This is a similar condition to that present in the *A. coridon* exhibited to-night by Mr. H. B. Williams.

- (4) Mr. Hall's Royston *A. coridon* (gynandro.).

This looks like a normal female, but there is slight blunting of

the apex of the right forewing. Near the apex are about 50 blue scales, and amongst them are eight androconia. It is therefore a predominantly female gynandromorph.

In conclusion Dr. Cockayne remarked that there was evidently a race of *A. coridon* producing gynandromorphs of predominately female type at Royston, and that the descent was probably direct. The evidence in favour of this view is that the genital organs in the majority of cases are those of normal females. It has been previously shown that there is evidence of direct descent of predominantly male type of gynandromorphism by Schultz who bred 4 *Lymantria dispar*, which were male in all respects except for splashes of female colour on the wings, from 85 pupæ. One of these males was paired with a normal female, and out of 65 pupæ of the brood, 2 similar gynandromorphs were bred.

Mr. H. E. Page exhibited a series of local races of *Plebeius argus* (*argon*) from Abriès in the French Alps, Sion and Berisal in the Swiss Alps, and from Pajares and Brañuelas in Spain. The last were of the remarkable form named by Dr. Chapman as var. *casaiacus*, and were taken by Mr. and Mrs. Page in August, 1914.

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### Notes on the Season's Collecting, 1914.

By HAROLD B. WILLIAMS. LL.B.

I am anxious to avoid writing anything in the nature of a diary, but some of my work this season may be of general interest. It will perhaps be better to deal shortly with each of the species to be mentioned in turn than to attempt a chronological account.

*Rumiccia phlaeas*.—The first brood was very abundant on Wimbledon Common on May 17th and 18th, and a number were overhauled. Two nice minor aberrations, both females, resulted. One is an extreme ab. *coeruleopunctata*, Stand., with four large blue spots in each hindwing. It has also a pallid area in each forewing (upperside) and on the underside an extra spot between the two inner discal spots. The second is a strongly marked underside, ab. *infra-extensa*, Tutt.

On July 18th I found the first examples of the 2nd brood, at Rickmansworth, and on July 25th they were common at Chingford.

On August 21st I took a ♂ specimen in North Herts with the whole of the left forewing, except the costal area, white. The usual spots are present and as intense as those on the normally coloured rightwing.

Between September 21st and September 27th I found the 3rd brood abundant on Wimbledon Common, and numerous interesting specimens were taken, of which the following call for mention:—A ♂ ab. *obsoleta*, Tutt, the hindwings entirely black; two ♀ ab. *radiata*, Tutt, the band in the hindwing replaced by five pencil-like dashes; and a ♀ with the left hindwing small, about three-quarters the size of the right hindwing, and the band of a straw colour.

*Amorpha populi*.—During the first week of June I obtained a large batch of ova from a wild Clapton ♀, taken *in cop*. The larvæ fed up rapidly on poplar and pupated from the middle of July onwards. Between July 29th and August 8th sixteen specimens emerged. On August 2nd I was fortunate enough to breed two gynandromorphous

specimens. Of these one is regularly halved, left side ♀ right side ♂. The right side of the abdomen shows the usual ♂ "clasper." The wings are strikingly different, the male side being of the strongly banded form, and the female side unbanded. The second specimen is more complicated. The left wings and antenna are ♀. The right wings are banded rather indistinctly and approach those of the ♂ in shape: the right antenna appears to be intermediate, and the body, outwardly, appears to be ♂. I have some numbers of pupæ lying over the winter, and hope to breed from the resulting moths next year.

*Polyommatus icarus*.—This species has been extremely variable this year, and some of the specimens obtained are exceedingly interesting. Of the spring brood I took 90 specimens at Boxhill, Banstead, etc., and of these no less than 30 show traces of obsolescence in the underside spotting. Most of these are not extreme. The specimens vary from those in which the basal spots of the forewings only are absent (ab. *icarinus*, Scharf., eight specimens) to forms in which a large number of the spots of both basal and submedian series in all wings are absent. The most extreme has the basal, and the two lower submedian spots absent on the forewings, on the hindwings the first and second basal and first submedian are present, and of the normal size. All the remaining spots are represented only by a few white scales, and in some cases traces of the black centre. One very fine ♀ specimen has no basal spots, with the exception of traces of the first on each hindwing, and all the submedian spots are thrown right out against the marginal lunules, leaving the centre of the wing clear of spots. Interest centres, however, chiefly in the unusually large proportion (one in three) showing traces of obsolescence. During the last fortnight of May the weather in Surrey was unusually cold, and I think this is almost certainly the cause of the line of variation shown in the specimens. The experiments of Krodell on pupæ of *Agriades coridon* (*Ally. Zeits. für Ent.*, ix., p. 106) appear to support this view. A series of *P. icarus*, from Horsley, exhibited by Mr. W. E. King at a recent meeting of the London Natural History Society, show the same characteristics as my own, though I have no information as to the proportion of obsolete to typical forms. Mr. L. W. Newman informs me that during the spring emergence he captured in Kent a specimen with the spots entirely obsolete (ab. *obsoleta*, Clark), and others approaching it.

I was interested, in view of this marked characteristic of the spring brood, to investigate thoroughly the variation of the summer brood, and during a fortnight's holiday in North Herts, in August, I overhauled some thousands of specimens and found only 30 obsolescent specimens, six of these, however, are extreme and worth particular mention. Two males have the underside spotting completely obsolete. A male and a female, taken together on August 18th, have the forewing spotting normal, the hindwings showing only three spots (one and two of the basal and one of the submedian series). Two others have the hindwing spotting almost completely obsolete. Another extreme ab. *obsoleta* was taken in the same spot by Mr. Newman, and I hear of others from various localities. The evidence is, perhaps, not strong enough to justify an assumption that the obsolescence of marking in the spring brood has a direct effect on the summer brood, but the facts may be considered worth recording.

*Aricia medon*.—In Surrey, in early June, I picked up fifteen speci-

mens of this species which are of some interest, in comparison with the *P. icarus* above referred to. Seven of them show either an advance towards *ab. salmavis* on the upperside, or obsolescence of spotting on the underside. The seven specimens referred to are as follows:—

One ♀ has the discoidals clearly ringed with white.

Two ♀ ♀ have traces of white against the discoidals.

One ♂ is similar as regards the discoidal, and in addition has some marginal lunules almost obsolete on the forewing.

Two ♂ ♂ lack a few underside spots.

One ♀ has the spots on the hindwings largely obsolescent, and the two lower of the submedian series of the forewings also. The discoidals of the forewings, on the other hand, are greatly enlarged.

The general characteristics of these specimens may, I think, be attributed to the same cause as the variation in *P. icarus* already referred to.

*Agrion coridon*.—During August I collected a large number of this species in its well-known locality in North Herts, and obtained some fine forms. The various modifications of the ♀, including the *ab. semisyngnatha*, Tutt, were in fair numbers. A considerable number of more or less obsolete undersides in both sexes were taken, and one or two nicely-striated. One fine female aberration is entirely of a light "khaki" colour with discoidals white-ringed on forewings and white on hindwings. The most striking feature of the variation was the abundance of the *ab. inaequalis*, Tutt, to which so much attention has been directed of late.

Of the form referred to by Mr. C. P. Pickett (*Ent. Rec.*, xxvi., p. 59) and Dr. Cockayne (*ibid.*, p. 221), in which the wings are smaller on one side than the other, I secured two specimens. In one the right forewing is 1mm. shorter than the left, measured along costa or inner margin, and sprinkled all over, particularly near the inner margin, with blue scales. The hindwings are of equal size and show no blue scaling. In the other both right wings show isolated blue scales, and are  $\frac{1}{2}$ mm. shorter than the left. In addition the following were secured, all of which, except possibly the last, may be referred to *ab. inaequalis*, Tutt.

Three specimens with a solitary blue spot above the 5th marginal lunule of hindwing (two left side only, one right side only).

Eight specimens with more or less pronounced "blue sprinkled" areas on the inner margin of forewings: two left side, six right side. In four of the latter there are also blue-scaled areas in the hindwings, and in one of these the blue reaches the margin, the orange colour being absent from the marginal lunule at this point. These specimens are distinct from those next to be referred to in that the blue scales do not form a continuous streak, but are more or less scattered, though arranged in lines following the direction of the nervures.

Three specimens with "streaks" of blue in right forewing. In each case this streak is between the 1st and 2nd nervures from the inner margin. In one it is only a short hair line near the tornus. In the other two a long streak occupies nearly the whole length of the wing. In one of these the streak is of considerable width.

One specimen with a similar, irregular "streak" in the left hindwing, near inner margin, running to hindmargin. The marginal



lunules are normal, except for a slight paleness in the outer line. The whole of the lunule is present.

One specimen with the underside of the right wing densely covered with greenish-blue scales similar to those usually present at the base. These scales cover the whole wing with the exception of an area near the costa. The left wing is normal. I have never seen a similar specimen. Dr. Cockayne has kindly examined the specimen, and tells me that these scales are exactly similar to those usually found at the base of the wing, being shorter, broader and blunter than the brown scales. The greenish-blue area is sharply divided from the brown area along the costa, except that the latter area includes one small patch of greenish scales. Of the other specimens referred to the last appear to be classifiable with Dr. Cockayne's "No. 7" (p. 224). I am no microscopist, but on examining the specimen with a lens there seems a distinct difference in tint between these last four, in which the tint approaches that of the blue in *ab. semisyngnapha*, and the previous eleven, in which the tint is lighter. I make this statement with some reserve, as the apparent difference may be due to the scales being more scattered in the eleven specimens.

A fact of more importance, I think, is that in the specimen, among the "eleven," which I classify with Dr. Cockayne's first six, the approach of the blue-scaled area to the hind margin involves a change in the marginal lunule at the point. In the specimen among the "four" in which the same thing occurs, no change is observed, the lunule being as completely normal as in *ab. semisyngnapha*. This seems to some extent to confirm the conclusion arrived at by Dr. Cockayne, that specimens of the latter class are not true hermaphrodites, while those of the former class are. It is a small point, but in an enquiry of this sort, in which facts are somewhat elusive, nothing is of such small importance as not to be worth recording.

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### A Life-history of *Colias erate*.

By W. G. SHELDON, F.E.S.

Whilst staying at Sarepta last May, I confined a female of *Colias erate* over a number of leguminous plants, which grew in the locality in which the butterfly occurred; amongst them were *Melilotus officinalis* and *Onobrychis sativa*, and upon a leaflet of the former plant the female obliged me by depositing one ovum on May 22nd. This ovum when deposited was straw coloured, opalescent, but not very glabrous; it was of course of the usual *Colias* shape. On May 23rd it had changed in colour to dark red, and on the 29th to lead colour, and later on this day the larva emerged. The egg stage was thus the very short period of seven days.

In the early morning of May 30th I saw that the larva had during the previous night eaten the egg-shell; during the course of this day it partook of a leaflet of *Melilotus officinalis*, upon which plant I fed it throughout. It was 2mm. in length; head black, 2nd segment light green, remainder of segments brownish-green; it rested stretched at full length on the midrib of the leaflet, on the upperside, and had nibbled two circular holes, leaving, however, the lower cuticle entire.

On June 1st the larva was feeding well, eating the leaflet away

from the edge towards the centre, leaving the lower cuticle entire, and resting on the midrib of the leaflet as before.

On June 5th it had changed to second instar; it was now 3mm. in length, head greenish-brown and hirsute; the remainder of the segments were dark green with a slight indication of a thin darker dorsal stripe: in this stage it ate away all but the ribs of the leaflet, commencing at the apex and working towards the base.

On June 10th it had changed into the third instar; it was then 4mm. long; the head and the remainder of the segments were dull green in colour; it was very hirsute for a Pierid larva, and covered with white tubercles emitting white spines; along the centre of the dorsal area ran a thin stripe slightly darker in colour than the surroundings; the subdorsal and spiracular areas had a series of slightly darker longitudinal stripes, which were difficult to see even with the assistance of a lens; the spiracular stripe was lighter than the surrounding area. In this stage the larva ate the entire leaflet including the ribs.

On June 15th the larva changed into the fourth instar; it had then greatly increased in size and was 10mm. long; it was of the same colour as the leaf on which it was feeding, and had a faintly indicated darker line along the centre of the dorsal area. The spiracular stripe was narrow and white, except the portion surrounding the spiracles, which were light crimson. The spiracles themselves were inconspicuous.

On June 19th the larva changed into the fifth instar; it was then 15mm. long, of a dark grass-green colour with the exception of the first and the anal segments, which were dull grass-green; there were still indications of the dark dorsal stripe which had been noticed in the previous stages. The spiracular stripes were now prominent and white in colour throughout, with the exception that immediately over each spiracle there was a crimson blotch. The spiracles, which were beneath the spiracular stripe, were black and conspicuous; the larva was very spiny, and on June 20th it had increased to 25mm. in length, and on the following day to 29mm. The spiracular stripe was on this day, over the spiracles coral-red, between spiracles lemon-yellow, edged with white throughout the length, on the dorsal sides. On June 22nd and June 23rd it fed slowly, and on June 24th suspended itself for pupation, changing into a chrysalis during the night of June 25th.

It will be seen from the above notes that only 27 days were occupied by the larva to go through this stage.

The chrysalis was 20mm. long, dull green in colour, with a line of light lemon-yellow, extending from the head along the hind margins of wing cases and the sides of abdomen to the anal segment. Below this stripe the front three segments of the abdomen had each a brown blotch. The discoidal spot was visible through the pupal envelope; and the inner margin of the external dark band on the superiors was indicated by a line of black dots.

The chrysalis commenced to change colour on June 30th, the butterfly clearly showing through the pupa case, and was apparently ready to emerge; the actual emergence took place on the morning of July 2nd.

The period of the pupa stage was thus seven days, and for the whole

of the stages 41 days, or under six weeks. The resultant imago proved to be a rather small female, expanding 51mm.

I presume *C. erate* at Sarepta has four broods during each year; there was certainly a numerous brood of imagines flying in early May, judging by the condition of the specimens at the date of my arrival there, May 20th. There was a second brood emerging during the last few days of our stay, June 17th to 23rd, and I think there would be a third brood during late July or in early August and a fourth in September. Presumably this species is a true hibernator, and not as in *C. edusa* successively brooded during the winter, because the winters at Sarepta are very severe, with snow on the ground for many months, as I believe they are throughout the whole of its known range, and it does not seem possible for a larva to live and feed under these conditions.

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### Agriades coridon. The new asymmetrical forms from the Herts district.

By C. P. PICKETT, F.E.S.

I am very pleased to see that at least one of our leading authorities has taken up this new and interesting asymmetrical form of *A. coridon*. I was one of the first to call attention to this interesting form, and believed it to be more than an ordinary asymmetrical form. Now we are working it up we already find at least something new regarding *A. coridon*, I do not think it should be placed under the heading of "ab. *inaequalis*:" it is quite a distinct form from the aberration which the late J. W. Tutt named ab. *inaequalis*. His description surely meant the usual form where the blue was either streaked or splashed on one side more than the other. For this present form a more appropriate name would be "ab. *roystonensis*." On reference to Tutt's *British Butterflies*, p. 167 (1896), his description reads as follows: "ab. *inaequalis*, n. ab. = with blue streaks, sometimes varying on opposite wings of the insect." Personally I have not come across these asymmetrical ♀s before during over thirty years keen collecting of the blues, and do not remember seeing or hearing of any others being taken anywhere. They only seem to have occurred on this particular Herts ground. I can trace them back the past five seasons, but have not noticed them on this ground before this, no doubt they were there, but being keen on ab. *semisynggrapha*, one was apt to overlook them; now that the *semisynggrapha* fever has worked off all attention is given to this new form. Strange to say all these asymmetrical forms that I have taken (with the exception of three) are more or less heavily blue scaled on the smaller wings, and appear as if the blue were dusted on. I took one specimen, however, with the whole of the four wings dusted in this way, even to the edge of the wings, but curiously enough this was not an asymmetrical form, but one rather smaller than the usual type. I have three asymmetrical forms without any trace of blue whatever, two being with right hand side wings largest, and ab. *aurantia*, Tutt (marginal orange spots), the left and smaller side being typical *coridon*, the other specimen is of a curious shade of greyish-brown, the small side being typical *coridon* and largest side showing faint marginal orange spots edged internally with whitish-blue crescents.

The most striking point of *A. coridon* from Herts is the great

abundance of ♀s over the ♂s. I am sure last season (1913) I shall never forget; the females were so abundant that they simply came in droves. I did count the number taken with one sweep of the net, it was over 50, and not a male amongst them, but there were three *ab. semisyngnapha*, no doubt they were taken for males, for they were often chased by a goodly number of ordinary females. I could never understand what became of the males, they seemed almost absent. When one looks back at past seasons on this same spot, almost the same conditions prevailed, there was certainly a great preponderance of females over the males, the males appearing extremely few compared with those taken from other localities. This female preponderance has occurred for a number of years, but in particular 1913 seemed to be an extraordinary season for this femaleness. This season (1914) was nothing compared to it, but the females were in great abundance, the males were more in evidence than I have seen them before from Herts. They vary so little that I have not seen a really good aberration from here. One of my best I took this year, it was an albino ♂, quite a whitish example. This season was quite a contrast to that of 1913, when I counted 25 collectors during my stay all with the *semisyngnapha* fever, this year all seemed peace and quiet, very few collectors being seen. I ran down during the first days of the "war," when railway traffic was partially held up, having to wait long hours to get through, but once on the spot the war was quite forgotten till my return, when I had much the same treat. I was able, however, to capture six asymmetrical specimens and two females (normal size) with deep dashes of blue on wings, in one on the right forewing and in the other on the left. I hear several of this kind were taken this year, so it seems as if there is still another side issue appearing in *A. coridon*. No doubt there seems to exist a certain amount of hermaphroditism in these asymmetrical females, and one awaits for further explanations in making clear this mystery. I look forward to 1915 with an extra amount of renewed energy to cure this "fit of the blues."

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### Some notes on the Genera *Platyphora*, *Verrall*, and *Aenigmatias*, *Meinert*, and a species new to Britain.

By HORACE DONISTHORPE, F.Z.S., F.E.S.

*Platyphora*, Verrall, 1877 = ♂; *Aenigmatias*, Meinert, 1890 = ♀.

#### PLATYPHORA LUBBOCKI, Verrall.

*Platyphora lubbocki*, Verrall, "Journ. Linn. Soc., Zool.," **13**, 260 (1877)<sup>1</sup>. *Aenigmatias blattoides*, Meinert, "Ent. Medel.," **2**, 212-27 (1890)<sup>2</sup>. *Platyphora lubbocki*, Wasmann, "Krit. Ver. Myr. Ter. Art.," **174** (1894)<sup>3</sup>. *Aenigmatias blattoides*, Wasmann, "Krit. Ver. Myr. Ter. Art.," **175** (1894)<sup>4</sup>; "Biol. Centralb.," **28**, 728 (1908)<sup>5</sup>. *Platyphora lubbocki*, Collin, "Proc. Ent. Soc. Lond.," **1904**, lxi.<sup>6</sup>; Malloch, "Ann. Scot. Nat. Hist.," **1910**, 17<sup>7</sup>; Collin, "Ent. Mo. Mag.," **49**, 174. Plt. 3, fig. 3 (1913)<sup>8</sup>; Donisthorpe, "Proc. Ent. Soc. Lond.," **1913**, lxxvi.<sup>9</sup> *Aenigmatias blattoides*, Donisthorpe, "Proc. Ent. Soc. Lond.," **1913**, lxxvi.<sup>10</sup>; "Ent. Rec.," **25**, 277-78 (1913).<sup>11</sup> *Platyphora lubbocki*, Donisthorpe, "Ent. Rec.," **25**, 277 (1913)<sup>12</sup>; H. Schmitz, "Jaarb. Nat. Hist. Genoots. Limburg," **1913**, 123.<sup>13</sup> *Aenigmatias blattoides*, H. Schmitz, "Jaarb. Nat. Hist. Genoots. Limburg," **1913**, 124<sup>14</sup>; "Zool. Jahrb.," **541-44** (1914).<sup>15</sup>

In 1877 Verrall described a fly, bred in one of Lord Avebury's observation nests, under the name of *Platyphora lubbocki*.<sup>1</sup> This

specimen was unfortunately lost, and the species was never found again until July 6th, 1901, when Dr. Wood captured a specimen in Stoke Wood, Herefordshire,<sup>6</sup> and subsequently J. J. F. X. King took another in the New Forest.<sup>7</sup> It will thus be seen that during all this time the host, or hosts, of this parasitic Dipteran remained unknown. On July 11th, 1913, I captured a specimen which was running about in my large *P. sanguinea* observation nest<sup>9</sup>, and as I had kept this colony in captivity for four years, the fly must have bred out from *P. fusca* cocoons, of which large numbers had been given to the ants to bring up as slaves. On July 4th, 1914, I captured a specimen in some sphagnum from a *P. picea* nest from the New Forest, and on July 12th I observed a specimen in the very large glass bowl which contained my *P. picea* observation nest, also from the New Forest. On July 23rd, 1914, I found a number of small red Dipterous pupæ in nests of *P. picea* in the New Forest, these I brought home with more of the ants, and introduced some into my observation nest and others into tins containing earth and a few of the ants. July 29th another was captured in the bowl, and on July 31st one hatched out in one of the tins. Before leaving town I took (the bowl) my large observation nest to the British Museum, where Mr. Edwards kindly took charge of it, and he made the following captures in it: August 1st, 3rd, 5th, 6th, 10th, 11th, 12th, and 17th; on 18th another was observed, and on September 10th the last specimen to hatch out was captured. On August 11th a specimen hatched from one of the red pupæ, some of which I had isolated in a small plaster nest and taken away with me.

#### ÆNIGMATIAS BLATTOIDES, Mein.

Meinert described this aberrant apterous Phorid in 1890 from a specimen he had taken in a nest of *P. fusca* in Denmark<sup>2</sup> (but for some unknown reason he suggested it might be associated with the nests of mice), and a second example exists in the Copenhagen Museum, also taken by him.

In 1898 Mik suggested that *Ænigmatias* might be the female of *Platyphora*, but he gives no reasons for this opinion ["Wien. Ent. Zeitschr.," 17, 204 (1898)].

In 1908 Wasmann, at Luxemburg, found a specimen in an observation nest of *P. ersecta* into which he had introduced a number of *P. fusca* cocoons; and he obtained a second specimen, also at Luxemburg, from *fusca* cocoons.<sup>5</sup>

On July 21st, 1913, I captured a specimen in a nest of *P. fusca* under a stone at Nethy Bridge, in Inverness-shire<sup>11</sup>—this H. Schmitz has since named var. *highlandica*.<sup>15</sup>

On July 14th, 1914, I captured a specimen in my observation nest of *P. picea* before mentioned, and on July 29th and 30th specimens hatched out in the tins before mentioned. On August 10th a specimen hatched from the Dipterous pupæ before mentioned, isolated in a small plaster nest; and on August 13th Edwards found a specimen running on the sphagnum in the bowl.

This certainly seems to prove that *P. lubbocki* is the male of *Æ. blattoides*. The hosts are *Formica fusca* and *P. picea*, and in the case of the latter the fly larvæ must have emerged from the cocoon before they pupated.

## PLATYPHORA DORNI, Enderlein.

*Oniscomyia dorni*, Enderlein, "Zool. Jahr.," 27, 145-56 (1908)<sup>1</sup>. *Aenigmatias blattoïdes*, Wasmann, "Biol. Centralb.," 28, 729 (1908)<sup>2</sup> [in part]. *Platyphora lubbocki*, Donisthorpe, "Proc. Ent. Soc. Lond.," 1913, lxxvi.<sup>3</sup> [in part]: "Ent. Rec." 25, 277 (1913)<sup>4</sup> [in part]. *Aenigmatias dorni*, H. Schmitz, "Jaar. Nat. Hist. Genoots. Limburg," 1913, 124<sup>5</sup>; "Zool. Jahr.," 37, 544-48 (1914)<sup>6</sup>.

On August 18th, 1907, Enderlein described an apterous Phorid found in a nest of *Polyergus rufescens* (the Amazon Ant) at Zeyrn, near Kronals in Oberfranken under the name of *Oniscomyia dorni*<sup>1</sup>: but as pointed out by Schmitz *Oniscomyia* is a synonym of *Aenigmatias*<sup>5</sup>.

*Polyergus* possesses no myrmecophiles of its own; this specimen was therefore parasitic on the slaves of the "Amazons," the slave species was not noted, but from what follows they were probably *P. rufibarbis*.

On July 17th, 1902, Wasmann found a specimen in an observation nest of *P. rufibarbis* at Luxemburg, on July 9th, 1904, he captured another in a nest of *P. rufibarbis* in a garden at Luxemburg, and on July 31st, 1905, he found a third in a nest of *P. rufibarbis* in this garden<sup>2</sup>. On July 26th, 1913, I captured a specimen of a *Platyphora*, which differs considerably from *P. lubbocki*, in my *P. sanguinea* observation nest<sup>3</sup>; this specimen Schmitz considers is probably the unknown male of *A. dorni*. As my *sanguinea* nest had been supplied with large numbers of *P. rufibarbis* cocoons from Weybridge, as well as the *P. fusca* cocoons before mentioned, the *Platyphora* most probably bred out from the former.

Edwards has kindly called my attention to the differences between *Platyphora lubbocki* from my *P. picea* nest (which are all very constant) and this specimen. These may be tabulated as follows:—

<i>P. lubbocki.</i>	<i>P. dorni.</i>
1. Front tibiæ and tarsi much thickened.	1. Front tibiæ and tarsi very little thickened.
2. Mid and hind femora yellow on basal $\frac{1}{3}$ to $\frac{2}{3}$ .	2. Mid and hind femora all black.
3. Second thick vein with an indistinct thin branch at tip.	3. Second thick vein divided distinctly into two equal branches at tip.
4. Hypopygium small, black.	4. Hypopygium large, yellow.

Should this not be the male of *P. dorni*, End., it is a new species of *Platyphora*, and in any case it is new to the British fauna.

## CURRENT NOTES AND SHORT NOTICES.

In the August No. of the *Ent. Mo. Mag.*, Comm. J. J. Walker adds a new genus and species of Coleoptera to the British list, in the Staphylinid, *Hygropora cunctans*, which he took in a damp place on the open heath near Brockenhurst while in company with Dr. Sharp. Mr. E. E. Green also introduces a new species to the British list and also to science in the Coccid, *Kurania britannica*, which was found on birch at Camberley, a birch, pine and heather country. The species is figured in detail.

Messrs. Watkins and Doncaster have sent us their new *Label List of British Butterflies and Moths*, with Latin-English names. The list comprises the Macrolepidoptera and is well and clearly printed, and allowance for sufficient margin is made. This publication should

prove very useful to those for whom it is intended. One would like to have the family name labels in the Rhopalocera as they are given in the rest of the list. As to being up-to-date, that is quite an impossibility for any list in our present period of rapid advance and change, but a good attempt has here been made to more or less assimilate modern views, but not always with complete success. We get such combination as *Lycaena argus*, *argus* right for the old *argon*, *Lycaena* certainly wrong even if the generally used *Plebeius* be wrong, as some aver. Again, *Adopaca thaumas*, *Adopaca* up-to-date, *thaumas* is the old name for what has long been called *linea* and now called by the original name *flava*. Generic names can never be stable, their comprehension must ever be variable as our knowledge increases and our work becomes more intensive, but they should never be interchangeable. *Lycaena* and *arion* must come together; *arion* is the unalterable type of the genus *Lycaena*, and cannot be in *Nomiades*. It would have been better to duplicate a name like *Diacrisia sanio* with its time-honoured synonym *Euthemonia russula*, a practice which, in the Noctuid portion of the list, has been advisedly followed to a large extent. Why *Luperina gueneei*, a species so abundant in Lancashire, is omitted, and the doubtfully accidental *L. dumerilii* inserted, we cannot explain. We note a few slight errors in spelling, *Euchloe* for *Euchloë*, *Xanthorhoe* for *Xanthorhoë*, *acteon* for *acteon*, etc. No label list would suit some of us; one we made ourselves would be out of date with us in a month or two.

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## REVIEWS AND NOTICES OF BOOKS.

THE GENITALIA OF THE GEOMETRIDÆ OF THE BRITISH ISLES, by F. N. Pierce, F.E.S. (110 pp., 48 plates with 450 figs.). Price 10s. post free, from the author.—More than five years have elapsed since the volume on the "Genitalia of the British Noctuidæ" was published, and during that interval, no doubt owing largely to the influence of the knowledge there collected and collated, lepidopterists generally have come to look upon the facts obtained by the investigation of the genital organs as of extreme importance in all classificatory work, and even as often affording the critical test for the determination of species. Not only is this so with Lepidoptera, but the study of these organs in both the Diptera and the Coleoptera has become most interesting to the ordinary student, and often the main indication relied on by systematists in dealing with otherwise difficult families.

Like the former volume, the present work deals with facts mainly, although wherever the genitalia indicated want of correlation with the characters hitherto depended upon for classification this has been taken into account. The names of genera and species have been revised by Mr. L. B. Prout, and for those he is "almost entirely responsible." On page xxvi., etc., *Xanthorhoe* should be *Xanthorhoë*.

In the former volume only the organs of the male sex were figured and those minus the penis, but in the present volume it has been found necessary to give in each case not only the latter part and its attendant structures, but also to figure the female apparatus with a figure of the bursa copulatrix, which often lies some distance from the other organs in the abdomen in the perfect insect.

"In order to test the validity of this principle," the author has

sent us with the copy of the book "two mounts (unnamed), one of *Noctuidae* and one of *Geometridae*, selected from a number of duplicate slides, in order that we may have an opportunity of identifying the species with the drawings and descriptions," together with a marked "solution" to refer to after determination.

In studying a subject which has been elaborated in considerable detail, and with which one is not already intimately acquainted, it is necessary to start with a certain amount of definite understanding as to the values of the terminological words, and the author rightly devotes a chapter to this matter. In his former work he used the following set of names for the various parts:—

MALE.		c.	(centre).
A. The Tegumen.			(1) Clasper.
1 The Uncus.			(2) Ampulla.
2 The Vinculum.			(3) Editum.
3 The Peniculus.		B. Anus.	
4 The Harpes.		1 Scaphium (only in <i>Noctuidae</i> ).	
a. Cucullus (upper).		2 Subscaphium.	
(1) Margin.		C. The Penis.	
(2) Corona.		1 Juxta.	
(3) Marginal spines.		2 <i>Ædœagus</i> .	
(4) Anal angle.		3 Vesica.	
(5) Anal spine.		4 Cornuti.	
(6) Pollex.			
(7) Digitus.			
b. Sacculus (lower).			FEMALE.
(1) Extension.		A. Lodix.	
(2) Clavus.		B. Genital Plate.	
		C. Ovipositor.	

The relative position and generalised shape and appearance of all these parts were more or less indicated in a figure of the male armature (Noctuid) and two plates of varied developments of parts were added. It would have been well to have included similar plates in the present volume, as, to an average student taking the Noctuid structures and terminology as a basis, there is some difficulty in satisfactorily understanding the Geometrid structures without a very considerable amount of special work, the time and opportunities for which are often not available to him.

It must be borne in mind, that in the former work the various parts of the male genitalia were lumped together in the ninth segment, that the penis was only dealt with in a general way, and not figured, and that the female organs were omitted altogether.

In the present work the various ancillary structures are classified much more elaborately. First they are separated into External Parts and Internal Parts. Those of the former have been allocated to the various segments from which they have supposed to have arisen by the devious modifications, developments and migrations, which have so obscured their origin and phylogeny. One does not like the terms External or Internal. Are not all the parts internal in position of origin? Do they not all more or less become external at emergence from the pupa? It would have been preferable to use Secondary and Primary. The term Secondary for all those parts which have doubtless originated from the outer cylindrical body-tube, and the term Primary for those parts which have doubtless been derived from the inner (intestinal) cylindrical body-tube, the approximation and welding together of which have formed the extremely complex organ



of the genital apparatus. There is an analogous development at the other end of the body-tubes in the complex structure of the eye, where the lens (cornea) has its origin in the outer body-tube, while the sensitive structures are developments from the inner body-tube, the whole having become welded together into one complex organ the eye.

The following is an analysis of the Terminology used in the present volume:—

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| <p style="text-align: center;">MALE.</p> <p>A. EXTERNAL PARTS.</p> <p>I. The tenth segment.</p> <p>1 The Uncus.</p> <p style="padding-left: 2em;">a Socii.</p> <p style="padding-left: 2em;">b Gnathos.</p> <p>2 The Anus.</p> <p style="padding-left: 2em;">a Subscaphium.</p> <p>3 The Transtilla.</p> <p>II. The ninth segment.</p> <p>1 The Tegumen.</p> <p>2 The Saccus (Vinculum).</p> <p>3 The Valvae (Harpes).</p> <p style="padding-left: 2em;">a The Costa.</p> <p style="padding-left: 4em;">(1) Costal arm.</p> <p style="padding-left: 2em;">b The Valvula.</p> <p style="padding-left: 4em;">(1) Harpe.</p> <p style="padding-left: 2em;">c The Sacculus.</p> <p style="padding-left: 4em;">(1) The Furca.</p> <p>III. The eighth segment.</p> <p>1 The Octavals.</p> <p>2 The Cerata.</p> <p>3 The Mappa.</p> <p>4 Abdominal Plate.</p> | <p>VI. The seventh segment.</p> <p>1 The Coremata.</p> <p>B. INTERNAL PARTS.</p> <p>I. Penis.</p> <p>1 The Edcagus.</p> <p>2 Anellus.</p> <p style="padding-left: 2em;">a Juxta.</p> <p style="padding-left: 2em;">b Cristae.</p> <p style="padding-left: 2em;">c Calcar.</p> <p style="padding-left: 2em;">d Canaliculus.</p> <p>3 Manica.</p> <p>4 Labides.</p> <p>5 Vesica.</p> <p style="padding-left: 2em;">a Cornuti.</p> <p style="padding-left: 2em;">b Ductus ejaculatorius.</p> <p style="text-align: center;">FEMALE.</p> <p>I. Ovipositor.</p> <p>1 Floricomus.</p> <p>II. Ostium.</p> <p>1 Operculum.</p> <p>2 Instita.</p> <p>III. Ductus bursae.</p> <p>IV. Bursa copulatrix.</p> <p>1 Signum.</p> |
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One would like to have had a much more detailed comparison or collaboration of the later terminology with the earlier one, as one finds it difficult to assimilate the two, there being only a few of the essential parts which are common to both the *Noctuidae* and the *Geometridae*, while numerous secondary parts are either only present in one group or are looked at from a different relative standpoint in a different correlation, and have received a different name. Definite statements might have been given as to special parts, which are present in the former group, but of which there is, apparently from the text, no trace in the latter group. (1) The Peniculus, a brush of hairs on either side of the tegumen and not mentioned as being found in the Geometers. (2) The Cucullus of the *Noctuidae*, the upper portion of the Valva, is apparently that part which is now named the Costa, but no reference is made to the former term. As a fact the Cucullus is an apical development of the Valva, not present in the *Geometridae*. (3) The central part of the Valva, which in the *Noctuidae* received no separate name, is now termed the Valvula, and the armatures on its surface, which were in the former called the Clasper and Ampulla, are now taken as one structure, when present, and termed, the Harpe, after Gosse. This term is adopted without any reference to the names previously used for the parts in the *Noctuidae*. (4) The Editum of this area is apparently not present in the Geometrids. (5) The Costa has not such a series of appendages and extensions as the apparently homologous Cucullus has in the *Noctuidae*, for no mention of, nor comparison with them is made.

(6) The Genital Plate of the volume on *Noctuidae*, the term for a plate leading to the genital tube, is not mentioned in the more detailed remarks on female armature. (7) Nor is the Lodix, the name of a plate which covers the last named plate, referred to.

It is to be regretted that an error has crept in, quite inadvertently we are perfectly sure. Still it is necessary to early call attention to it as it appears somewhat unjust to some of our foremost workers in the investigation of these organs. "The *gnathus* of Chapman," is a byword with workers on the genitalia, but on page xx. occurs "The Gnathos.—Pierce," and again on page 81 "Gnathos: (Gr. gnathos, the lower jaw) . . . Pierce)." On page xxi. we read "This organ (the gnathos) has appeared to me to be of such importance as to form two primary divisions of the *Geometridae* according as it is present or absent and for these divisions I propose the names GNATHOI and AGNATHOI." Turning to Wyttsmann's *Genera Insectorum*, fasc. 103, p. 6, Prout (1910), we read: "In particular, Dr. Chapman (*in litt.*) considers that a dichotomous arrangement is indicated thus: 1° tenth abdominal segment clearly marked off from ninth, and distinctly articulated into dorsal and ventral pieces, suggesting a shark's jaw (typified by *Eranius*, but embracing numerous *Enochrominae* as well as *Boarminae* of Hampson), 2° without this character."

Again in the *Ent. Record*, vol. xxiii., p. 287 (1911), Chapman writes:—"The name *Scaphium* as used erroneously is sometimes perhaps applied to the "subscaphium," but more usually to the 10th abdominal sternite, and this piece, if one objects to "10th abdominal sternite" as being a description and not a name, is in want of a short name. If so, I would call it the "gnathus" (*γναθος*), anglicised "gnath," in allusion to its so often resembling a lower jaw, as in—"

The question of the term "gnathos" is still further complicated. In October, 1905, in the *Transactions of the Entomological Society of London*, Mr. G. T. Bethune-Baker published "A Monograph of the Genus *Ogyris*," in which he introduced the term "Falces" for similar structures in this genus of *Lycanidae*. On page 270 we read, "The tegumen of the whole of the *Lycanidae* is furnished with a pair of hooks at the lower extremities of the lateral lobes, these I have designated by the term Falces (falx=a reaping-hook)." A careful comparison and consideration of the figures on the plate accompanying this paper (plate xv.) with the drawings in Mr. Pierce's book will readily convince one that these structures are the same, and hence as the term "falces" was introduced so long ago as 1905, it has priority over the term "gnathos," which will fall.

(To be concluded.)

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CORRECTION:—In my notes on collecting in the Tyrol (p. 248), I regret to find that an error was made in recording *Erebia nerine* from near Gamagoi as these prove to be a dark form of *Erebia goante*. I find, however, that one *E. nerine* was taken at Bormio on July 8th, and another at Trafoi on July 11th.—DOUGLAS H. PEARSON.

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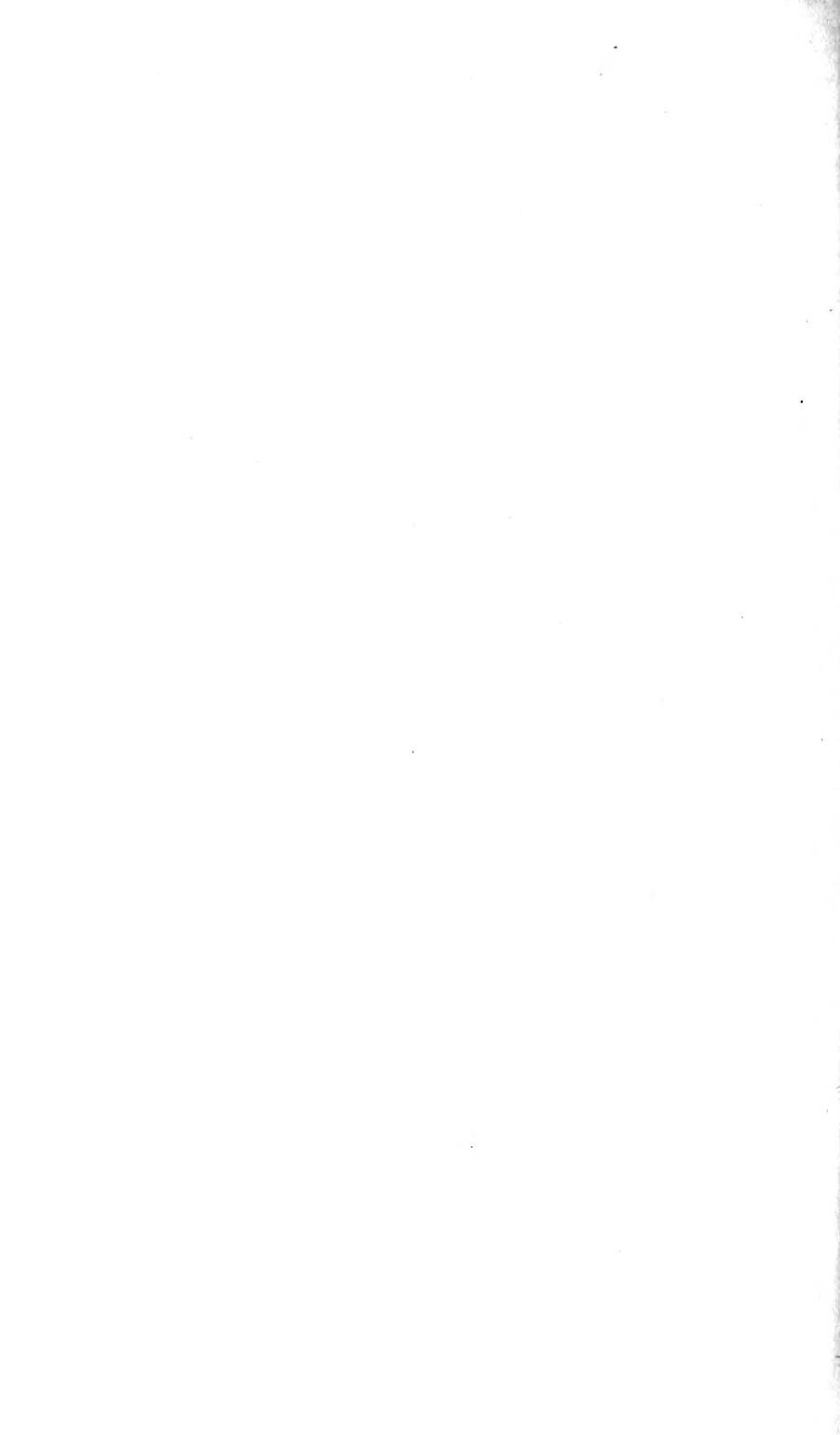
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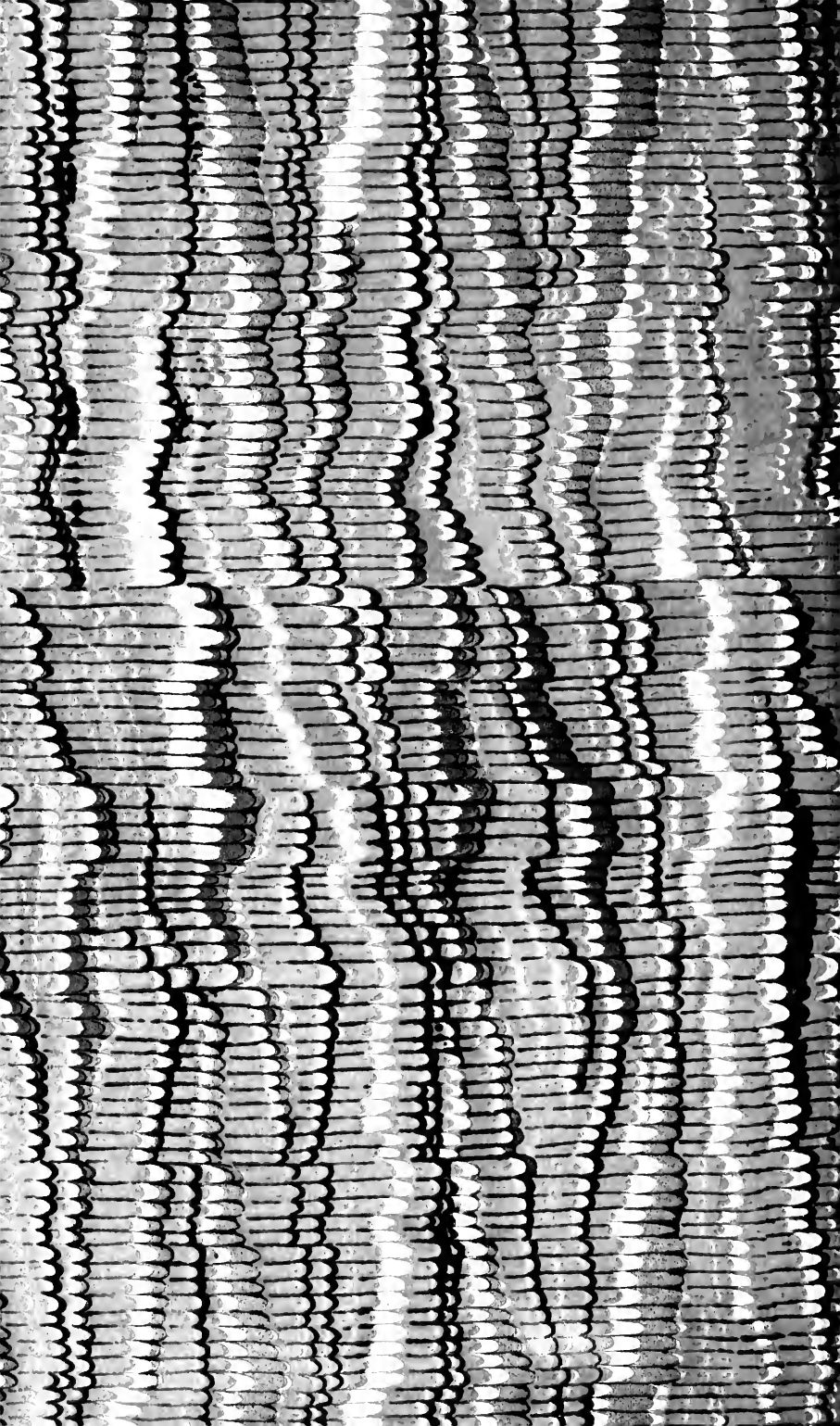
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