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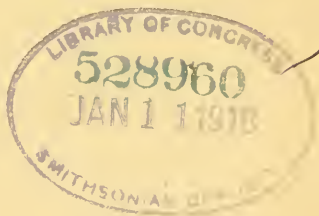
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ERRATA ET CORRIGENDA.

P. 122, l. 12 from top, for Basses-Alpes read Basses-Pyrénées.
 P. 159, l. 32 from top, delete *cleante*.
 P. 207, l. 10 from top, for *molybdena* read *molybdina*.
 P. 235, l. 17 from bottom, for *Euanessa* read *Euvanessa*.
 P. 240, l. 9 from bottom, for *electa* read *electa*.
 P. 264, l. 16 from top, for 63 read 263.
 P. 264, l. 18 from top, for Plebeids read Plebeïds.

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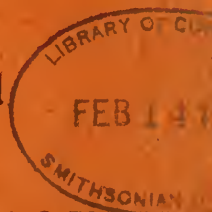
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THE ENTOMOLOGIST.

Vol. L.]

JANUARY, 1917.

[No. 644

NEW SPECIES OF CICADIDÆ FROM SUMATRA.

By J. C. MOULTON, B.Sc.

THE following species form part of a collection made in Sumatra by Mr. H. C. Robinson, Director of Museums, Federated Malay States, and Mr. C. Boden Kloss, Curator. The descriptions were drawn up two years ago, and were embodied in my report on the collection of Cicadas obtained by these two naturalists on their expedition to Mount Korinchi, Sumatra. As there appears to be no immediate prospect of publishing the various reports on these collections, I have thought it advisable to publish the following descriptions without further delay. In doing so, I wish to acknowledge the kind help of my friend Mr. W. L. Distant, who has been good enough to check my descriptions and compare the specimens with the British Museum collection, so that I hope their "novelty" may be regarded as undoubted.

Puranoides, gen. nov.

Differs from *Purana* in the absence of lateral tubercles on the second and third ventral segments; the rostrum just passes the posterior coxæ. The two genera, *Purana* and *Maua*, are very similar to this genus, but differ in having two pairs of lateral tubercles. One other genus (*Leptopsaltria*) also has two pairs, another (*Tanna*) has one pair, and I have collected a specimen on Mount Kinabalu in North Borneo, representing an undescribed genus, characterised by the presence of three pairs of lateral tubercles.

Head (including eyes) as wide as base of mesonotum and as long as space between the eyes; lateral margins of pronotum subangulate; abdomen in the male considerably longer than space between the apex of head and base of cruciform elevation, posterior portion gradually attenuated. Opercula small, not reaching second ventral segment. Tympanal coverings broader at base than long.

Tegmina and wings hyaline. Fore femora spined.

Type.—*P. klossi*, sp. n.

Puranoides klossi, sp. nov.

Male.—Head, pronotum, and mesonotum greenish-ochraceous; head with margins of front, space between the ocelli (and spot in front of the middle ocellus) and two small spots between the ocelli

and eyes black; the pronotum with two fine central black fasciæ widening anteriorly, rounded and closed posteriorly; a black lateral fascia behind the eye and another in the oblique incisure. Mesonotum with five thin black fasciæ, one central, one on each side slightly oblique and abbreviated, followed externally by another pair parallel to the last, but longer; two black spots in front of cruciform elevation; abdominal segments ochraceous to castaneous, slightly pilose, posterior margins of the segments pitchy. Beneath, face greenish-ochraceous with black longitudinal fascia continued on base and again at tip of rostrum. Tarsi and apices of femora of front and middle legs piceous, otherwise like hind legs, reddish-ochraceous. Opercula greenish-ochraceous, short, transverse with external angles bluntly rounded. Abdomen beneath dull castaneous, posteriorly darker.

Tegmina and wings hyaline; costa of tegmen reddish-golden, venation of tegmina and wings mostly blackish. Tegmina with slight infuscation on transverse veins at base of second and third apical areas and a blackish nodus at the base of the first ulnar area.

Length excl. tegm. ♂ 18 mm., ♀ 15 mm. Exp. tegm. ♂ 58 mm., ♀ 56 mm.

The female is exactly similar to the male in coloration. Another male differs from the Type in having the general coloration pale ochraceous instead of greenish ochraceous.

Type male, Type and co-Type females: Sungei Kumbang, 4700 ft., Korinchi, Sumatra, April, 1914. Types deposited in British Museum; co-Type in F.M.S. Museums, Kuala Lumpur.

Male Var. (mentioned above): Sandaran Agong, 2450 ft., Korinchi Lake, Sumatra, May-June, 1914.

Cosmopsaltria sumatrana, sp. nov.

Male.—Head and pronotum brownish-ochraceous; mesonotum paler, with two fine externally pale-edged black oblique fasciæ from anterior margin towards centre, succeeded posteriorly by a fine blackish median line and two small blackish dots placed just in front of the anterior portion of the cruciform elevation, which likewise bears two small dark spots close to those of the mesonotum.

Abdomen castaneous with golden pilum above. Face and general colouring below brownish-ochraceous, rather paler than above, with the exception of the fore and median tarsi, the apices of the hind tibiæ, rostrum, and opercula, which are dark castaneous to piceous. The last two segments of the abdomen below are dark castaneous; the inner edge of the opercula black.

Tegmina and wings hyaline, venation greenish or reddish-ochraceous. No infuscations. The opercula are long, reaching the penultimate segment of the abdomen as in *C. jacoona*, Dist.; interior margin very slightly and evenly convex, exterior margin similar except for slight constriction near base, apex bluntly rounded and narrowly margined with dark castaneous.

Length excl. tegm. 35 mm. Exp. tegm. 88 mm.

Type ♂ (and only known specimen): Sandaran Agong, 2450 ft., Korinchi Lake, Sumatra, May-June, 1914. Deposited in the British Museum.

This is an interesting novelty in that it constitutes what is apparently the first record of a *Cosmopsaltria* from Sumatra. From the neighbouring island of Borneo, Mr. Distant records five species (I recognise two more) and two are known from the Malay Peninsula, so the long absence of a record from Sumatra, which has so similar a fauna, is very remarkable; no doubt many more species await discovery there. Mr. Distant divides the species of this genus into two groups on the opercula. This species comes into the first group on account of the dark-margined opercula. With *C. ida*, described by me from Sarawak in 1911, it can be distinguished from the other species of this section by the plain, unspotted tegmina. From *C. ida* it differs in the larger size and different markings of the head, pronotum, and mesonotum, and different shape of the opercula. *C. sumatrana* seems to be nearest to this Bornean species, but not, I think, near enough to be considered a geographical race. [It is also allied to *C. alticola*, Dist. from Borneo.—W. L. D.]

SOME NOTES ON THE LIFE HISTORY OF GONEPTERYX CLEOPATRA.

BY CAPT. E. BAGWELL-PUREFOY, F.E.S.

DURING the summer of 1902 we received several dozen pupæ of *Gonepteryx cleopatra* from the south of France, and turned out the resulting butterflies in Tipperary, Ireland. The two lessons we learnt by this somewhat imperfect experiment were, firstly, that some, at any rate, of these butterflies paired and laid almost at once; and, secondly, that the resulting larvæ would feed up satisfactorily on all species of *Rhamnus* that we offered them with the sole exception of *R. frangula*. This last appeared to poison them, and they seldom survived on it for more than three days.

When, in 1907, a large butterfly enclosure in Kent became available for experiments of this kind, we determined to try and gather some definite information concerning the life history and habits of this beautiful species; and, having stocked the garden with them in 1908, we have been successful in keeping the breed going ever since.

During these nine years we have carried out various experiments and made copious notes on the species, and as these point to conclusions not generally known or accepted, it would, perhaps, be as well to set them out briefly here.

To *cleopatra*, I think, has generally been attributed the same life history as *rhanni*, but our observations go to prove a wide divergence, especially where the pairing habits are concerned. These pairing habits, the longevity of the females, and the occasional lying over of the pupa are the chief points now to be discussed.

Towards the end of May, 1908, we received a small box of pupae from the south of France. These were already in a somewhat advanced state of "ripeness," and the first imagines began to appear before the end of the month. The weather was glorious, and a pairing was observed on the evening of May 31st. A conspicuous spot of black ink was put on each of the fore wings of the female. This was the only *cleopatra* marked with ink during the season. As June wore on many ova were laid on *R. alaternus* and *R. hybridus*, but the marked female was never observed to lay. Looking through the notes made during that summer, I see that she was come across every now and then, always at rest in some quiet part of the garden. She was noticed at rest in certainly three different situations, and the final one selected for the winter was on ivy facing due south. It seemed most improbable to us at the time that a female which had paired in May should defer laying until the following year, but such proved to be the case. Surviving a winter of much frost and snow, she resumed activity on April 6th and laid her first egg on the 19th. All through May and June she was to be seen on fine days feeding and laying. On July 9th she paired for the second time; but on the 23rd of the month she collapsed from old age, having achieved fourteen months: perhaps a record for a butterfly. We have had varying luck with this species during the winter, but I see from notes that no less than sixty-two fertilised females came through the winter 1910-11. During the summer of 1910 we carried out a little experiment with a view to finding out the proportion of females that lay over to those that deposit the same year. Ninety females were turned out during the early part of the summer, and every one that was found paired was marked with black ink on one wing. By working at night with an acetylene lamp it was quite easy to spot them. After a few fine days every one of our ninety females had an ink mark. All had paired. As soon as ovipositing commenced we used to net the layers and mark them with red ink. Twenty-nine or thirty females were so marked; so it worked out at two females hibernating before laying to every one that laid at once.

It has been suggested that some of the extraordinarily fresh specimens which are noticed on the wing in early spring may have wintered as pupæ, and it is quite possible that this is indeed the case. We notice females depositing quite late in the autumn, and larvæ are often found still feeding on the evergreen *R. alaternus* in November. Our climate is, of course, fatal to these late feeders; but such may not be the case in the more genial Midi. We have often watched pupæ all through the winter, and have kept them alive perhaps till March, but have never succeeded in getting them to emerge in the end. In April, 1912, however, a perfectly fresh male *cleopatra* appeared in the garden that

must, without any doubt whatever, have wintered in the pupal state. We had had warm March days that had brought out our few surviving males, and most of the females. Then, in April, this male appeared and was first noticed when its wings were barely dry.

Very few males winter successfully with us, and those that do, live but a short time in the spring. A very few virgin females also come through, those, in all probability, that emerge too late in the autumn to pair. We have noticed spring pairings.

As a general rule the females pair at once if the weather is warm; indeed, they most frequently pair before flying at all. This was first noticed by us when we took to pinning out freshly emerged butterflies that were still hanging to the empty pupa case. The males find them out, and pair with them as soon as their wings are dry.

As far as the females are concerned this is by far the most satisfactory hibernating insect we have dealt with. They feed up beautifully on buddleias, scabious, valerian, etc., and retire for the winter on the underside of ivy, *R. alaternus*, laurestinus, and other evergreens. Very few deaths occur among the females, but the males are a much more difficult proposition. A lamp inspection at the end of October (at the risk of being arrested and shot!) showed that we have forty or fifty facing the present winter.

The weak point in their life history, as far as our climate is concerned, is that the tiny larvæ in the spring succumb to three or four degrees of frost, and, as we seldom escape spring frosts, it is necessary to treat them more or less artificially at that time of the year.

East Farleigh, Kent,
November, 1916.

NOTES ON THE LARVAL AND PUPAL STAGES IN SOME OF THE SESIIDÆ.

By COLONEL R. H. RATTRAY.

IN continuation of my notes in Entom. xviii, pp. 9-12, I am adding a few notes I made during the years 1915 and 1916. I regret that, owing to my duties, I have only been able to give a very little time to the work. I have, however, verified to a large extent my former deductions and modify them to a small extent.

I have only been able to deal with the following species: *Trochilium crabroniformis*, *Sesia culiciformis*, and *Sesia audrenæformis*.

¶ As regards *T. crabroniformis* I have, now that I know the district better, found them even commoner than I thought before. During the year 1915 I obtained over fifty full-fed larvæ and a good number that had not yet spun up. During 1916 I had less time at my disposal, so did not do so well; I,

however, obtained about thirty larvæ, mostly full grown. During these two years I bred out some forty perfect specimens. I see no reason to modify any conclusions I then came to. In every case in which the larvæ had not spun up they all fed for a time, but eventually died. I never saw a really small larva from these parts; one was sent me by a gentleman from, I think, the New Forest area, but it arrived in so shrivelled a state that it was quite impossible to identify it. As *S. formiciformis* is also apparently found in the same area, I could not with any certainty say it was not this species. I think, however, that even if the larva was that of *T. crabroniformis*, it must have received some injury or been stung to thus delay its development. I think we may still conclude that the normal period or life-cycle extends over a period of two years. Before leaving this insect I would like to add one hint on management that I hope may be of some use to others in rearing. Regularly every morning, about 8 a.m., I look in the large flower-pot in which I keep my pupæ. I very often find a pupa has fallen out of its hole and is lying on the sand. I at once carefully pick it up and replace it in its burrow, with its tail in the hole; it can thus obtain a leverage, and by curling itself upwards burst its skin and emerge safely. I found that if left to themselves they in about nine cases out of ten died. Many species of Sesiidæ seem to emerge safely if left to themselves on falling out of their holes, but I soon saw that *T. crabroniformis* seemed to want a good deal of leverage to enable them to burst their skins, and if left on the sand double themselves up repeatedly as if trying to obtain the necessary leverage. In cases where I left them on the sand they died.

Sesia culiciformis.—During the spring of 1915 I was able to obtain a large number of full-fed larvæ, but was not very successful in rearing them. I tried the forcing-box mentioned by Tutt in his notes, but, I suppose, from my not quite understanding the correct amount of heat and moisture, a large batch, of over a hundred died. I then reverted to the system mentioned in my former article and reared practically the whole batch. With reference to the period of life-cycle of this insect, I, in March this year (1915), found some eight or nine quite small larvæ, about $\frac{1}{4}$ inch long, in one wood that to my certain knowledge had only been cut down the previous year. I also found a large number of pupa cases from which the moths had emerged. The very small larvæ had not spun up and continued to feed until they died. Is it possible that in some years, that are for some reason particularly favourable, the larvæ feed up and emerge the same year? I have never, as in the case of *S. cynipiformis*, found larva of various sizes throughout the year. In the case of the pupa cases they were found in a wood that I had seen cut down during the previous winter. I hope

next spring to go more thoroughly into this question. During the first week in April I dug out over twenty that had actually turned into pupæ. I am of course quite convinced that the normal period of life-cycle is one year, but I think it is very probable that a few larvæ remain over in larval state till the following spring.

Sesis andrenæformis.—During the year 1915 I was very lucky with this insect; it seemed to be the year for them. In some six days I spent on the ground I found over forty good larvæ. I forced these in the same manner as in the former year with excellent results. I bred out over thirty moths; only two were stung. In 1916 I could only give up a few days, but managed to get about thirty full-fed larvæ. I was not so fortunate with these, but reared sixteen. My experience during these two years leads me to the conclusion that the life-cycle of *S. andrenæformis* is always over two years. I found very few larvæ had been stung; in fact, I have only bred out seven flies out of some hundred larvæ in three years.

I regret I was unable to look up any of the other species, but as I am now relieved of my military duties, I may be able to continue my studies next year, when I hope to devote my time to the other species found round here.

69, Dry Hill Park Road,
Tonbridge, Kent.

TWO DAYS' COLLECTING IN LANCASHIRE AND CUMBERLAND.

BY GERARD H. GURNEY, F.E.S.

ON July 3rd I was granted five days' leave from my military duties at Reading, and determined to make a dash up to Lancashire in order to spend a day at Witherslack, and then on to the Cumberland mountains for two days' search for *Erebia epiphron* var. *cassiope*. The latter quest would I felt be doubtful of success, as although friends had given me very lucid descriptions of the special locality in which to find *cassiope*, yet Cumberland is a long way to go to find a butterfly on a perfectly strange ground, when one only has a limited forty-eight hours to do it in, especially when that butterfly only flies in a few very local spots on a large range of mountains; moreover, the weather was very unsettled at the time; in fact, all the fates seemed to point to it being a bit of a wild-goose chance. However, you never know your luck, and as I had got my leave I determined to go, and duly arrived at Grange-over-Sands late in the evening of July 3rd. The following morning luckily was sunny and very warm, and I was early astir and bicycling the short three miles to Witherslack. It was just two years since I had had a net in my

hand, the last time being a wonderful day spent at Eclépens in that fatal first week in August, 1914, when Germany had just declared war on France and the rumblings of the European holocaust had already sounded, and one wonders when one will see those beautiful woods again, with their great profusion and variety of insects. But to return to Witherslack, where I was renewing an acquaintance of seven years before.

On the "moss" itself, *Cænonympha tiphon*, var. *philoxenus* was very abundant, the males generally a good deal worn, but with care a good varied series of fine specimens was taken; the females were quite fresh and very fine. There were not many other species on the wing; a few fresh *C. pamphilus*, and odd specimens of *Pieris napi*, I think comprised all the butterflies, but fine fresh *Lasiocampa quercus* dashed wildly about in the sun, and *Diacrisia (Euthemmia) sannio* males were frequent, with one female.

Early next morning I left Grange and went up to Windermere by steamer, stopping on the way to call on the Rev. J. Euston Nurse, without whose kind help and assistance with localities I should have had no chance of the success I had. From Ambleside I had a ten-mile drive to the little hostel at the head of the valley, where I proposed to stay for the remaining three days of my leave, or rather two, as one whole day would be taken up on the return journey to Reading.

That evening it was bitterly cold, and heavy lowering clouds coming up from the south-east made me very anxious for the morrow, and my worst fears were realized when I woke early the following morning to find it pouring in torrents; however, it was no good spending the day in the hotel, so I set forth up the mountains at the back, to try, at any rate, and find the special landmarks for the locality which I had had so carefully described to me.

About one o'clock the rain stopped, and a dense fog came on, and when I arrived at what I expected would prove to be the *cassiope* ground it was difficult to see more than a few yards ahead of one; however, I stumbled on with my feelings at zero, when I suddenly saw at my feet, clinging to a blade of grass, a small black object; this was, of course, *Erebia epiphron* var. *cassiope*, and it proved on examination to be a perfectly fresh, undamaged specimen, absolutely torpid, and only clinging to the grass stalk by one leg. I then began a systematic search for others, and presently, after an hour's very hard work, I had collected six specimens. These I found by pulling apart the tufts of grass, and concealed right down in the bottom of the plants were the butterflies; they appeared to be practically lifeless, and lay on their sides in the palm of my hand without moving. This success proved that I was on the right ground at any rate, and as the rain had now ceased and the fog a little

lifted, I determined to wait where I was in the hopes of the weather improving. After some time the mist cleared right away, and at once the atmosphere became very appreciably warmer, and soon I saw four or five *cassiope* slowly crawling up the grass stems; others followed, and I collected nearly twenty in this way, or found them hanging to grasses, generally amongst the larger tufts. About one o'clock the sun appeared very feebly for a few minutes, but apparently with enough strength to arouse *cassiope* into liveliness, for at once they began to fly, and I was able to take a nice series of perfect specimens: it was quite extraordinary how little sun they required to tempt them into flight. They flew strongly up and down the gully, and looked rather large and conspicuous on the wing. As soon as the sun went in, which it very quickly did, they disappeared as if by magic, and were nowhere to be seen, and there was more rain and fog; later in the afternoon it again cleared and became warmer, and again one saw them crawling slowly up the grass stems. They did not, as so many species of *Erebia* do, drop down on open ground, with outspread wings, directly the sun went in, but these *cassiope* entirely disappeared at once.

They were extremely local, and I only saw them in one small gully; in fact, considering the terrible weather and the lack of time at my disposal, I was very fortunate to find them at all, and, as it turned out, my leave proved to be long enough for my requirements.

I also picked up in the same place *C. pamphilus* and two fresh *Parasemia* (*Chelonia*) *plantaginis*. Searching one of the tufts of grass (*Nardus stricta*) I found a half-fed larva of *cassiope*, I presume a very late and backward specimen. All the butterflies I took were quite fresh and both sexes were well represented. That evening I started on my return to Reading, well pleased with my four days' collecting trip.

NOTES FROM CAIRO.

By F. W. SOWERBY, F.E.S., LIEUT., R.N.D.

As most of the collecting in this part of the world has probably been done during the "season," perhaps a few notes on the specimens I obtained during part of July and August, 1915, may be of interest.

An attack carried out on July 13th landed me unexpectedly in Cairo a few days later. During my first few days I was confined to hospital, but the few insects which visited my ward filled me with a great longing to get out among them. The most interesting visitors were the magnificent metallic green Chrysid, an enormous bumble-bee (*Xylocopa aestuans*), and a very big black wasp (*Eumenes maxillosa*). I also found in the

hospital a fine long-horned beetle, the Lebbek-borer (*Xystrocera globosa*), and a species of *Attagenus*. Light did not seem to attract very many insects, but I obtained the following species at it, mostly single specimens: Lepidoptera—*Agrotis puta*?, *Prodenia litura*, *Earias insulana*, a very small *Nomophila noctuella*, and *Ephestia cautella*; one beetle, *Catharsius pithecius*; a Trichopteron; and two fine insects, the big green *Sphodromantis bioculata*, and the large and beautifully blotched antlion, *Palpares cephalotes*.

Being in a hospital at Giza, most of my collecting at first was done in the fine Zoological Gardens there. Here the first insects which struck my eye were the common dragonflies, *Brachythemis leucosticta* with dark-banded wings and *Crocothemis erythræa* with a scarlet body. These were very abundant, but difficult to catch, jumping up from the gravelled paths as one approached, to settle again a little further on. In this order I also obtained *Orthetrum trinacria*, big and greyish blue, *Ischnura senegalensis*, very small, and a good many others which I have been unable to identify.

Lepidoptera included *Pieris rapæ*, *Colias edusa*, *Danaïs chrysippus*, *Pyrameis cardui*, *Lampides beticus*, *Zizera lysimon*, *Tarucus theophrastus*, *Chapra mathias*, *Gegenes nostradamus* (one), and the Pyrale *Pachyzancla licarsicalis*, which came out in abundance from all the undergrowth one touched. The two smallest blues, *lysimon* and *theophrastus*, were to be seen in thousands.

As in Gallipoli, Cyprus, and the other places in this part of the world in which I have collected, the most abundant and noticeable orders were Orthoptera and Hymenoptera. The Zoological Gardens provided me in the latter order with series of *Xylocopa æstivans*, *Apis mellifica fasciata*, *Anthophora quadrifasciata*, the minute *Nomioides variegata*, *Sceliphron spirifex*, *Philanthus triangulum*, *Vespa orientalis*, *Eumenes gracilis*, *E. maxillosus*, *E. pomiformis*, *Polistes gallica*, and *Myzine zonata*. The last six I found in all the localities in which I collected, *Polistes gallica* appearing to be the commonest Egyptian insect. Single specimens were obtained of *Crocisca scutellaris* and an *Odynerus* near *minutus*.

Of Orthoptera I took series of *Chrotogonus lugubris*. *Oxycoriphus compressicornis*, *Epacromia thalassina*, *Acrotylus patruelis*, and both green and brown examples of the large *Tryxalis unguiculata*. I also saw a very large brown Mantis on an acacia, but could not reach it.

The only Coleoptera were an orange Galerucid, *Rhaphidosoma foveicollis*, and a big black species of Heteromera, *Ocnera hispida*, which I found in great abundance in an empty tub.

Hemiptera were noticeable by their absence in this as in all other localities, and I only took one specimen of the minute diptera-like *Nysius ericæ*.

The only other place in Giza in which I collected much was the garden of the Horticultural Society. Here I added *Craspedia minorata* (one) and *Noctuelia floralis* to my lepidoptera, and obtained also the following: Orthoptera—*Chrotogonus lugubris* and *Paratettix meridionalis*; Coleoptera—*Cicindela melancholica*, F. (*ægyptiaca*, Klug) and *Pædcrus fuscipes*; Hemiptera—*Oxycarenum hyalinipennis*; Hymenoptera—*Philanthus triangulum*, *Pompilus* sp., and *Notogonia* sp. near *argyropiga*; Diptera—*Argyramœba leucogaster* and some nice Asilidæ. The tiger beetle was running about in great numbers on the mud left as the water irrigating the crops subsided; however, like the English species, it ran so quickly and flew so readily on being approached that I obtained very few specimens.

(To be continued.)

NOTES ON SOME OF THE LEPIDOPTERA OF THE BRITISH LINE IN FRANCE.

BY CAPTAIN H. DOUGLAS SMART, R.A.M.C.

THIS is not a scientific paper, but I hope it may be of interest to other mere collectors, whose collecting is now being done somewhere in France.

From the nature of my occupation, serious collecting has been impossible, and the insects taken or observed are the result of day-time rambles. Collecting by night and by the rearing of larvæ have both been impossible. Often I have had no net, and the difficulty of using a net in trenches needs experience for its proper appreciation.

The period covered is the year ending on September 10th, 1916, and the district is the British line from the Belgian Frontier to the Somme.

In this period the infantry battalion to which I am attached has fought in and out of trenches at several parts of the line and has marched and billeted along most of it.

My collecting has of course depended upon the nature of the district occupied at any time and the exigencies of my work, the latter varying from an easy two hours a day to an "all out" ninety-six hours in four days.

As regards nomenclature, or the Confusion of Tongues, I propose to adhere as closely as possible to the 'Entomologist' list, which I consider the most reliable one yet published of our British insects, which appear to differ but little from those of Northern France.

In this connection I should like to suggest humbly that a responsible committee of ento- and etymologists be appointed to consider all attempts to tamper with the names of established

species and genera; that after a specified date they publish an official catalogue, the titles in which could be changed only at regular quinquennial revisions.*

As in Britain, the weather of the 1916 season has been very unfavourable, and insects, judged by British standards, very scarce.

Papilio machaon apparently is common everywhere. The spring brood on the Somme and the summer brood in the Pas de Calais were both numerous. I do not know whether it occurs in Flanders. The three common Pierids were the only ones observed, and they are unusually abundant on the land, now uncultivated for two years, immediately behind the front line. In the Souchez area the summer brood of *napi* showed a tendency to produce spring ♀ forms, and both *rapæ* and *napi* were often of exceptional size.

Euchloë cardamines was abundant in the Somme area, and is doubtless so along the whole line.

Colias hyale produced a numerous spring brood on the Somme, but *C. edusa* was not observed in this locality or season. Further north I saw one *edusa* near Souchez in August, and found *hyale* common near Bruay in September.

Gonepteryx rhamni I have seen commonly wherever I have been at appropriate seasons—Flanders, Artois, Picardy.

Argynnis selene, one specimen near Bray, Somme.

A. euphrosyne, one or two seen on the wing near Corbie. †

A. paphia, very common in a wood near St. Pol and no doubt in many other places. I feel sure, however, that it did not occur, or only rarely, in the extensive woods near the line at Souchez. One specimen near Bruay.

Melitæa aurinia occurred in the Somme marshes, but in very small numbers. I saw it nowhere else.

* Captain Smart is evidently unaware that the Committee of his dreams has already materialised. The only drawback I fear is that though we are certain that the labours of the International Committee on Nomenclature established at the Oxford Congress of 1912 will terminate after the war, we do not know which war. Indeed, the complete revision of entomological nomenclature, in so far as it affects even the lepidoptera we were once permitted to regard as "macros," judging from present results, may fairly be anticipated about the date of—the Greek kalends.—H. R.-B.

† Corbie in the department of the Somme is on the chalk, and is a favourite collecting ground with Parisian lepidopterists in peace time. My friend, M. Ferdinand le Cerf, keeper of the Lepidoptera in the Museum of Natural History at Paris, directed my attention to the locality long ago, and I only regret that time and opportunity have been wanting to follow his direction. *Hipparchia briseis* occurs here; and Captain Smart should have met with at least two other Coppers in the department, *Chrysophanus hippothoe*, and *C. dorilis*. Duponchel says that the former species used to be very common in the peaty marshes round Amiens, marshes which I suspect will some day restore *C. dispar*, var. *rutilus* to the fauna of the north of France. *C. dorilis* I myself observed near Crécy; and M. Postel records it from Hédeauville.—H. R.-B.

M. parthenie was common in a wood near Vaux-en-Amienois, which is easily the best hunting-ground I have come across in this country. Unfortunately my opportunities there were limited to one dull day.

Araschnia levana I am doubtful about. There was a small, fast, tawny butterfly fairly common about Amiens in April. I had no net in those days and never saw it settle. The summer form did not come my way in Artois.

Vanessa urticae was everywhere commoner and often larger than in Britain; also it was more continuous. The hibernated specimens appeared to carry on well into June, when a new brood appeared on the wing. After that fresh and wasted examples were always to be seen together up to September.

V. io was common everywhere, and in the Vimy trenches abundant, though small.

Pyrameis atalanta occurred everywhere, but was distinctly rare in Artois in August and September. *Cardui* I did not see.

Melanargia galatea, abundant near Amiens; not uncommon at Souchez, where it occurred over a much larger area.

Pararge egeria, var. *egerides* was common in the spring at Corbie. I did not meet with the summer brood in Artois.

Both broods of *P. megera* were very plentiful.

Satyrus semele I found only on one rough hillside near Bruay.

Epinephele janira was common everywhere. In the south, however, its distribution was distinctly patchy. It was to be found in some meadows or marshes and not in others. *Hyperanthus*, on the other hand, swarmed everywhere, and produced some good minor variations.

E. tithonus was unaccountably rare and was seen in only two places—two specimens near Souchez and good numbers near St. Pol.

Cenonympha pamphilus, abundant everywhere and producing some fine large specimens.

Thecla betulae was the only hair-streak I saw, a single specimen being taken by a friend near St. Pol. It was abundant near Bruay.

Chrysophanus phloëas did not show itself at all till August, when it was not uncommon near Souchez and St. Pol. No aberrations were taken except one or two with a trace of blue-spotting on the hind wings.

I have been very disappointed in not meeting with any of the other "coppers."

Of *Lycena astrarche* I have taken only two specimens, one near Corbie early in the year and one near Bruay in September. In each case careful search was made for more, but without success.

L. icarus is of course abundant all along the line, and my series of it is perhaps the best part of my very limited conti-

mental collection. It includes ab. *icarinus*, a splendid ab. ♀ *cærulea* from Picardy, and ab. *arcua* from near Arras. There are other minor aberrations, including a ♀ with fringes of the fore wings of the same dark brown as the wing. The only *L. corydon* seen was a battered one caught near St. Pol in late August.

L. argiolus was very common in Picardy in May, but I saw nothing of the later brood.

L. minima was abundant in one part of the wood at Vaux, but I was too late to take it in good condition.

The same wood produced one fine *N. cyllarus* ♂.

Of the genus *Syrichthus* I obtained only four individuals, all of them in May and June, near Corbie. These four, however, include at least two species—*malvæ* and *armoricanus*. Three of them are probably all *armoricanus*, and appear identical as to the under sides. One of these, however, is considerably darker, with smaller, better defined spots on the upper side. It corresponds very closely to the figures of the upper side of *fritillum*. My ignorance of this genus is profound (probably *H. carthami*, H. R.-B.).

Nisoniades tages occurred in the Fricourt trenches. I have seen it nowhere else.

Hesperia thaumas has been everywhere abundant.

H. lineola was abundant behind the Vimy trenches, and was the only skipper there at the time, an arrangement I greatly appreciated after sifting 1 per cent. *lineola* from the accompanying *thaumas* in British localities.

H. sylvanus was abundant in all districts.

(To be continued.)

NOTES AND OBSERVATIONS.

LEPIDOPTERA IN THE NEW FOREST, 1916.—I had the good fortune to spend the past summer at Brockenhurst. Insects were certainly scarce. In fact, it was a common thing to hear, from other visitors, that there was nothing about. Here is my list;

May: *Hemaris fuciformis* occurred at flowers of bugle on the railway bank; also at the azaleas in the Rhododendron Drive at Rhinefield (one was taken, in excellent condition, at flowers of dew-berry as late as July 5th); *Hemaris tityus* was scarce at flowers of lousewort; *Lithosia sororcula* occurred on the 19th in Stubby Copse, but was observed more freely, subsequently, at Holmsley. *Thera obeliscata* was knocked out of Douglas fir at Stubby and larvæ of *Cleora jubata*, *Ellopija prosapiaria*, *Amphipyra pyramidea*, *Xylina socia* were found. *Eupithecia irriguata* was found on a beech trunk near Lyndhurst Road Station. *Epione advenaria* occurred at Holmsley; *Eupithecia indigata* was knocked out of pine and holly, and *E. pusillata* was netted at Rhinefield. *Boarmia cinctaria* was to be found freely in every suitable spot; *Tortrix politana*, *Eucosma fuligana*, *Cydia subsequana* (flying in the sun in that splendid drive at Rhinefield), *Ancylis unguicella* (Matley Heath) occurred in

moderate numbers. *Micropteryx calthella* was abundant in flowers of *Caltha palustris*, and *Lithocolletis quinqueguttella* found sparingly among *Salix*.

June produced very little. I got *Nemoria viridata* (Matley Heath), *Tephrosia consonaria*, *Eupithecia pulchellata* and *Thera firmata*. I also got *Laspeyresia coniferana*, *Enarmonia rubiginosana*, *Eucosma bifasciana*, *Evetria sylvestrana*, *Evetria buoliana* (bred freely from shoots of *Pinus sylvestris*); *Epiblema parvulana* (*scopoliana*, Hw.) was netted near the railway bank. Close to the Poundhill Inclosure *Lithocolletis cavella* was found among birch and *Gelechia dodecella* rather commonly among the pines. *Tinea fulvimitrella*, one only, was flying over *Myrica gale* at Holmsley. I was a little late in finding how and where to work for *Pachythelia villosella*. I bred four ♀♀ from the cases obtained, and although I exposed them they failed to attract a single ♂ visitor. Only two cases of male larvæ were found, both on heather, and in each case the moth had emerged. Nearly all the ♀ cases were found on fences and pine trunks. Larvæ of *Cerostoma scabrella* and *C. horridella* were beaten.

July: *Zygæna meliloti* was very scarce at Woodfidley. *Heterogena asella* was beaten out of *Pinus sylvestris* near the Poundhill Inclosure, having probably strayed there from the Queen Bower beeches. *Boarmia roboraria* was found at rest on one of the trees of that fine avenue of Douglas firs at Ramnor and *Boarmia abietaria* was bred. *Ephestia semi-rufa*, a solitary example, was obtained from an oak trunk near Balmer Lawn. *Eucosma oblongana* (*marginalana*) occurred rather commonly near the railway at Woodfidley and *Tortrix cratægana* sparingly in Stubby Copse. *Evetria pinivorana* was bred. *Scythris grandipennis* was netted on a heath at Ringwood; *Stathmopoda pedella* at Matley; larvæ of *Eurhodope advenella* and *Pseudoterpna pruinata* were beaten.

August produced a few interesting insects; *Semiothisa alternata* occurred near Green Bower, also larvæ of *Pygæra curtula*, and *Acronycta leporina*. *Schrankia turfosalis* was netted at Hinchleslea. I found *Scoparia angustea* on the up platform at Holmsley Railway Station. A search of the station buildings and approaches would probably result in the discovery of a colony of this local moth. *Crambus hamellus* occurred sparingly at Matley Heath. *Sparganothis pilleriana* flew commonly at dusk at Hinchleslea, but was difficult to get in good condition; also, *Elachista rhynchosporella* and *Aphanaula leucatella*; *Psoricoptera gibbosella* was not uncommon on oak trunks near Lady Cross and Queen Bower. *Elachista ? dispunctella*, not in good order, was netted; *Cerostoma sylvella* occurred both in Holland Wood and at Queen Bower. *Chrysoclista vinolentella* was netted flying round an apple tree in the garden. *Gracilaria semifascia* and *Coriscium sulphurellum*, both new to me, fell at one stroke of the beating-stick, and the next dislodged an example of that beautiful insect, *Cerostoma sequella*, also new to me. Larvæ of *Stauropus fagi*, *Aventia flexula*, and *Gracilaria elongella* were found. I got at Matley some interesting examples of the diminutive second generation of *Bactra lanceolana*.

September: I was very pleased to find *Xylina socia* at sugar in the garden and not uncommon. I had three moths of this species, at the same time, at one quite small patch of sugar; *Noctua castanea* was also a visitor. *Plastenis retusa* fell to the beating-stick at Holmsley. *Acalla cristana* was very scarce among the thorns in the Queen Bower district. When beating for this species I could not help but disturb a good many *Acalla contaminana*, one of which was specially interesting in having a conspicuous white button.—F. G. WHITTLE; 7, Marine Avenue, Southend-on-Sea.

LEPIDOPTERA IN CAMBRIDGESHIRE.—Although the little moth-collecting I have done this year has been confined to the garden, I have taken a number of moths at sugar, including two I have not seen here before, viz. *Thyatira batis* and *Anchocelis lunosa*. *Xanthia ocellaris* again occurred, though not in such numbers as in 1914. I took six (all males) in fine condition and missed several others, which I hope will “carry on.” They were all amongst wych elm. Some day I hope to succeed in breeding this insect. The following is a list of my principal captures (all at sugar, light, of course, being out of the question).

June and July.—*Cymatophora ocellaris* (*octogesima*) (four, one nice var.). *Thyatira batis* (one, second record only for this neighbourhood). *Habrosyne derasa* (common). *Aplecta advena* (two only). *Hadena trifolii* (common May—August).

August—October.—*Triphena fimbria*, *T. ianthina*, *T. interjecta*, *T. orbona*, and *T. pronuba* (common, but late and worn; also noticed on ragwort with *Noctua umbrosa*, *N. rubi*, *Hydroecia nictitans*, etc.) *Agrotis puta* (common), *Epunda lutulenta* (very common, many, strange to say, in good condition). *Cosmia affinis* (common). *C. diffinis* (scarce at sugar). *Anchocelis lunosa* (one, the first seen here). *A. pistacina* (some very dark forms). *Cirrhia citrigo*, *Xanthia flavago* (very dark “bands”), *X. fulvago* (all common and early; *citrigo* first appeared on August 20th). *Xanthia* (*Mellinia*) *gilvago* (about a dozen). This species is getting scarce in the garden. The last time I saw it in abundance was in 1909, when I set nearly 200 (some var. *palleago*); there must have been thousands at light and sugar. *M. circellaris* was very common at the same time, but no *ocellaris* such as I take now, though they occurred near by.

Xanthia Mellinia ocellaris (six, see above). This species had not, in my opinion, the slightest resemblance to any form of *gilvago*, as I have seen stated. Obscurely marked *circellaris* have sometimes to be looked at twice on the sugar, but with *ocellaris* beside them a great difference is at once apparent. The latter is a much more delicate and “neater” looking insect, and when flushed with pink (as occurs here) is a delight to see (and set!).

Xylina semibrunnea (eight—three hopeless cripples) together with one *Plusia festucae* (September 12th), complete my list of those taken at sugar, which, considering the abominable weather and the small area in which I collected (less than three acres of garden), is really quite good.

Cymatophora ocularis I think must be considered the best thing taken, as though it occurs pretty regularly round Cambridge (some years in numbers), it is always very local and uncertain in appearance.

I ought to mention too the almost total absence of *Orrhodia vaccinii*. Since coming here in 1907 I have only seen three specimens, the last three years ago. Its congener, *O. ligula*, is abundant and very variable. Has any other southern collector found it scarce?

Dayfliers were pitifully scarce all through the summer, and only one *Acontia luctuosa* was noticed. Amongst the butterflies, *Argiades sylvanus* (as often happens in wet years) was quite common, but the "Common Blues" and "Small Copper" were entirely absent! Larvæ, however, were abundant everywhere, and I had a full-fed *Anticlea sinuata* brought to me.

I saw several *Cerura furcula* larvæ crawling down the trunks of willow-trees I had sugared. They were full-grown, and were evidently coming down to pupate, and as they were very conspicuous in this position were wise enough to choose the night-time for their purpose.—HUGH P. JONES; Westwood, Great Shalford, Cambridge.

UNUSUAL FOOD-PLANT OF *ACHERONTIA ATROPOS*.—In a letter from Mr. Charles Morris of Le Cannet, under date November 16th, he writes: "Last week we found a fine larva of *A. atropos* on an olive-tree nearly full fed. It had completely devoured a small branch. We were attracted by the large amount of frass on the road. There was only one, and it had taken on the glaucous green tint of the leaves, and the stripes on the back were indigo and Prussian blue—altogether remarkable coloration and a handsome beast; coloration no doubt due to its diet, as I find all nude larvæ take on very much the colour in pigmentation of the shade of leaf or flower they feed on. It may, if successful, produce a very dark imago, which, of course, may produce also some salad oil, and go greasy! I had a male that evidently had been at a hive, and exuded honey from its head for years after it was killed and dried." The text-books give tea-tree, bitter-sweet, and snowberry as additional foods to solanum. But as might be expected, a larva with the powerful jaws of *atropos* can stomach even the tough leaves of evergreen trees, and Millièrè (Catalogue des Lépid. des Alpes-Maritimes, part i., p. 116; Cannes, 1872) includes with the food-plants on the Riviera *Lycium barbarum*, *L. europæum*, *Datura stramonium*, privet, and *Jasminum fructicans*. He records also having beaten a larva from *Quercus robur*. M. P. Rondou (Catalogue, etc., des Pyrénées, p. 50) has taken it on *Fraxinus elatior*. To which may be added, on the authority of Rouast (Catalogue des Chenilles Européennes, Soc. Linn., Lyon, tome xxix, p. 267) *Cannabis sativa*, and garden bean. But I think Mr. Morris is the first to note *atropos* on olive.—H. ROWLAND-BROWN; Harrow Weald, December 3rd, 1916.

THE HIBERNATION OF *LAMPIDES BÆTICUS*.—In volume ii. of Tutt's "British Butterflies" the bionomics of this species are fully discussed, with copious observations from Dr. Chapman. The conclusion arrived at by Dr. Chapman (p. 370) in respect to the stage in which *bæticus* passes the winter is that normally it is a continuous-brooded species, and carries with it from its tropical and sub-tropical home the habit of continuity. The capture of imagines by me at Hyères in March–April, 1898, before Dr. Chapman's notes were published, had led me to suppose that on the Riviera hibernation took place exclusively as imago. But a remark on the subject in a recent letter from Mr. Charles Morris of Le Cannet suggests that—assuming winter to mean the months of November to February inclusive—Cannes indigenous *bæticus* do not "hibernate" at all. Quoting a previous note of his in 1914, I transcribed in the 'Entomologist,' vol. xlix. p. 151), "larvæ in pea-pods . . . at the end of October, and in November; ? imported from Algeria." Under date November 11th, 1916, Mr. Morris adds: "I am getting a fair number of larvæ of *bæticus* in the pea-pods which the cook brings in, and she tells me that these peas now in market are grown in the neighbourhood of Grasse, and are not from Algiers, as was the case two years ago." From this remark it would seem, therefore, that the pea-feeding *bæticus* at all events winter in the pupal and imaginal stage—in fact, carry on from one generation to another without hibernation at all in the strict sense. By the end of November the autumn pea-crop would be finished, and the larva presumably full-fed before the bursting of the pod, and the maturity of the fruit therein contained.—H. ROWLAND-BROWN; December 17th, 1916.

SCOPARIA FREQUENTELLA, *S. PALLIDA*, ETC.—I found that moss growing on walls and sheds in a brickfield at Wakering contained larvæ of a *Scoparia*. These proved to be *frequentella*; quite a crowd of moths emerged, with them one *S. pallida*. *Gelechia affinis* was also bred from the moss in some numbers.—F. G. WHITTLE; 7, Marine Avenue, Southend-on-Sea.

PROUTIA BETULINA LARVA FEEDING ON *PLANTAGO*.—A leaf of *Plantago lanceolata* containing a larva of *Gracilaria tringipennella* was picked at Thorpe Bay on April 24th. The leaf was dropped into a jar in which there was a larva of *Proutia betulina*. This at once went for the plantain leaf and ate with an appetite.—F. G. WHITTLE.

EUVANESSA ANTIOPA IN KENT.—In 'The Field' for November 18th Mr. C. S. Mills records having seen a perfect specimen of *Euvanessa antiopa* near Canterbury on October 28th last. It was basking in the sun on an old branch of a tree; it was very strong on the wing when disturbed, and allowed him to get within a yard of it. This species appears to have been extremely rare this year; the only other specimen which has been recorded ('Entomologist' for August, p. 188) was seen by Mr. W. A. R. Jex Long near Glasgow on April 29th last; consequently, a hibernated example, and from its large size it was undoubtedly a female.—F. W. F.

LATE APPEARANCE OF *PARARGE EGERIA*, VAR. *EGERIDES*, ETC.—With reference to my note in the December number of the

'Entomologist,' p. 287, on the late appearance of *P. megæra* on November 13th, my brother-in-law, Mr. F. B. Hincheliff, who was shooting in this neighbourhood on that day, tells me he saw two specimens of *P. egeria*, var. *egerides*, and one of my daughters saw *P. atalanta* on the 16th of the same month—a fine bright day, but much colder than the 13th.—GERVASE F. MATHEW, F.L.S., F.E.S., *Paymaster-in-Chief, R.N.*; Instow, North Devon, December 11th, 1916.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 18th, 1916.*—Dr. T. A. Chapman, M.D., F.Z.S., Vice-President, in the chair.—Prof. E. Bugnion, La Luciole, Aix-en-Provence, France, and Rev. Bruce Cornford, 13, Havelock Road, were elected Fellows of the Society.—Mr. G. Talbot, on behalf of Mr. J. J. Joicey, exhibited some new and little-known examples of resemblance in butterflies.—Prof. Poulton gave an account of some experiments on spiders with butterfly food and observations on the attacks of birds on butterflies, in British East Africa, by the Rev. K. St. Aubyn Rogers. He also related some observations by Dr. R. Hanitsch on the proportions of the female forms of *Papilio polytes*, L., on Singapore Island, and exhibited all the females and a selection of males of the series of *P. polytes*, F., *romulus*, Cr., on which they were based.—Mr. Donisthorpe exhibited an ergatandromorph of *Myrmica laevinodis* which he had taken in his garden at Putney on October 11th.—Mr. W. C. Crawley exhibited mermithogynes of *Lasius flavus* and *L. alienus* taken at Porlock; also the alate ♀♀, hitherto unknown, of the common ant aphids, *Forda formicaria*, Heyden, and *F. viridana*, Buckton, taken at Porlock with *Lasius alieno-niger*.—Dr. Cockayne exhibited a ♀ Psychid, bred July, 1916, from a larva found on a Japanese dwarf cedar at Hammersmith, together with the larval case.—Mr. L. W. Newman exhibited true melanic (unicolorous black) specimens of *Eupithecia lariciata* from Warwickshire; melanic specimens of *Boarmia consonaria* from Kent; dark type, intermediate and melanic specimens of *B. consortaria* from Warwickshire; also on behalf of Mr. G. B. Oliver two curious aberrations of the latter species.—Mr. H. Main exhibited a pupal cell *in situ* of the beetle *Dytiscus marginalis*, together with a spectroscopic photograph of the pupa in its cell, showing how it rested on its extremities, the rest of the body being unsupported.—Mr. Bedwell exhibited on behalf of Mr. C. J. C. Pool an exceptionally large ♂ of *Emus hirtus* taken near Rochester in September, and also a specimen of *Megapenthes lugens* taken by Mr. D. Cumming, in May, 1915, on holly blossom near Lyndhurst. Mr. Bedwell also exhibited a living specimen of *Elater coccinatus* from Waltham Abbey, with examples of *E. pomonae* and *E. sanguinolentus*, and the thorax of each species mounted separately for comparison.—The following papers were read: "Falkland Island Diptera," by C. G. Lamb, M.A., B.Sc.; communicated by F. W. Edwards, F.E.S. "Observations on the Growth and Habits of the Stick Insect, *Carausius morosus*, Br.," by H. Ling Roth; communicated by Prof. Poulton, D.Sc.. F.R.S., etc.

Wednesday, November 1st, 1916.—Dr. C. J. Gahan, M.A., D.Sc., Vice-President, in the chair.—Messrs. Hassan Efflatoun, Choubrah Avenue, Cairo, Egypt, and S.E. Agricultural College, Wye; Frank Hamnyngton, Mercara, Coorg, S. India; Harry Haden May, Blackfriars House, Plymouth; and Akio Nohira, Tehijoji, Ottagun, Kyoto, Japan, were elected Fellows of the Society.—Prof. Poulton gave an account of some observations by Mr. C. O. Farquharson on the Hesperid butterfly, *Rhopalocampa forestan*, Cram. He also exhibited a specimen of a Tabanid fly (probably *Pangonia oldii*) which had attacked Dr. G. D. H. Carpenter while on the wing. Also examples of *Mallota cimbiciformis*, bred by Mr. H. Britten of the Hope Department.—The Rev. F. D. Morice exhibited specimens of *Pteronus sertifer* ♂♂ and ♀♀.—Mr. G. T. Porritt exhibited specimens of *Symphrobrus striatellus*, Klap., and of *S. elegans*, Steph., for comparison.—Mr. G. Talbot exhibited, on behalf of Mr. J. J. Joicey: (1) A gynandromorph of *Papilio lycophron*, race *phanias*, R. and J., from North Peru. (2) *Polygrapha cyanea*, G. and S., the unique and hitherto undescribed female, apparently a mimic of *Opsiphanes*. (3) A hybrid gynandromorph of *Amorpha populi* × *Sphinx ocellatus*.—The following papers were read: "Further Notes relating to the Jurinean Genera of Hymenoptera," by the Rev. F. D. Morice, M.A., F.E.S., and J. Hartley Durrant, F.E.S. "On a Collection of Heliconine Forms from French Guiana," by J. J. Joicey, F.F.S., and W. J. Kaye, F.E.S. The latter was illustrated by a large collection of *Heliconius melpomene*, which was exhibited.—Rev. GEORGE WHEELER, Hon. Sec.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 12th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Kaye exhibited a specimen of the new species of *Ornithoptera*, *O. joiceyi*, from New Guinea.—Mr. Newman, specimens of the extreme melanic form of *Tephrosia consonaria* from Kent; fine melanic forms of *T. consortaria* and an intermediate form, a series of var. *rossica* of *Callimorpha dominula*, and a bred series of *Dicranura bicuspis* from Tilgate Forest.—Mr. A. E. Gibbs, the purse-like galls on the petioles of poplar leaves caused by the Aphid *Pemphigus bursarius*; a case of further specimens of *Pararge aegeria* var. *egerides* from South Devon sent by Dr. Perkins, and read a long series of notes on the characteristics, habits, and dates of the various broods. In the discussion it was shown that besides passing hibernation in almost any stage of larval growth, the species could pass the winter as a pupa.—The Report of the Field Meeting at Ockham and Wisley on May 20th was read by Mr. Kaye, the leader.—The Reports of the Field Meetings to Clandon on June 24th and to Box Hill on July 22nd were read by Mr. Hy. Turner, the leader.—HY. J. TURNER.

October 26th, Mr. Henry J. Turner, F.E.S., President, in the chair.—The death of a member, Mr. C. A. Briggs, F.E.S., was announced.—Mr. Bowman exhibited underside aberrations of *Aricia medon*, (1) with distal spots on under side of hind wings represented by white splashes only, (2) ab. *obsoleta* with heavy striations of white.—Mr. H. Moore, the West African moth *Eudæmonia*, sp., with hind wings produced to very long tails.—Mr. Brooks, the introduced floating plant *Azolla* from Enfield.—Mr. Hugh Main, a stereoscopic picture of the stag-beetle shortly after pupation.—Mr. Curwen, a

number of species of the genus *Pararge* from the continent of Europe, and remarked on the diverse habits of some of the species.—Mr. Turner, examples of most of the species in the genus *Pararge* (*sens. lat.*), arranged as they are in the National Collection to show the sub-generic divisions in illustration of his paper, "The Genus *Pararge*." A considerable discussion took place, in which it was advanced that in a genus with a large number of species it was necessary to consider them in groups; that the giving of special names for such groups was much to be deprecated, especially as they often had no particular significance when given; that in the case of the very large genus *Papilio* one spoke of a group by the name of a conspicuous member of it, *e.g.* the *machaon*-group; that the species sometimes fell naturally into groups by their habits, *e.g.* *ægeria*, etc., shade-loving; *megæra*, etc., sun-loving, etc.—Mr. Frohawk reported the occurrence of *Anosia plexippus* in Ireland, and gave a résumé of the extension of the range of this species. A discussion then took place, in which it was advanced that migration in many cases appeared to be a voluntary act.—HENRY J. TURNER.

MANCHESTER ENTOMOLOGICAL SOCIETY.—October 4th, 1916.—Exhibition evening.—The following were the exhibits:—Mr. B. H. Crabtree, a series of *L. ægon* ab. *masseyi* from Witherslack; also a nice selection of *P. c-album* reared from larvæ from a female insect taken in the Wye Valley, May, 1916.—Mr. W. Mansbridge, *Macaria alternata* from Witherslack, *M. liturata*, Delamere, also var. *nigrofulvata*, from the same locality, *M. notata* from Burnt Wood, *Bomolocha fontis*, *Ephyra pendularia*, var. *subroseata*, *Eurymene dolabraria*, *Asthena sylvata*, *Eucosma undulata*, *Eupithecia satyrata*, and var. *callunaria*, *E. plumbeolata*, all from Burnt Wood; *E. venosata*, Witherslack, and *E. indigata*, Delamere; *Bupalus piniaria*, two forms of the female from Delamere; *Lycæna icarus*, asymmetrical female, one side nearly ab. *arcuata* and the other side var. *icarinus*, from Crosby sandhills; *Pædisca rubiginosana*, taken at Delamere.—Mr. C. F. Johnson, series of *N. lucina* from Witherslack, *M. notata*, *M. hastata* from Burnt Wood, two yellow vars. of *A. grossulariata*, and a long series of *L. ægon* from Witherslack and the New Forest, showing a marked local difference.—Mr. L. Ward, various hand-coloured drawings by himself of Lepidoptera in all stages; also a number of specimens illustrating the lepidopterous fauna of the district round Chew Valley.

November 1st, 1916.—Mr. A. Binns gave an address on "Bees." He confined his remarks to *Apis mellifica* and its varieties—English, Italian, and Dutch. He dealt first with the anatomy, mentioning the distinguishing features of queens, drones, and workers, and gave some interesting personal experiences of bee-keeping, embodying in his paper a good deal of valuable information and many useful facts. On an average it takes 14 lb. of honey to make 1 lb. of wax. The life of a worker bee hatched during the summer is about six to eight weeks, during which time it manages to gather something like 2 oz. of honey. If the bee hatches out in, say, August it usually lives through the winter. A swarm of bees weighs from 4 lb. to 8 lb.—The address was followed by a lively

discussion in which the majority of those present took part.—A vote of thanks, proposed by Mr. Mansbridge and seconded by Mr. Crabtree, was unanimously accorded to Mr. Binns for his very interesting paper.—Mr. Crabtree showed *S. tilix* from Kent—a varied series including forms with light and dark hind-wings.—Mr. Watson, Hymenoptera parasitic on Saturnidæ, as follows: *Cosmijoppa violaceipennis*, *Xanthopimpla watsoni*, *Oneilella formosa*. Full details of these will appear in the report.—Messrs. W. Lees and H. Burrows, Lepidoptera captured at Lindow Common during 1916: *B. quercus*, *B. rubi*, *S. carpinii*, *N. dromidarius*, *A. fuliginosa*, *A. menyanthidis*, *A. rumicis*, *X. fulvago*, *A. porphyrea*, *H. pisi*, *A. myrtilli*, *E. nanata*, *M. ocellata*, *E. plumbaria*, and *M. rubiginata*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquitt Street, Liverpool, October 14th, 1916, the President, Dr. John Cotton, in the chair.—As usual on the opening meeting of the session, the evening was devoted to exhibits relating to the season's work. It was at once apparent that the war had affected our members, but if the quantity of material was less the quality was well maintained; most members reported a bad and uneven season, with the consequent result that many of our favourite species had been scarce and also late in their appearance.—Mr. F. N. Pierce had a large number of micro-lepidoptera, chiefly from Delamere Forest; included in his exhibit was a short series of *Solenobia melanella* from Essex.—Miss D. I. Burne had a specimen of *Pseudoterpsia pruinata* of a uniform clear ochreous colour; its fine condition suggested that it was a natural yellow variation.—Mr. S. P. Doudney showed the following, all from the Wye Valley; *Apatura iris*, *Argynnis selene*, *A. aglaia*, *A. adippe*, *A. paphia*, *Vanessa c-album*, *Thecla w-album*, *Epinephele janira*, a xanthic aberration, *E. hyperanthes*, *Pararge egeria*, *Angerona prunaria*, *Zonosoma annulata*, *Asthena blomeri*, *A. sylvata*, *Eupistertia obliterated*, *Minoa murinata*, *Eucosmia undulata*, and many commoner species.—J. W. Griffin, a specimen of *Sphinx convolvuli* taken on a fence post at Leasowe, Cheshire.—Mr. W. Mansbridge brought, from North Staffordshire, *Eurymene dolobraria*, *Zonosoma pendularia* var. *subroseata*, *Asthena sylvata*, *Macaria notata*, *Eupithecia satyrata* and var. *callunaria*, *E. plumbeolata*, and a varied series of *Bomolocha fontis*; from Delamere Forest, *Aplecta nebulosa* var. *robsoni*, *Macaria liturata* var. *nigro-fulvata*, and *Eupithecia indigata*; from Witherslack, *Macaria alternata*.—Mr. H. B. Prince exhibited some fine varieties of *Lycena bellargus* from Folkestone, including lead-coloured males and ab. *striata*, also many interesting species from other localities, among which were two examples of *Vanessa urtica* with the orange-red colour replaced by dusky ochreous, also very blue female *Lycena icarus*.—Mr. R. Wilding brought a box of Lepidoptera from Colwyn Bay, among which were fine series of *Vanessa io*, *V. atalanta*, *Pararge egeria*, and *megera*.—

WM. MANSBRIDGE, Hon. Sec.

Meeting held at the Royal Institution, Colquitt Street, Liverpool, November 20th, 1916; the President, Dr. John Cotton, in the chair.—Dr. George Granville Buckley, M.D., F.S.A., Holly Bank,

Manchester Road, Bury, was elected a member of the Society.—Mr. F. N. Pierce read a paper entitled "Notes on the Genus *Ornix*." He reviewed the synonymy of the genus and mentioned having recently examined the types of the various species, with the cordial assistance of Mr. J. Hartley Durrant, at the British Museum. Mr. Pierce then took the various species in detail, and after alluding to the difficulty of identifying captured specimens by the wing-markings, told how a little practice enabled one to correctly name any of the genus by an examination of the genitalia, and described how this could be done with certainty without damaging the insect for cabinet purposes. The author exhibited all the British species of *Ornix* in illustration of his paper, including the species which as the result of his investigation he had introduced to the British List, viz., *Ornix finitimella*, already known to occur on the Continent. An animated discussion followed, and in the course of some remarks, Mr. W. Mansbridge exhibited the larval mines of *Ornix anglicella* and *O. avellanella*. Mr. Pierce also exhibited about 150 species of micro-lepidoptera captured by the Rev. C. R. N. Burrows in his garden at Mucking, Essex. These included: *Phtheocroa rugosana*, *Eupæcilia dubitana*, *E. atricapitana*, *Chrosis alcella*, *Conchylis dilucidana*, *Cnephasia nubilana*, *C. pascuana*, *C. chrysantheana*, *C. hybridana*, *C. genitalana*, *Sphaleroptera ictericana*, *Letinia buoliana*, *Tinea ferruginella*, *Pœcilia albiceps*, *Ornix anglicella*, *O. torquillella*, *O. finitimella*, and many species of *Lithocolletis* and *Nepticula*.—Mr. W. A. Tyerman exhibited a number of autumnal species of Lepidoptera from the Wye Valley, including *Vanessa c-album*, *Catocala nupta*, *Noctua rufina*, *Agriops aprilina* and *Xylina ornithopus*.—Dr. John Cotton showed hibernating examples of *Gonepteryx rhamni* and *Vanessa urticæ*.—Mr. R. Wilding had a fine exhibit of local Coleoptera, among them the following, viz., *Anisotoma fulva*, *A. ciliaris*, *Egialia rufa*, *Hæmonia appendiculata*, *Nemosoma elongatum*, *Apion astralagi*, and *A. sanguineum*.—WM. MANSBRIDGE, Hon. Sec.

 OBITUARY.

CHARLES ADOLPHUS BRIGGS.

Born May 26th, 1849; died October 17th, 1916.

By the death of C. A. Briggs the older naturalists have lost from their midst a lepidopterist of the first rank, while his more intimate friends will miss a most agreeable companion, both at home and "in the field." Brimful as he was of amusing anecdotes, curious stories, and interesting reminiscences, his conversation and letters were always seasoned with touches of dry humour; but what most struck all those who knew him was the sterling gentlemanliness of his every action. His disposition, indeed, was eminently cheerful, quite in keeping with his broad, round, jovial countenance, and he apparently retained this trait of his character to the last, even under the burden of his severe affliction. For in a letter to an intimate friend, as late as July, 1915 (dictated, as he could no longer use a pen), he says:

"Our entomological days are over; my stroke has left me in the condition of a black-beetle whose body has been trodden upon, and it confines me to the house and garden."

Though not a voluminous writer, Briggs was a frequent contributor to the entomological periodicals. His contributions usually took the form of useful and interesting short notes, but occasionally longer articles appeared. Amongst the latter were: "A Week's Collecting in Unst," "The Genus *Scoparia*," "*Aporia cratægi* in England" (in the 'Entomologist'); "Dragonflies in 1892," "*Tephrosia crepuscularia*," "Two species of Ephemeroïdæ new to Britain" (in the 'Ent. Mo. Mag.');" "The New Forest *Zygæna meliloti*," "Our Pterophori," "The Blown-over Theory" (in the 'Young Naturalist,' of which he became an assistant editor). In 1906 he contributed to the 'Transactions of the Devonshire Society'; and the 'Victoria History of Devon and of Surrey' also benefited by the product of his pen.

C. A. Briggs was a member of the eminent firm of solicitors, Messrs. Briggs, Vaughan, and Briggs of Lincoln's Inn Fields, from which he retired as an active partner in 1896. He became a Fellow of the Entomological Society of London in 1877, and a member of the South London Entomological and Natural History Society in 1887. As an entomologist he was at first chiefly interested in the British Lepidoptera, and his collection was remarkable for the very fine varieties and aberrations it contained, especially in the Lycenidæ. It was also very rich in the Psychidæ, Crambidæ, etc., to which he had devoted much study and attention. On his leaving Leatherhead for Lynmouth in 1896, his collection of Lepidoptera was disposed of by auction in October and November, the sales occupying nearly five days, and realising but £5 short of £1000.

In 1890 Briggs began to show an interest in the Odonata and Ephemeroptera, and this interest was extended to other orders formerly included in the comprehensive term Neuroptera, as well as to the Orthoptera. Of the insects belonging to these various orders he amassed extensive and important collections, and amongst his discoveries may be mentioned *Ectopsocus briggsi*, McLach., while he added to the British list, *Hyperetes questfalicus*, Kolbe, and more than one of the Ephemeroptera. In 1894 he acquired the important collection of British Trichoptera formed by P. Wormald.

In addition to entomology, Briggs took a deep interest in the Mosses and Land-shells of Britain, of which he possessed considerable collections, including the very large and remarkable series of variations of British Helices collected and arranged by the late J. C. Carrington. He took much interest in horticulture, and also possessed a large number of antiques, including some 2000 pieces of china.

Six years before his death he gave up collecting. On October 13th, 1914, he had a stroke of paralysis, which incapacitated him for active work. Though he lived for two years longer, he gradually became weaker, till death took place without any pain on October 17th, 1916.

W. J. LUCAS.

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FEBRUARY, 1917.

[No. 645

NEW SPECIES OF HETEROCERA FROM JAPAN AND FORMOSA IN THE BRITISH MUSEUM.

By A. E. WILEMAN AND RICHARD SOUTH.

Trachea mediifascia, sp. n.

♂. Fore wings brown, slightly red-tinged, costa marked with darker brown; antemedial line ochreous, outwardly edged with black, oblique, indented before dorsum, indistinct before costa; postmedial line ochreous inwardly edged with black, curved round end of cell, thence inwardly oblique to dorsum; area between antemedial and postmedial lines darker brown, enclosing the ochreous-outlined stigmata; subterminal line ochreous, sinuous, indented near costa, inwardly clouded with darker brown; a black bar on dorsum, and a black line below median nervure, the latter connecting the antemedial and postmedial line; terminal lunules black, inwardly paler edged; fringes pale brown mixed with darker; a series of pale dots on the veins beyond postmedial line. Hind wings pale fuscous, termen and fringes whitish, terminal line black.

Expanse, 36 millim.

The type, which was taken at Arizan, 7300 ft. (Wileman), August 24th, 1908, is in the British Museum.

Comes near *T. olivacea*, Moore.

Sypna diversa, sp. n.

♀. Fore wings pale reddish brown, rather silky, clouded with blackish on basal area, six pale marks on costa beyond middle; antemedial line pale, double, wavy, indented on vein 1, thence incurved and silvery white, inwardly edged with black above and outwardly below vein 1; postmedial line pale, edged with blackish, bluntly angled outwards before middle, two black dots on outer edge below costa; reniform stigma indicated by an ochreous lunule placed on the outer edge of a black interrupted median fascia, followed by three longitudinal black streaks; subterminal line pale, deeply angled outwards about middle, inwardly edged with blackish and outwardly with black; termen blackish, crenulate, preceded by a series of white dots inwardly black-edged; fringes pale brown mixed with darker. Hind wings fuscous with slight tawny tinge, darker on tornal area, where are traces of two blackish bands. Under side pale brown powdered with darker on the hind wings and suffused; fore wings suffused with darker on basal two-thirds and as a tapered band on terminal third; reniform lunule pale.

Expanse, 48 millim.

ENTOM.—FEBRUARY, 1917.

Type in the British Museum. Rantaizan, 7500 ft. (Wileman), May 6th, 1909.

There are also one specimen from the Kagi District, Formosa (July, 1909), and two specimens from Darjilling in the Museum collection.

Sypna hampsoni, sp. n.

♂. Antennæ fasciculate. Fore wings pale purplish brown, reddish-tinged on the basal area; basal line pale inwardly edged with black, slightly bent in the cell; postmedial line pale, outwardly shaded with blackish, indented near costa, gently incurved to vein 1, thence excurved to dorsum; the space between the transverse lines, except a portion towards costa, greyish clouded with brown; stigmata outlined in blackish; subterminal line black, sinuous, patched with black towards costa; apical area beyond the subterminal line pale brown without purplish tinge; terminal line pale, wavy, preceded by white-edged black dots placed between the veins. Hind wings pale brown suffused with blackish, especially on the terminal third; postmedial line black, sinuous, not clear towards costa; subterminal line whitish, serrate, not clear towards costa; terminal line and fringe paler than on the fore wings; black dots before the terminal line without white edging and placed on the veins.

Expanse, 28 mm.

Type in the British Museum. Kagi District, 7-10,000 ft. (July, 1909).

Allied to *S. kirbyi*.

Anachrostis marginata, sp. n.

♂. Forewings pale brown speckled with rather darker brown, costa black at base and dotted with black towards apex; transverse lines black but indistinct and interrupted; discoidal dot black; terminal area clouded with dark brown and blackish; terminal line black, interrupted; fringes pale brown. Hind wings pale fuscous, fringes paler. Underside whity brown, fore wings with dark discoidal dot and a curved line beyond.

♀. Rather more heavily powdered with brown, transverse lines obscure.

Expanse, 14 mm.

Types in the British Museum. Kanshirei, Formosa (Wileman) ♂. Tainan, Formosa (Wileman) ♀.

Bocula moorei, sp. n.

♀. Fore wings pale ochreous brown, slightly dusted with darker; postmedial line represented by an irregular series of blackish points placed on the veins; termen broadly bordered with purplish brown, the border strongly lobed inwards between veins 2 and 6, terminal dots of the ground colour; fringes purplish brown mixed with ochreous brown, especially at base. Hind wings purplish brown. Underside pale brown suffused on fore wings, except dorsal area, and powdered on hind wings, with darker.

Expanse, 31 mm.

Type in the British Museum. Formosa (ex coll. Moore).

Allied to *B. pallens*, Moore.

Oglaea mediopallens, sp. n.

♀. Head and thorax whitish brown, slightly flushed with pinkish; abdomen whitish brown faintly tinged with pink and thickly dusted with dark brown except on middle of the costal area; a black longitudinal streak on costa at base, and a rather longer black one from about middle of base; antemedial band black, pale-edged, inwardly oblique to vein 2 where it tapers and turns upwards and outwards to about vein 4; a blackish bent line in the cell and a brownish cloud above it on the costa; costa pale-dotted towards apex; subterminal line pale, diffuse, irregular; terminal line black; fringes greyish, paler at the base. Hind wings fuscous, terminal line blackish. Underside fuscous brown; fore wings rather darker.

Expanse, 28 mm.

Type in the British Museum. Kagi, Formosa.

Raparna roseata, sp. n.

♂. Antennæ ciliated. Head and collar rosy, the latter yellow tipped; thorax yellow, abdomen grey-brown, mixed with yellow near thorax. Fore wings yellow mottled with rosy, the mottling denser on costal and terminal areas; a rosy spot enclosing a black speck at lower angle of cell; postmedial line rosy, its inner edge diffuse, outer edge sinuous. Hind wings yellow, mottled with rosy; medial line rosy, almost straight. Fringes inclining to purplish, greyish at tips, preceded by black dots.

Expanse, 22 mm.

Type in the British Museum. Kiushiu (ex coll. Leech).

There are two other specimens from Kiushiu and one from Nagasaki (ex coll. Leech) in the Museum Collection.

This species is closely allied to *R. transversa*, Moore, but is distinguished by the rosy transverse lines.

Antarchæa pryeri, sp. n.

♀. Head and front of thorax greyish, palpi tinted with purplish; thorax ochreous buff, abdomen greyish marked with darker. Forewings ochreous buff, freckled with darker on the costal and terminal areas, tinged with purplish chiefly beyond basal area; a pale oblique line from apex to dorsum a little before tornus. Hind wings dark fuscous. Underside pale, without marking.

Expanse, 20 mm.

Type in the British Museum. Japan (ex coll. Pryer).

Paracolax curvilinea, sp. n.

♂. Antennæ ciliated. Fore wings pale whity-brown, powdered and suffused with darker brown; antemedial line dark brown, ex-curved; medial line brown, deeply curved round cell, thence straight to dorsum; postmedial line dark brown, gently curved from apex to dorsum near tornus; terminal line black, discoidal lunule very indistinct. Hind wings rather paler, medial and postmedial lines dark brown, the latter angled above tornus, not extending to costa; terminal line black.

Expanse, 26 mm.

Type in the British Museum. Japan.

Very similar to *P. grisealis*, Schiff., but the markings are fainter and curved instead of oblique.

Paracolax unicolor, sp. n.

♀. Forewing black-brown without markings. Hind wings and under sides of all the wings pale brown suffused with dusky except on fringes.

Expanse, 26 mm.

Type in the British Museum. Formosa (Wileman).

Luceria sordida, sp. n.

♂. Antennæ bipectinated. Fore wings greyish brown sprinkled with darker brown; discoidal dot black; traces of oblique transverse dusky line beyond the middle of dorsal area; hind wings paler.

Expanse, 16 mm.

Type in the British Museum. Takow, Formosa plains, July 23rd, 1906 (Wileman).

Hypenodes squalida, sp. n.

♀. Fore wings whity-brown, sprinkled with dark brown from base of the wing to the postmedial line and also beyond the subterminal line; traces of a black, wavy, antemedial line; postmedial line black, inwardly oblique, outwardly edged by the pale ground colour, angled above dorsum; subterminal line pale, sinuous; terminal dots black. Hind wings fuscous, base of fringes paler.

Expanse, 16 mm.

Type in the British Museum. Japan (H. Pryer).

Near *H. croceipicta*, Hampson.

Hypenagonia obliquifascia, sp. n.

♂. Fore wings whitish tinged with ochreous or brownish; antemedial line blackish, inwardly oblique, bent below costa; medial and postmedial lines blackish, inwardly oblique, both indented below costa, approximate on dorsum, space between lines purplish brown and band-like; subterminal series of black dots inwardly pale-edged, parallel with termen, preceded by a dusky oblique shade with a geminate blackish mark on it above middle and another nearer costa; discoidal dot black; fringes whitish preceded by a brownish line. Hind wings whitish, with markings similar to those on fore wings, but the band does not extend to the costa.

Expanse, 18-20 mm.

Type, with two other male specimens, in the British Museum. Kanshirei (Wileman).

Comes nearest to *H. vexataria*, Walk.

Drymonia basalis, sp. n.

♂. Head greyish, mixed with brown; thorax brown, patagia whitish brown mixed; abdomen brown, dark, almost black on basal segment. Fore wings greyish powdered with black-brown, thickly

on basal area up to the pale, wavy, and outwardly oblique antemedial line; a narrow black band follows the antemedial line; postmedial line pale, wavy, edged with black on each side, the black continued along veins from its outer edge; a black-brown patch on costa between postmedial line and apex of the wing; terminal line blackish, fringes greyish marked with black-brown at ends of the veins. Hind wings smoky grey, veins brownish, hairs on basal area brown-tinged; fringes greyish, marked with brown at ends of the veins.

Expanse, 46 mm.

Type in the British Museum. Gifu (ex coll. Leech).

Comes near *D. trimacula*, Esp.

Stauropus obliterata, sp. n.

♂. Head whitish, thorax greyish brown, patagia whitish; abdomen brownish, posterior edges of segments whitish. Fore wings whitish sprinkled and suffused with brownish; discoidal spot blackish, elongate; faint traces of oblique antemedial and blackish postmedial lines, the latter sinuous; subterminal line represented by a series of blackish spots between the veins; terminal line brown, fringes whitish. Hind wings whitish suffused with brown on basal two-thirds; terminal line brown, fringes whitish.

Expanse, 46 mm.

Type in the British Museum. Oiwake (ex coll. Leech).

Allied to *S. grisescens*, Staudinger.

Tarsolepis japonica, sp. n.

♂. Antennæ dark brown; head and thorax cinnamon brown, the latter with a short dark brown bar in front and dark brown edging behind; abdomen dark brown, becoming paler on anal segment. Fore wings pale cinnamon brown, suffused with greyish on apical and terminal areas; two silvery cuneiform spots as in *T. sommeri*, but both are shorter, the apex of the upper one acute; area between the spots streaked with dark brown, a dark brown curved line before the lower spot; postmedial line pale, wavy from costa to upper silvery spot, round the apex of which it curves and falls on dorsum near apex of lower spot; subterminal line as in *sommeri* but straighter. Hind wings dark brown, paler on costa, discoidal spot blackish. Underside pale brown, clouded with dark brown on medial area of fore wings; a large black discoidal spot and a series of black terminal dots on hind wings.

♀. Similar but more heavily streaked with dark brown between and around the silvery spots.

Expanse, 76 mm. ♂; 78 mm. ♀.

A male specimen and two females from Tokio, July, 1894, and a female from Miyanoshta, August, 1907. Types coll. Wileman.

A specimen from Japan in the British Museum (ex coll. Leech) measures only 64 millim. in expanse.

This species was confused by Leech with *E. remicauda*, Butl. = *sommeri*, Hb.

NOTES FROM CAIRO.

BY F. W. SOWERBY, F.E.S., LIEUT., R.N.D.

(Continued from p. 11.)

On July 30th I joined Mr. Storey, of the Entomological Department in the Ministry of Agriculture, for an expedition to collect some of the insects which occur solely on the land where the desert joins the cultivated valley of the Nile. We met at Badreshein, and rode towards the Sakkara pyramids by the usual tourist track, through two or three miles of fairly thick date palms, past the ruins of Memphis and the colossi of Rameses II. Flying round one of the latter I came across the pretty Cetoniid, *C. savignyi*.

On arriving at a watering place, where the desert abruptly meets the palms and cultivation, we left our animals and started collecting, moving in the direction of the "Step Pyramid."

On the desert itself we came across no living thing whatever, but on the edge I added quite a lot of uncommon insects to my list. The first species which attracted our attention were big wasps (Bembecidæ) of the genus *Stizus*. Flying along a small bank were numbers of the bright yellow *Stizus succineus* and yellow and black *S. bizonatus*, and among them I caught one specimen of a third, possibly new, species. Along this bank, also, were a lot of little Chrysidids, of various kinds and glittering colours, very difficult to catch owing to their rapid flight and the dazzling sun. Here also I obtained *Sphex pruinosus*, *Ammophila tydei*, *Trypoxylon attenuata*, *Bembex lusca* (a series), and one or two other Hymenoptera.

Walking through the rough herbage produced *Cordistes* sp. and other Asilidæ, the fine grasshoppers *Sphingonotus savignyi*, *S. cærulans*, and a larger, paler species or form of the latter, and the *Myrmeleon* figured by Savigny on Plate III, 14, for which I could not find a name. With these were a lot of the commoner grasshoppers found also in the other localities.

The bulk of the day's catch was taken at a patch of melons flowering in the full sun. As well as species found commonly elsewhere, the following Hymenoptera were secured: *Myzine* sp. nov.? (one), *Ceratina tarsata*, *Anthidium ferrugineum* v. *thoracicum*, *Anthophora* sp., *Cælonites fischeri*, *Odynerus chloroticus*, *Pompilus* sp., *Miscophus ctenopus*, *Notogonia pompiliformis*, *Dielis collaris*, and *Nototrachys foliator* (one), most of them in large numbers. Other orders were not well represented, and the only specimens taken were the Coleoptera *Mylabris apicipennis*, *Epilachna chrysomelina*, and *Coccinella 11-punctata*.

The day's bag was completed with *Gryllus domesticus* and a few ants and beetles taken on the bare sand near a well where we had our lunch. Except for one specimen each of a very small *Gymnopleurus* and a *Cionus* (?), the Coleoptera, as might be expected, were Tenebrionidæ: large numbers of the common

rugose *Scleron orientale* and of the very rapid little black *Zophosis abbreviata*, and one *Hymatisus villosus*. The ants were the ubiquitous *Camponotus maculata* and *Myrmecocystus viaticus*, with two or three species of tiny *Monomorium*. On this bare sand there were also a great number of large ticks with marbled abdomens which made their way towards us as soon as we sat down.

On another day about half an hour was spent out at Ma'ad, hunting among the "Camel Thorn" on the edge of the desert. This produced plenty of the three commonest "blues" and several of the tiny *Chilades trochilus*, some pretty Pyrales (*Tegostoma mæschleri*), and single specimens of *Eublemma cochlyioides* and *Rhynchina arenialis*. As usual the commonest things were the Hymenoptera and Orthoptera. The latter included *Epacromia thalassina*, *Pyrgomorpha grylloides*, and the prettiest Egyptian mantis, *Empusa egea*.

Megachile flavipes, *Crocisca ramosa*, and *Bembex mediterranea* were abundant, as well as other common bees and wasps, and I secured one each of *Megachile argentata*, a very tiny *Melipona*, *Pompilus dispar* and *flavicus*, and *Ammophila pæcilocnemis*. The only representatives of other orders taken were *Mylabris apicipennis* and *Hippobosca capensis*.

On the last day of July I left Giza to go to the Sirdaria on Gezireh. It is the residence of the Sirdar, on the island made by the separation of the Nile just above and below Cairo, and has a nice garden where *Danaïd chrysippus*, *Pyrameis cardui*, Lycænidæ, etc., were always plentiful.

In this garden I took the following Hymenoptera: *Phlanthus triangulum*, *Dielis collaris*, the very rare *Stizus apicalis*, *Hedychrum cælestinum*, *Myzine zonata*, *Nomiodes variegata*, *Crocisca ramosa*, *Xylocopa æstuanus*, *Anthophora quadrifasciata*, *Apis mellifica fasciata*, *Mutilla interrupta*, *Sphex umbrosus*, *Sceliphron spirifex*, *Lara anathema*, *Tachytes ambidens*, *Trypoxylon attenuata*, and *Bembex lusca*. *Tryxalis unguiculata*, *Chrotogonus lugubris*, and other grasshoppers were abundant, and *Eristalis tæniops* and the yellow Tachinid *Mintho isis* common. In the house I found *Labidura riparia*, *Periplaneta americana* and its extraordinary parasite *Evania appendigaster*, and an abundance of the ants *Myrmecocystus viaticus*, *Camponotus maculatus*, and *Monomorium* spp. Light attracted one moth, *Oligochroa coriacella*, a few *Gryllotalpa gryllotalpa*, and a lot of an apparently unnamed species of *Embia*.

My other notes from Egypt include a few moths from Port Said in April and a very big swarm of locusts which, in the same month, passed the train I was in from before reaching Zagazig till after passing Ismailia, in a steady thick cloud. Of this swarm I also saw specimens at Port Said and in the desert to the west of Cairo.

At Alexandria in September I got a magnificent Oleander Hawk-moth at a hotel light, together with a few *Deiopeia pulchella*. *Acherontia atropos* was also said to be coming to light fairly commonly then, but I did not come across it. A visit to the Nouzha Gardens, outside the town, added no fresh species to my collection. *Lampides baticus*, *Gegenes nostrodamus*, and *Pachyzancla licarsicalis* were abundant, and I took one or two *Pyrameis cardui* and *Chapra mathias*.

During my stay in Cairo I was greatly helped by Dr. Gough and Mr. Storey, the entomologists in the Ministry of Agriculture, and by Messrs. Nicholl and Bonhote, of the Zoological Gardens. To Mr. Storey I am especially indebted for identifying specimens; he, besides collecting with me at Ma'adi and Sakkara, accompanied me to Cyprus, to which island I had the good luck to be sent for about three weeks' convalescence.

NOTES ON CONCHYLIS FLAVICILIANA.

By W. G. SHELDON, F.E.S.

In 'Entomologist,' xlix, p. 20, there is a note of mine on the occurrence in Surrey, in 1915, of larvæ which I considered could only be this species. Last year I was able to pursue the matter further.

On July 19th I bred a single imago, the only one that emerged, which proved that my supposition was correct. Presumably I had not treated the larvæ properly during hibernation, for there were a good number of them.

I visited the locality in which were found the larvæ in 1915, four times between July 15th and July 26th, with the result that I netted eleven specimens; I was on the ground as early as 7 p.m., but as far as could be ascertained the imagos only flew from 8.30 to 9 p.m.

Towards the end of August I again visited the locality to obtain some larvæ, but, alas! found the whole hillside, which in an ordinary summer only produces a thin crop not worth mowing, had been mown, I suppose owing to the extra crop produced by the wet season, and also probably in consequence of the increased value of hay. Anyhow, with the exception of a few plants of *Knautia arvensis* which grew amongst some bushes, and which were crowded with larvæ, the whole stock was destroyed.

This catastrophe induced me to examine the whole of the ground within a mile or so around, with the result that I eventually found another small locality in which *C. flaviciliana* larvæ were not infrequent. This search helped me to realise the excessive localness of the insect and its inability to spread.

I found *K. arvensis* an abundant plant in about half a dozen fields and hillsides within a mile of the place where I had first met with *C. flaviciliana*, but in only one of these was there the slightest trace of larvæ.

The original locality is a valley, on the bottom of which is a strip of cultivated land perhaps 300 yards wide. The sides of this valley are either open downs or rough flowery fields; they rise above the bottom perhaps 200 feet. *C. flaviciliana* was found in 1915 on one side of this valley, from the edge of the cultivated strip almost to the brow of the hill. As one walks to the top of the slope, the hill is seen to be a flat plateau perhaps 100 yards in width, and crossing this one comes to a steep slope leading down to another valley, very similar in appearance and growth to the first. In this valley *K. arvensis* is abundant, and as it certainly has not been cultivated for the last thirty or forty years, I felt sure that I should find *C. flaviciliana*, but there was not the slightest trace of it.

The new locality which I found was in the first valley, on the other slope to the original locality, and immediately opposite to it. Both these localities did not extend more than 200 yards up the length of the valley, and they were terminated at each end by a high, thick hedge, over which the imagos did not appear to be able or willing to establish the species, although *K. arvensis* occurred freely both higher up and lower down the valley. No doubt before the sole of the valley was cultivated *C. flaviciliana* occupied it also.

I take it that the reason of the excessive localism of the species is, firstly, its inability to spread over any trifling obstacles; and, secondly, its habitat must never have been cultivated, or at any rate mown, for of course this destroys the larvæ if the mowing takes place in the month of August; and, if earlier, leaves the female without anything suitable to deposit her ova upon.

January 6th, 1917.

SOME STEPHANIDÆ: WITH DESCRIPTIONS OF NEW SPECIES.

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

IN connection with the proposed forthcoming monograph of this family of parasitic Hymenoptera throughout the world by Ernest A. Elliott, Esq., F.Z.S., etc., it were well to here place upon record the descriptions of two or three species found in the course of work thereon to be new. For their affinities I am indebted to the monographer. This is a small and very specialised family, of which no more than some sixty-six species were recognised in 1900; since which time a comparatively large number of additional ones have been brought forward in

very scattered literature. The total of Stephaninæ nowadays (as distinct from the less typical Stenophasminæ) appears to stand at about 111 species. I shall at present mention but half a dozen.

Stephanus tibiator, Schlett.

'Berl. Ent. Zeits.,' xxxiii, 1889, p. 293, ♂.

Four females were captured by Mrs. Everard during 1911 at Aden, in South-West Arabia. These abdomens may thus be described:

Petiole much shorter than remainder of the abdomen (*i. e.* 6 mm. to 10 mm.), evenly and moderately trans-striate throughout, excepting at the apex, which is glabrous and nitidulous; the striation extends to both lateral and ventral surfaces; remaining segments smooth and shining, with base of the second narrowly transaciculate and a few scattered hairs upon both the sides of the sixth segment and dorsum of seventh. Terebra a little shorter than body (*i. e.* terebra 20 mm., and body 24 mm.). From the typical description, the present insects differ in nothing.

Stephanus Ceylonicus, Cam.

'Journ. Str. Br. R. Asiatic Soc.,' xxxix, 1903, p. 102, ♀.

Col. Yerbury took the type at Trincomali before 1892. Mr. O. S. Wickwar has been so good as to present me with two Ceylonese females; one was found by him at Kandy during September, 1909, and the other was captured at Galgamua in the following February.

Stephanus tortus, sp. nov.

A large black species with the petiole, part of the legs and mouth piceous, and the terebra white-banded. Face reticulately, but not transversely, rugose; frontal tubercles conspicuous and acuminate, posterior tubercles small; occiput coarsely reticulate laterally, centrally transaciculate, its posterior margin simple. Second flagellar joint a little longer than the first, third as long as second. Colliform prothorax transrugose; semi-annular part glabrous; mesonotum smooth, with a central row of punctures, but the lateral ones indistinct; mesopleuræ smooth above, rugulose below; metapleuræ rugulose and separated from median segment by a shining and glabrous sulcus; median segment strongly and moderately punctate, with its apex transaciculate. Petiole shorter than rest of abdomen (9 mm. to 10 mm.), finely trans-striate throughout; remainder of abdomen smooth and shining; terebra a third longer than body (34 mm. to 26 mm.), and subapically banded with white. Hind coxæ discally glabrous, and there finely tuberculate, below and within obsolete trans-striate; hind femora bidentate, shining and smooth, with very sparse hairs and punctures; their tibiæ compressed at

basal third, centrally excised and apically inflated. Wings slightly infumate throughout.—Black: mandibles and a spot before their base red; petiole dark red; abdomen piceous; anterior legs, except basally, red; hind tibiæ piceous, centrally clear red.

A much stouter species than *S. Ceylonicus*; the peculiar conformation of the hind tibiæ appears remarkable, as also are the unusually short second and third flagellar joints.

A single female, sent me by Mr. Wickwar, was captured during September, 1905, at Nedunkernie, in the Northern Provinces of India.

Parastephanellus rufidornatus, Cam.

Stephanus rufo-ornatus, Cam., 'Tijds. v. Entom.', xlviii, 1905, p. 45, ♂.

The type is from the Burnett River, in Queensland. I have seen another male, taken (very probably with more of both sexes, though the female is still undescribed) by Mr. Turner at 1100 feet about Kuranda, in the north of the same State, during May–June, 1913.

Parastephanellus eburneus, sp. nov.

A very small black species, with sparse white and testaceous markings. Face rugously trans-striate; frontal tubercles acuminate, the anterior is apically deflexed; posterior tubercles normal; occiput finely trans-striate, with its posterior margin bordered. Second flagellar joint half as long again as the first, the third shorter than first and second. Colliform prothorax smooth, shining, and quite short, the semiannular part finely rugulose; mesopleuræ obsoletely trans-striate and dull throughout; metapleuræ glabrous and nitidulous, separated from the metanotum by a deep sulcus; median segment smooth with large and diffuse punctures. Petiole longer than remainder of abdomen, with its basal half finely trans-striate; rest of segments dull and obsoletely punctate; terebra shorter than body (*i.e.* 5 mm. to 6 mm.), immaculate black. Hind coxæ obsoletely trans-aciculate; their femora bidentate, shining, and nearly smooth; their tibiæ compressed to centre. Wings clear hyaline and not large.—Black: face, clypeus, mandibles except apically and a streak at the inner orbits testaceous-white; a broad streak from base of mandibles below the eyes to near occiput clear ivory-white; scape and basal flagellar joints testaceous; tegulæ and stigma pale; anterior femora and tibiæ piceous, all tarsi testaceous, and both base and apex of intermediate tibiæ clear white.

The ♂ differs very slightly in its smaller size of but $3\frac{1}{2}$ mm., its piceous petiole and testaceous genital valvulæ.

This is closely related to the last-named species from Australia, but differs in the metanotal sculpture and the colouration, more especially that of the anterior legs and the intermediate tibiæ.

The typical female was captured at Kandy by Mr. O. S. Wickwar during February, 1910; the androtype was discovered by Mr. E. E. Green on a leaf infested by the Coccid, *Hemichionaspis Brasilicnsis*, in June, 1909, at Peradeniya, also in Ceylon.

Fenatopus Indicus, Westw.

Stephanus Indicus, Westwood, 'Ann. Nat. Hist.,' vii, 1841, p. 538.

This species occurs throughout the Malay Archipelago; and to it appears to belong a female taken by Mr. G. E. Bryant at some 2000 feet upon Mt. Matang, in Sarawak, on December 14th, 1916.

Monks' Soham, Suffolk,
November 1st, 1916.

DESCRIPTIONES HYMENOPTERORUM CHALCIDOIDICORUM CUM OBSERVATIONIBUS.

IV.

BY A. A. GIRAULT.

Cosmocomoidea morilli, Howard.

A SERIES of specimens (identified by Howard) reared from leaf-hopper eggs on sugar-cane, October, 1911, San Lucrezia, Vera Cruz, Mexico (F. W. Urich). The male antennæ are 13-jointed, contrary to the original description. The genus, thus, is *Gonatocerus* save for the distinct (longer than wide) petiole of the female abdomen. Compared with types of both sexes. In these Mexican specimens (females), the abdominal petiole was only slightly longer than wide; and the head (except vertex) and sides of the base of the abdomen, the parapsides, the propleurum, and the legs (except the caudal tibiæ) of the male were honey yellow. The abdominal petiole is decidedly shorter in the males, the abdomen subsessile in the Mexican male, which also had the fascia on the fore wing. In the cotype females I find the abdominal petiole varies much in length, sometimes no longer than with the Mexican series of females. In the female, the most conspicuous marking is the cross-band of dorsal abdomen at about middle; the other black markings are more or less obscure. The scutellum is scaly. The thoracic structures are as in *Gonatocerus* and the genus is *Ooctonus*.

Blastothrix bohemani, Westwood.

The two mandibular teeth are acute, and the species is an *Epidinocarsis* (or *Anagyris*). From a specimen labelled in the U.S.N.M.

My former references to *Anagyris* have always been to those species from Australia, so referred, but which appear to represent a new genus. They have the marginal vein *punctiform*, which means no longer than wide, that is, circular, a point; the second tooth of the mandibles is broadly truncate. In *Anagyris*, the marginal vein is plainly twice longer than wide or more (as seen under the microscope). The genus is very closely allied with *Dinocarsis*.

Sympicis marylandensis, n. sp.

Female.—Length, 2.15 mm. Slender.

Brilliant metallic green, the wings hyaline, the venation, legs, scape and pedicel (except above in both), pale yellowish; venter of the abdomen (except the brownish margins and the black distal fourth and tip of the ovipositor valves) pale yellow; dorsum of abdomen, metallic purplish excepting a tolerably broad pale yellow cross-stripe a little distad of middle and not quite reaching the margin on each side. Abdomen at base above metallic green. Thorax scaly reticulate, the axillæ advanced half cephalad of the scutellum, the propodeum with a distinct median and lateral carina, the caudal margin also carinated, the surface between the median and lateral carina cross-wrinkled, the spiracle oval, not large; lateral carina straight, not changing direction. Marginal vein somewhat over twice the length of the stigmal, the latter much shorter than the post-marginal. Abdomen conical, a fourth or more longer than the thorax. Mandibles 7-dentate. Pedicel somewhat longer than wide at apex, slightly larger than club 2; funicle 1 over twice longer than wide, 2 a little shorter, 4 a half longer than wide. Club terminating in a distinct nipple which is very small, appears to be articulated and bears no terminal spine.

Described from one female captured in the forest, Prince George County, Maryland.

Type.—Catalogue No. 20,137, U.S.N.M., the above specimen, the caudal tibiæ and head on a slide.

Anagyris subalbicornis (Girault).

Many females reared from *Pseudococcus bakeri* on grape, Fresno, California, February, 1915 (R. L. Nougaret).

Euplectrus platypeneæ, Howard.

Many females, one male reared from the larva of *Cirrhis humidicola*, Esperanza, British West Indies, December, 1912 (F. W. Urich). Compared with types.

Podagrion mantidiphagum, n. sp.

Female.—Of the stature and so on of *mantis* Ashmead from which it differs as follows: The caudal femur is entirely yellow except a broad, oblique metallic stripe centrally, mesal aspect; the propodeum is rougher (rugose) and the split median carina does not diverge so rapidly from the base. Otherwise very similar. Caudal tibia white

just below the knee. Caudal femur bears seven teeth beneath, the first large, small, large, small, small, large, large; 7th is largest, triangular, 6th is highest, towering, 3rd is as high as 1st but not so wide; 2nd, 4th and 5th subequal. Funicle 1 longer than the pedicel, a half longer than wide, 7th somewhat longer than wide.

The male differs in having the antennal club brown like the rest of antennæ, the abdomen is yellowish brown except above at apex, and the caudal femur bears beneath but four large teeth, 4 largest, 1 smallest, acute, the other two towering. Also the caudal tibiae are dark metallic.

Described from one male, numerous females reared from an egg-mass of a mantid. Palo Secco, British West Indies, March, 1914 (F. W. Urich).

Types.—Catalogue No. 20,138 U.S.N.M., one male, three females on tags, a caudal femur, and an antenna of a female on a slide.

Paraleptomastrix notatus, n. sp.

Female.—Length, 1.20 mm. Like *abnormis* in structure, generally.

Black, the wings lightly dusky throughout; apex of pedicel and a stripe across the scape a little before the apex, silvery white, the club suffused with yellowish white (sometimes dirty yellowish white); legs white, the tibiae yellow, the caudal legs black except the tibiae more or less at base; middle coxæ dusky, the cephalic silvery white; middle femur black dorsad at apex; venation black; head densely punctate, the thorax velvety scaly, the scutellum somewhat coarser, the scutum with short silvery pubescence; tegulæ large, white.

Scrobes distinct, forming a triangle, the area scaly. Frons moderately broad. Pedicel a little longer than funicle 1 which is subequal to 2 and 3, each about thrice longer than wide; 6th a half longer than wide, a little shorter than club 1. Marginal vein subequal to the stigmal, a third shorter than the long post-marginal, over four times longer than wide. Hairless line of fore wings short, closed, the wings finely ciliate caudad and proximad of it. Axillæ rather broadly joined.

Caudal tibiae and tarsi sometimes yellow.

Described from ten females reared from *Pseudococcus bakeri* on grape, Fresno, California, March 23rd, 1915 (R. L. Nougaret).

Types.—Catalogue No. 20,139, U.S.N.M., five females on a slide.

NOTES ON SOME OF THE LEPIDOPTERA OF THE BRITISH LINE IN FRANCE.

BY CAPTAIN H. DOUGLAS SMART, R.A.M.C.

(Continued from p. 14.)

My observations of the moths are extremely disconnected, but some of them may be of interest. Of the Sphinges I can speak of only four species:

Smerinthus populi, ova at Méaulte, Somme.

Macroglossa stellatarum, in Flanders and the Pas de Calais.

Trochilium apiformis, one specimen at Méaulte.

Zygæna filipendulæ, common in many places and the only burnet seen.

Nola centonalis occurs on trees growing on the river bank at Ville-sur-Ancre.

Lithosia mesomella is common near Souchez. I found no other "footman."

Euchelia jacobææ was common in the trenches before Fricourt.

Arctia caja is common everywhere. Throughout the winter the larvæ were very plentiful in the trenches at Armentières, where millions of them suffered death from drowning, a fate that we ourselves had some difficulty in avoiding.

Spilosoma fuliginosa was common on the Somme, and added to the beauty of the edging of spring flowers at that time decorating the trenches.

S. menthastri and *S. lubricipeda* are both common everywhere. The larvæ of the latter were to be seen in Flanders in November.

The "swifts" were by no means plentiful. I saw only *Hepialus lupulinus* in the south and *H. hectus* in Artois. I did not see *Cossus* at all, but signs of its presence are frequently met with on all parts of the line.

Porthesia similis, abundant everywhere in the larval stage.

Leucoma salicis, larvæ abundant in Picardy.

Psilura monacha, larvæ in Fricourt district and empty pupæ near Amiens.

Orgyia antiqua, common near St. Pol, Bruay and district.

Malacosoma neustria, larvæ common at Corbie.

Lasiocampa quercus, flying in great numbers in woods near Souchez.

Saturnia paronia, one ♀ attracted by light near Corbie. I afterwards saw her offspring in the garden where I put her out.

Drepana fulcataria, near Souchez.

D. rinula, common in most places.

I found several empty "kitten" cocoons on alders in the Ancre marshes.

Pygæva curtula, larva near Bray, Somme.

Acronycta psi, common. *A. aceris*, larva near Bruay.

A. megacephala, larva near St. Omer.

Leucania palleus and *L. impura*, both common in Artois, where they are often to be seen flying about the grass in the day-time.

Xylophasia rurea and *X. monoglypha*, common.

X. scolopacina, one near St. Pol.

Luperina testacea, common.

Mamestra brassicæ and *M. persicariæ*, common.

Apamea basilinea, in swarms in the Somme area; several in every tent and on every tree in a camp near Bray.

A. didyma, in Artois in most localities, but not often seen. It must be remembered that I did no sugaring or other night collecting. This and *Noctuæ* in general were far less often seen than in England, a lighted room attracting very little at any time.

Caradrina morpheus, *C. taraxaci* and *C. quadripunctata*, all seen occasionally in various places.

Agrotis segetum and *A. exclamationis*, a few odd specimens.

Triphæna comes and *T. pronuba*, fairly common.

Amphipyra tragopogonis, common.

Cosmia trapezina, larva in Somme area.

Polia flavicincta, at Bailleul.

Phlogophora meticulosa, Flanders.

Hadena oleracea, fairly common everywhere.

Gonoptera libatrix, common in Flanders.

Plusia gamma, common everywhere throughout the summer, but in swarms in lucerne fields near Bruay in September.

Agrophila trabealis, at Vaux, Amiens.

Acontia luctuosa, very common in the Somme district.

Baukia argentula, locally common in the marshes of Somme and Ancre.

Euclidia mi, locally abundant, and *E. glyphica*, universally abundant in Picardy.

Boletobia fuliginaria, one perfect specimen in a house near Corbie, where it is probably a far more usual capture than in Britain.

Rivula sericealis is common in many places, especially in the Ancre marshes.

Zanclognatha grisealis was common near Corbie.

Hypena proboscidalis was as common as it is at home.

A species worth mentioning, which I took just after the year about which I am writing, is *Xanthia aurago*, at Fresnicourt, in Artois.

The first Geometer I have to mention is *Rumia luteolata*, of which I have met with no single specimen. Hawthorn is much less universal a plant here than in Britain, but still there is plenty of it. Frequently it differs considerably from the British thorn, and to my unbotanical soul suggests a different species. Perhaps *R. luteolata* is scarce for this reason.

Biston hirtaria occurs near Amiens.

Boarmia repandata and *B. gemmaria* occur in woods near Arras.

Tephrosia crepuscularia and *T. biundularia*, common in the Somme area, as also is *T. punctularia*.

T. consonaria was common in the wood at Vaux.

Pseudoterpna pruniata and *Nemoria viridata* occurred near Souchez.

Asthena candidata, I saw near Corbie.

Eupisteria obliterata was very common at Corbie, and common near St. Pol.

Acidulia dimidiata, near Corbie.

A. bisetata, St. Pol and Souchez.

A. virgularia, Corbie.

A. marginipunctata, a specimen in a train between Étapes and Boulogne.

A. remutaria, Somme.

A. aversata, common everywhere.

Timandra amataria was the commonest trench geometer from Flanders to Fricourt.

Cabera pusaria and *C. exanthemata*, common everywhere.

Bapta bimaculata, Somme.

Strenia clathrata swarms on all waste or meadow land behind the line from the Ancre to Souchez, and is almost continuous in appearance throughout the summer.

Abraxas grossulariata occurs as in England.

Ligdia adustata was seen, though not commonly, on the Somme.

Lomaspilis marginata was common in all districts up to Souchez.

Hybernia marginaria was the only species of its genus seen in Flanders, where we wintered.

The scarcity of spring larvæ in Picardy was very remarkable. On May 10th a careful search in a wood near Ville-sur-Ancre revealed one *b umata*, one *defoliaria*, a few *grossulariata* and *sordidata*, less than half a dozen *virida a*, and one or two *trapeziina*, which species must have largely adopted a vegetarian diet. Of course this scarcity is familiar to British collectors as the culmination of a series of years in which these larvæ become more and more numerous till they are checked by the insufficiency of the food supply.

In Picardy in 1916 there was another factor, which may occur in all years. This was the presence of countless millions of *Melolontha vulgaris*. These beetles flew round the trees in swarms, day and night, and had reduced the foliage to the condition often seen in Yorkshire in a year when Hybernid larvæ are at their maximum. A favourite toy with the children of Corbie was a cockchafer on a piece of cotton, which made a very efficient and entertaining kite. Even our own men derived much amusement in their spare time from knocking flying cockchafers down with sticks. If *M. vulgaris* is always as common as this, I do not think *defoliaria* and its relatives are likely to be ever abundant. I do not know where the cockchafers came from, as the proportion of grass land in France is relatively very small, except for the zone directly behind the firing line, and this zone cannot have produced the countless swarms of beetles, which were as numerous ten miles behind the line as they were on the line itself.

Cheimatobia brumata was very common in Flanders, but I did not see *C. boreata*.

Larentia didymata is abundant in the Pas de Calais.

L. viridaria is common near Corbie.

Emmelesia alchemillata was common in one wood near St. Pol.

Eupithecia oblongata was a very common grass insect at Corbie, where *E. vulga*'a was also common.

E. rectangulata, in the same district, was the only other "pug" noticed.

Hypsipetes ruberata was common in the Vaux wood, and *H. soroidata* in most places.

Melanthia bicolorata was common near St. Pol and Souchez ;

M. albicillata, near St. Pol.

Melanippe rivata occurred in the Somme district ; *M. sociata* was common here and in Artois.

M. montanata abounded in the Ancere marshes.

M. fluctuata, though widely distributed from Amiens to Armentières, was not very often seen.

Coremia ferrugata and *C. unidentaria* were very common in the trenches on Vimy Ridge.

Camptogramma bilineata was abundant.

Cidaria corylata was seen near Amiens.

C. truncata occurs along the whole line, but I saw *C. inmanata* near Bruay only.

Anatis plagiata was common near Corbie, and very common near Bruay.

To the above should be added *E. abbreviata*, of which I took a specimen near Amiens.

Lyceena astrarche was subsequently found in numbers, but very worn, in September, near Bruay.

I have inadvertently left out *Ematurga atomaria*, which is everywhere common. In the Ancere marshes it produces huge yellow males with very regular bands, one of which I sent home as a non-British species. This form is an exaggeration of the large, yellow-banded males which occur in Wicken Fen on very similar ground.

(To be continued.)

NOTES AND OBSERVATIONS.

CRYPTOBLABES BISTRIGELLA AND LOCAL TORTRICES AT HINDHEAD, SURREY.—I spent two short holidays at Hindhead, April 20th to 28th, and June 3rd to 17th. On the occasion of my earlier visit I was pleased to obtain a series of *Steganoptycha pygmaea*, which species I had never seen alive before ; it was not uncommon flying in the afternoon sunshine amongst spruce. The chief event of my June visit was the comparative abundance of *Cryptoblabes bistrigella*, which was beaten out almost every day. The most prolific spot was a ride in an oak-wood on the southern side of the Punch Bowl ;

growing along the side of this ride were several beech-trees which had overhanging low branches. I never passed these beeches without knocking out of them two or three specimens. The bottom of the Punch Bowl I found a very good locality for Tortrices, amongst others the following occurring: *Conchylis ambiguella*, *Pammene gallicolana*, *Grapholitha albersana*, *Pammene germarana* (*puncticostana*), *Ancylis upupana*, *A. myrtiliana*, *A. diminutana*, and *Conchylis cnicana*. *P. germarana* was abundant in several oak-woods, flying in the afternoon sunshine. A notable sight was a female of *Hemaris fuciformis* ovipositing on its foodplant *Lonicera periclymenum*.—W. G. SHELDON, Youlgreave, South Croydon.

STEGANOPTYCHA MERCURIANA FEEDING UPON BILBERRY.—Whilst at Rannoch early in July last, I found a very few small Tortrix larvæ feeding upon bilberry, *Vaccinium myrtilus*; from these in August emerged two specimens of *S. mercuriana*. Barrett says of the food-plants of this species "June in a web on *Dryas octopetala*, but reared by Dr. Wood from heather."—W. G. SHELDON.

TORTRIX RUSTICANA IN TILGATE FOREST.—The late W. P. Weston in 'Entomologist,' xiii, p. 85, states that: "Messrs. Howard Vaughan and Sydney Webb met with this species once commonly at Tilgate Forest." I have hunted Tilgate Forest pretty frequently for the last thirty years, but until this year I have not seen *T. rusticana* there, nor have I seen a more recent report of its occurrence. This year, however, it was common at the end of May, flying in the afternoon sunshine over rough herbage in some swampy fields on each side of the River Mole where one crosses it by a foot-bridge on the way from Three Bridges Station to the well-known tile-yard. I believe the only information in Britain respecting the habits and foodplants of the larva is that Mr. E. R. Banks bred it freely some years ago from larvæ found feeding upon *Myrica gale*, see E. M. M., xlv, pp. 151-154. Certainly it could not feed upon this plant at Tilgate, for it does not occur there. Hornig says that it feeds upon spun-together leaves of *Lotus*, *Doryenium* and *Gentiana amarella* in September. Schmid says it feeds upon bilberry and *Onobrychis sativa* and Goerze adds *Convallaria*. Meyrick in 'Br. Lep.,' p. 538 also gives *Myrica*, *Vaccinium*, etc. I think I am correct in saying that not one of these plants occurs in the locality I found *T. rusticana* in last May and therefore, that it has yet another food-plant.—W. G. SHELDON.

ECCENTRICITIES OF TRIPHENA FIMBRIA.—When collecting in the New Forest in the late seventies *T. fimbria* used to be the first insect to appear on the sugar patch. It was always in evidence three-quarters of an hour before lighting-up time. We seldom saw it fly, and used to wonder how it got there. Mr. James Douglas says he has not observed it at sugar in the Hainault Forest, though it is common there, and he has found it on grass stems. In Lincolnshire it comes freely to sugar but not before dusk, when it mixes with *T. pronuba* and the rest. Mr. A. Simmons says in Nottinghamshire it occasionally comes to sugar. Here in Derbyshire the perfect insect is very rarely seen. The late Mr. John Hill took the larvæ in his neighbourhood for thirty-six years, but only saw the perfect insect once. Mr. H. C. Hayward has collected

hundreds of larvæ during the past thirteen years, and has found it in his own garden, where he regularly sugars. He has not seen a single imago during that period. The larva is not uncommon in sheltered places round here. I frequently sugar, but *fimbria* is not to be tempted by the most alluring bait.—G. HANSON SALE; Coxbeach.

HYPENA OBSITALIS.—A good specimen of *Hyppena obsitalis* was taken at ivy in Paignton on October 5th, 1908, by Mr. E. J. Milman. I had neither figure nor description of *obsitalis* at the time, and though I showed it to many visitors, the specimen was not identified for several years. It agrees with South's var. *A.* and Tutt's var. *costipuncta* (Tutt's 'British Noctuæ and their Varieties, vol. iv, p. 67), and has a wing expanse of 36 mm. Thus in size it agrees with *H. proboscidalis*, and I think that, without close observation, *obsitalis* could be easily overlooked as being *proboscidalis*, though the forewings of *obsitalis* are narrower and their markings so different.—P. P. MILMAN; Paignton.

SCOPARIA PALLIDA, STH.—In the January issue of the 'Entomologist,' p. 18, Mr. Whittle records the breeding of a single specimen of *S. pallida* together with a number of *frequentella* from moss gathered in the neighbourhood of Wakering, Essex. I have not heard of it being bred before and should be greatly obliged if any reader could give me any information concerning the larva and its food. Possibly it may be known on the Continent if not here. I have spent, in years gone by, a good deal of time in a vain search for it among damp moss growing in boggy places where the imago occurs, or used to occur pretty freely. It has struck me since that from the fact that its nearest relation *cembra* is well known to be a root feeder, *pallida* may have a similar taste. If such should prove to be the case, the larva from which Mr. Whittle bred his single specimen may have crawled into the moss to spin up. We have a good deal to learn yet about the larval habits of the genus *Scoparia*.—A. THURNALL; Wanstead, Essex, Jan. 10th, 1917.

UNRECORDED OCCURRENCES OF THE SIRICIDÆ (HYMENOPTERA).—As occurrences of the Siricidæ are recorded from time to time in this journal, the following records, though rather belated, may be of interest. A specimen of *Sirex gigas* was taken on Rockbourne Knoll, in Hampshire, by the late Mr. W. F. J. Challis in 1912, while he took a specimen of *Sirex noctilio* in Bournemouth on September 24th, 1914. Both specimens are in my possession.—A. STEVEN CORBET: Reading.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 9th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. G. W. Mason, of Ealing, was elected a member.—Professor Bateson, F.R.S., gave a lecture with lantern slides and other illustrations entitled "Remarks on the Mendelian Theories with especial reference to recent extensions in their application made

in America." Some discussion took place.—Mr. G. T. Porritt exhibited a gynandromorph of *Lasiocampa quercus* and an olive-banded male of the same species, together with a lemon-yellow male of *Cosmotriche potatoria*, the former from near Huddersfield.—Mr. Platt Barrett, British *Lycanidæ* taken this season.

November 23rd.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. L. W. Newman, a series of very darkly-marked bred specimens of *Agriopsis aprilina*, from Teesdale.—Mr. Frohawk, a fine bred series of *Chrysophanus rutilus* from ova laid by a female from Holland and compared them with the Austrian race and British *C. dispar*.—Mr. Turner, a long series of many forms of *Peronea cristana* and examples of various continental races of *Parnassius mnemosyne*.—Mr. Brooks reported that he had taken an imago of *Acronycta megacephala* on June 8th and again on August 8th on the same trunk. It was supposed that the latter was a belated emergence. Mr. Blair, the living larvæ of the Dipteron *Microdon mutabilis*, an inhabitant of ants' nests, found among sphagnum from the New Forest. Mr. Frohawk reported that he had noticed wasps collecting ears of corn in quantity from one portion of a field. This was quite a new habit.

December 14th.—The President in the chair.—The annual exhibition of varieties.—Mr. W. J. Kaye, on behalf of Mr. J. J. Joicey, (1) a gynandromorph of *Papilio lycophron*, from Peru; (2) the first known female of the Brassolid *Polygrapha cyanea*, closely resembling an *Opsiphanes* sp., from Ecuador; (3) a yellow aberration of *Zygaena trifolii*, from Watergate; (4) a yellow form of *Zygaena filipendulæ*, from Tenby, an aberration confluent on left wing only, an aberration intermediate between yellow and red, and a fine ab. *chrysanthemii*. Mr. Kaye, also for Mr. Joicey, twelve new forms of *Heliconius melpomene*, from French Guiana, representing a wholly new phase of variation in the species, and read notes on the relationship of the forms. Mr. Kaye's own exhibit was a cabinet drawer of the Ithomiine genus *Leucothyris*, composed of transparent insects with black markings, and read notes on the significance of the varied markings exhibited. Dr. Cockayne, an aberration of *Polygonia c-album*, in which the two large costal spots are united and the hind wings are almost entirely black. Dr. Chapman, males and females of two pairs of *Lycænid* species, of which one of each pair has only quite recently been differentiated, viz., *Callophrys avis* from *C. rubi* in the Riviera, and *L. pyrenaica* from *L. orbitulus* v. *oberthüri* in the Pyrenees. He also showed the double-brooded S. European *Agriades*, which Dr. Verity differentiates from the single-brooded *A. coridon* with the name *aragonensis*. Mr. W. Leeds, a long series of *Lycænid* and other aberrations largely from Herts. *Polyommatus icarus*, ab. *cærulea*, streaks replacing dots on underside, brilliant blue females; *Agriades coridon*, orange-ringed spots on hind margin ♂, black suffusion extended ♂, pale buff ♀, white wedges between nervures ♀, black marking elongated underside ♀, ab. *melanotoxa* + ab. *arcua* ♀, &c.; *Bithys quercus* ♀ dark blue patches instead of purple: *Epinephele jurina* ♂ with bleached central patches on all wings; *Cænonympha pamphilus* ♀ straw coloured, ♂ dark fulvous colour; *Epinephele tithonus* ab. *mincki* yellow, with extra spots, several with one, two, or

three extra spots in upperside, one with complete absence of spots, &c. Mr. Newman, for Mr. Percy Richards, a fine collection of preserved larvæ of British Lepidoptera, which had been hand-painted in their natural colours. For Mr. G. B. Oliver Mr. Newman exhibited a fine series of aberrations of *Agriades thetis*, including ab. *obsoleta*, ab. *semi-obsoleta*, striated forms, one with ground colour creamy white, a leaden-coloured upper side, one ♂ leaden and blue mixed; many aberrations of *Polygonmatas icarus*; and *Cœnonympha pamphilus* with spotless underside. For Signor Piatzzo Mr. Newman showed a fine *subroseata* form of *Zonosoma pendularia* which had a conspicuous white line between the dark outer border and the red suffusion. Mr. Newman's own exhibits were (1) a series of bred *Celerio galii* from Cornwall, (2) hybrid *ocellatus* × *populi* with much variation, (3) many aberrations of *Amorpha populi*, (4) Unicolorous black examples of *Eupithecia lariciata* from Warwickshire, (5) a series of a new species of British Geometer, which has recently been differentiated from *Lampropteryx suffumata* by the Rev. W. Metcalfe, and somewhat resembles *Eustroma silaceata*.—Rev. A. T. Stiff (1) many aberrations of *Epinephele tithonus*, including xanthic, bipupillate, and extra-spotted forms, with a male having pale bars on the hind wings; (2) a pale *Hypocrita jacobææ*; (3) a large *Cœnonympha pamphilus* with black ocelli on hind wings, a bipupillate ♀ and a ♂ with minute apical spot on underside,—Mr. Porritt, a very fine series of extreme forms of *Abraxas grossulariata* ab. *nigrosparsata* from Huddersfield.—Mr. West (Greenwich), for the Society, 12 drawers of the Freeman collection of European Butterflies.—Mr. G. C. Russell, many aberrations of *Aphantopus hyperantus*, including ab. *cæca*, ab. *arete* and ab. *lanceolata*, &c., mostly bred from ova from North Hants; (2) a fine blue *A. coridon* and an unusually pale specimen without dark margins; (3) a gynandromorphic *Saturnia pavonia*; (4) *Deiopeia pulchella* taken in Surrey in June, 1913; and (5) *Mimas tilia* lacking the four spots on upper wings.—Mr. Buckstone, several series of *Selenia lunaria*, successive broods from a Teesdale female, and read notes on the broods and specimens and on the variation shown.—Mr. Bowman, specimens of *Zonosoma pendularia*, including examples with pink markings absent, with pink suffusion between the marginal lines, with marginal dots elongated into striæ, a very beautiful form with all four wings of a rich purple, and forms in which a white conspicuous line appears between the dark area and the pink suffusion.—Rev. J. E. Tarbat, ♀ *A. coridon* without trace of marginal spots, an ab. *obsoleta*, and a ♀ with the marginal spots coalesced; and an asymmetrically marked *Sphinx ligustri*.—Mr. Prideaux, a series of aberrations of ♀ *P. icarus* and an example of *Funicia phlaeas* ab. *schmidtii* (yellow).—Mr. Edwards, exotic *Papilionidæ* and species of the genus *Urania*.—Mr. H. Moore, a box of specimens of species showing the same kind of deformity as ab. *roystonensis* of *A. coridon* to support his contention that they are cripples and not worthy of distinctive names.—Mr. C. P. Pickett, a drawer of representative specimens of *Angerona prunaria*, the results of nineteen years' breeding, and read notes on his experiments with coloured environment. He also showed a long series of ab. *picketaria*. Mr. Pickett also exhibited several drawers of *A. coridon*,

aberrations taken in the Herts district in 1916, and read notes on the various forms met with.—Mr. R. Adkin, series of *Polyommatus icarus* from many outlying parts of England, Scotland, Ireland, and the islands, and compared the races as to size, colour, and markings.—
HY. J. TURNER.

THE DERBYSHIRE ENTOMOLOGICAL SOCIETY.—October 28th, 1916, Mr. James Douglas, President, in the chair.—The special groups selected for exhibition were the *Melanippe* (*Xanthorhoë*) and *Melanthia* (*Mesoleuca*). The President exhibited two boxes of lepidoptera taken this year, including a series of *Argynnis euphrosyne* showing a fine range of variation. A bred series of *Plusia moneta* from larvæ taken in his own garden at Chellaston, the specimens being of a darker colour than those from the south and having a more silvery appearance. *Melanippe* (*Xanthorhoë*) *montanata*, a series from Shropshire showing a fine range of variation, with the extreme form var. *limbaria* Hbn., var. *continuata* Kaulik, and var. *degenerata*. Mr. H. C. Hayward showed a series of *Lasiocampa* (*Bombyx*) *quercus* and *L. callunæ* (Palm.) from Bude and Derbyshire respectively, both reared under identical conditions from 1915 ova in the south, and both producing imagines in July and August, 1916. A series of *Melanthia* and *Melanippe*, including aberrations of *Melanthia rubiginata*, *Melanippe rivata*, and *M. fluctuata*, the last named including Shetland forms, and a specimen of var. *costovata* from Repton. A collection of Tortrices, Tineæ, and a few Pyralides from Repton, 1916, including the following thirty-seven species not recorded in the county list in the Victoria County History: *Crambus pinellus*, *Scoparia cratægella*. Tortrices: *Sciaphila pascuana*, *S. wahlbomiana*, *Grapholitha cinerana*, *Retinia posticana*, *Dichrorampha simpliciana*. Tineæ: *Dasytoma salicella*, *Epichnopteryx pulla*, *Tinea biseliella*, *Lampronia rubiella*, *Micropteryx purpurella*, *M. unimaculella*, *Swammerdamia cæsiella*, *S. lutaria*, *Prays curtisellus*, *Harpiteryx nemorella*, *Depressaria zephyrella*, *Gelechia nigra*, *G. scalella*, *Pavilia nivea*, *Butalis fusco-ænea*, *Heliozele stanneella*, *Argyresthia conjugella*, *A. semifusca*, *A. mendica*, *A. pygmaeella*, *Cedestis farinatella*, *C. gysselinella*, *Ornix scoticella*, *Coleophara lutipenella* and *Blatoteres glabratella*. The last species is not yet included in the British lists but has been recently reported elsewhere. *Chrysochoris festaliella*, *Elachista apicipunctella*, *Lithocolletes oxyacanthæ*, *L. frölichiiella* and *Trifurcula pulverosella*.—Mr. S. Hooke exhibited *Melanthia rubiginata*, *M. albicillata*, *Melanippe hastata* and *M. procellata*.—Dr. Winstan St. A. St. John showed a series of *Spilosoma mendica* bred from Kent ova, the majority being the type but three having a tendency towards var. *rustica*. Two typical specimens of this brood paired, the larvæ being fed on osier. About half the pupæ emerged. The ♀♀ tended to black spots on the posterior margin of the hind wing, and to var. *rustica*, all the males being var. *rustica*. *S. lubricipeda* var. *fasciata*. *Odontopera bidentata*. A bred specimen with a large area of the hind wings without scales.—Mr. W. H. Sankey exhibited a series of ♂ *Saturnia pavonia* obtained by "sembling" at Darby Dale, including an almost completely melanic form, *Eugonia*

(*Ennomos autumnaria*), a bred series from a ♀ taken at Ramsgate last year.—Mr. A. Simmons showed *Cosmia paleacea* and *Erastria fasciana*.—Mr. G. Hanson Sale, *Eupithecia coronata*, taken at Coxbeach, being a new record for Derbyshire.—G. HANSON SALE; Hon. Sec.

RECENT LITERATURE.

Notice sur les Glossines ou Tsétsés. Par E. HEGH, ingénieur agricole, attaché au Ministère des Colonies de Belgique. (Royaume de Belgique, Ministère des Colonies, Service de l'Agriculture.) Londres: Hutchinson & Co., 1915.

A USEFUL and interesting treatise of 148 pages well and fully illustrated.

Bulletin Agricole du Congo Belge. (Royaume de Belgique, Ministère des Colonies.) Vol. vi, no. 1-2; Mars-Juin, 1915. Londres: Hutchinson & Co.

Treats of agriculture and farming.

Reports on Scale Insects. By J. H. COMSTOCK. (Cornell University Agricultural Experiment Station, Bulletin 372.) Published at Ithaca, New York: March, 1916.

AN important publication of 178 pages (with 26 plates and a number of other illustrations) in which a number of scale insects are dealt with, and in some cases described.

W. J. L.

"*Gynandromorphism,*" and Kindred Problems. By E. A. COCKAYNE, M.D., M.R.C.P., F.E.S. 'Journal of Genetics,' vol. v, 1915.

WE have received in separate form Dr. Cockayne's latest contribution to a fascinating subject, and congratulate the author upon a really valuable addition to our knowledge thereof. He has collected the known instances of gynandromorphism in the recorded cases, and throws much additional light on the association of the phenomenon with heterochroism. He demonstrates how it may be hereditary by direct and indirect descent, and his remarks confirm the observations of many collectors at home and abroad that there are genera decidedly more prone to gynandromorphism than others—*e.g.* the *Lycænidæ*, and of them the groups *Agriades* and *Polyommatus*. It is really extraordinary how dimorphism is so often accompanied by the genesis of individuals structurally associated with both sexes. I recall to mind the large number of true gynandromorphous *P. icarus* taken on an area less perhaps than a hundred acres by Mr. Oberthür's collectors at Dompuric-sur-Mer, in the Lower Charente, where also the "whole blue" females of *A. corydon* and *A. thetis*—*syngrapha* and *coelestis*—are actually in the ascendant. Dr. Cockayne also shows how in-breeding tends to the same result, especially in the case of hybrids, such as the several hybrid races produced by crossing species of the genus *Amorpha* (*Smerinthus*). This paper, with its admirable photographic plates, sums up at once our present knowledge of a subject to which Dr. Cockayne's own observations have contributed not a little, while his lucid style and reasoned scheme of diagnosis help us to grasp technicalities of description too often unintelligible to the lay mind unversed in the methods of advanced scientific research work. A word of unqualified praise must also be accorded the woodcuts in the text of dissections and preparations.

H. R.-B.

Subscriptions for 1917 (7s.) should be sent to R. South (Editor),
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[No. 646.

THE
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A. FORD, 36, IRVING ROAD, BOURNEMOUTH.

THE ENTOMOLOGIST.

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MARCH, 1917.

[No. 646

ALECTA NEBULOSA, HUFN, VAR. *PLUMBOSA*, VAR. NOV.

BY WM. MANSBRIDGE, F.E.S.

HAVING been interested in *Aplecta nebulosa* and its variation since I came to reside in Liverpool twelve years ago, it has always been one of my favourite excursions in early spring to go for the larva, which is sometimes abundant in Delamere Forest. In most seasons the aberrant specimens obtained from these larvæ have been paired in different combinations, and occasionally I have reared a family of the commonest form, which in Lancashire, Cheshire, and Yorkshire represents the type, but is by some authors, *e. g.* Tutt, 'Brit. Noct. and their Vars.,' iii, p. 68, considered to be var. *bimaculosa*, Esp.; hereafter I shall refer to this as the local type.

The local type forms vary from light grey, really a mixture of black and white, in which the white scales predominate, to very dark grey where the black scales are most numerous, in the ground-colour of the fore-wings; invariably, however, the ground-colour is a mixture of black and white producing the well-known mottled appearance. Thus the darkest can easily be recognised as of the type form.

In 1913 I had a large number of larvæ, as that season they were common in the Forest, and thinking they might be useful to some of my correspondents I paired a couple of the darkest mottled specimens that emerged, expecting to breed forms like the parents, as all experiments in breeding from the local type had, both with myself and others, yielded progeny like the original pair.

The result was most unexpected, as in 1914 I bred 86 moths, of which 29, or 33·7 per cent., were of the ordinary local type form, rather paler than usual; 35, or 40·7 per cent. var. *robsoni*; and 22, or 25·5 per cent., of a leaden-grey variation, perfectly uniform in fascies, and quite distinct from either of the others

I was at once struck by the approximation of these figures to Mendelian proportions for simple opposed characters.

I did not obtain any wild larvæ in 1914, so could not repeat the experiment until the next year, when again a couple of very dark local type forms were selected. Unfortunately, the larvæ hibernated badly, and only 19 survived to emerge in June, 1916. These were as follows: 13 type forms ranging from light to dark, 4 var. *robsoni*, and 2 dark *plumbosa*. In this instance the small proportion, about 6 per cent., of imagines does not confirm the assumption of Mendelian inheritance, although the fact that all the three variations again appeared from similar parentage suggests that segregation of two opposed characters does occur.

What is perhaps more remarkable, however, is the sudden appearance of the black form *robsoni* as a distinct aberration. So far as I am aware, the black varieties of *nebulosa* have never before been bred from any form of the type, when both parents have been of the grey-mottled character, but, on the other hand, they always appear if one or both parents are black; hence, *robsoni* would be expected from a wild type female if she had paired with a black male.

I do not wish in this article to expaud the suggestiveness of this result in its bearing upon the general origin of melanism, but as it arises from the two experiments it should not be passed over without mention; it will suffice to remark that probably we have here an indication as to the genesis of the black forms *robsoni* and *thompsoni* of *nebulosa*.

The variation I now propose to call *plumbosa* is bred annually from wild larvæ to the extent of 1 to 3 per cent., hence, next to *thompsoni* it is the rarest of the naturally occurring forms; it also varies from leaden-grey to fuscous-grey in ground-colour, but is never black, in this respect being parallel to the lighter and darker forms of the local type.

The following is a description of var. *plumbosa*: Fore-wings leaden-grey to fuscous-grey; stigmata faintly outlined with white and exteriorly with black; transverse lines faintly white, posteriorly black, interrupted; a transverse series of small black acute tooth-shaped marks representing the subterminal line; on the termen a series of black lunules and dots; the veins in the subterminal region black; hind-wings, in both sexes, uniform dark grey, the veins darker than the ground-colour. Head, thorax, petagia, and abdomen as in the local type (var. *bimaculosa*, Esp.), but slightly darker. Types, two males and two females, representing palest and darkest, in coll. W.M.

4, Norwich Road, Liverpool,
January 27th, 1917.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

BY G. T. LYLE, F.E.S.

(Continued from vol. xlix, p. 272.)

SECTION 2.—APANTELES.

THE majority of the species included in this section are parasitic on the larvæ of Micro-Lepidoptera, and consequently are not so well known as those which prey on the "Macros." Since the days of George Elisha and W. H. B. Fletcher there seem to have been but few students of the earlier stages of our smaller moths who have preserved the far from uncommon hymenopterous parasites. It is to be hoped that the volume on the "Micros" promised us by the editor of the 'Entomologist' will do much to induce entomologists to take up the study of these interesting and often beautiful insects, and I trust that one result will be a greatly increased knowledge of their parasites.

Decorus, Hal.*

Haliday considered this to be the same as his *annularis*, but Reinhard and Marshall make *annularis* = *emarginatus*, Wees.

All the specimens I have seen agree perfectly with the original description, excepting that I do not find the wings to be pure hyaline.

Elisha bred the species from *Conchylis dilucidana*. Haliday obtained it from oak and larch. In Harwood's collection I have seen three females labelled by him "Fir, Berechurch, 25/6/14."

Xanthostigmus, Hal.†

It is fairly easy to recognise this species by its pale stigma, which has a noticeable fuscous border. There is a medial depression on the metathorax, and a medial longitudinal channel on the first abdominal segment. In my specimens the terebra is two-thirds the length of the abdomen. Seems to be common and has been bred many times. I have obtained it from a larva of *Paramesia ferrugana*, October 10th, 1914, and from a cocoon found on hawthorn May 16th, 1916.

Cocoon white and smooth with a satiny gloss.

Prætor, Marsh.‡

This fine species, which expands as much as 9-10 mm., was described by Marshall from two males captured by Bignell in South Devon, and one bred by Elisha from *Catoptria emulana*;

* 'Ent. Mag.', ii, p. 254.

† 'Ent. Mag.', ii, p. 246.

‡ 'Trans. Entom. Soc.', 1885, p. 197.

Morley records two specimens taken by Capron at Shiere in Surrey ('Entomologist,' xxxix, p. 102), and I have seen a pair captured by Harwood at Colford, August 17th, 1914, and a female also taken by him at Stanway in July, 1914. These appear to be the only records. The insect may be distinguished by the infumated wings, which have the first abscissa of the radius and the first intercubital nervure united in a curve, there being no elbow at the point of junction. This latter peculiarity may be noticed in other species in this genus, but, as far as I know, in none very nearly related to *A. prætor*.

The second abdominal segment is rather more than half as long as the third, which renders it rather difficult to classify the insect, although the exerted terebra, combined with the shape of the first segment, refers it to this section.

Emarginatus, Nees.*

A species which may be recognised by the pale spot at the inner angle of the stigma. I have taken it by sweeping, but not frequently.

Harwood has a specimen labelled "Dulwich, 6/7/15." Bignell bred it from *Depressaria nervosa*.

Obscurus, Nees.

As Marshall remarks, this insect, excepting in the wings, has much the appearance of a *Microgaster*. The metathorax is distinctly rugose, a character not common in this division of the genus.

I possess a single male, swept from low bushes on May 26th, 1912.

Viminetorum, Wesm.†

On p. 200 of the 'Trans. Entom. Soc.' for 1885, Marshall, in describing this species, gives the second abdominal segment as smooth; this, however, may be merely a slip of the pen, as he contradicts himself on p. 208. Wesmael says the second segment is distinctly rugulose.

I have three females which I must refer to this species, though perhaps rather doubtfully: One bred from a small larva of *Hylophila bicolorana*, May 9th, 1911, another from a full-fed larva of *Nota cucullatella*, May 6th, 1911, and the third from *Hybernia rupicaprararia*, July 17th, 1911.

Albipennis, Nees.‡

Seems to be a somewhat common insect, though I have never met with it myself. The second abdominal segment is very short, and the apex of the subcostal nervure on the hind wing is noticeably fuscous.

* 'Mon. Aff.,' i, p. 182.

† 'Mon. Aff.,' i, p. 182.

‡ 'Mon. Aff.,' i, p. 186.

Harwood has a female which he bred from a larva of *Platyptilia bertrami*, the cocoon which accompanies it is thin, rather papyraceous; glossy and more elongate than is usual in *Apanteles*, but possibly the elongation may be accidental.

(To be continued.)

NEW SPECIES OF NOCTUIDÆ AND GEOMETRIDÆ FROM FORMOSA.

BY A. E. WILEMAN AND RICHARD SOUTH.

NOCTUIDÆ.

Anachrostis indistincta, sp. n.

♂. Fore wings pale brown with darker markings, and some rather long brownish hairs on dorsum towards base; costa marked with dark brown, becoming blackish near apex; transverse lines indistinct, discoidal dot black; terminal area freckled with darker brown, interrupted terminal line black; fringes pale. Hind wings pale fuscous with dusky discoidal dot and terminal line. Underside pale brown with a slight reddish tinge, a black discoidal dot on all wings.

Expanse, 17 millim.

Type, male, in the British Museum. Kanshirei (1000 ft.), Formosa (Wileman), May 2nd, 1907.

Anepa irrorata, sp. n.

♀. Fore wings pale brown with slight rufous tinge, finely irrorated with black; antemedial line blackish curved and fairly distinct; postmedial line black, almost straight, inner edge rather diffuse, outer edge bordered with clear pale brown; a white dot in the cell and a black point at outer end of the cell; subterminal line indicated by black dots, only distinct at costa and dorsum; terminal dots black, fringes greyish brown. Hind wings fuscous with a dusky discoidal mark and oblique line beyond; fringes paler.

Expanse, 30 millim.

Type in the British Museum. Sikkim (Dudgeon).

This specimen was referred by Colonel Swinhoe to *A. dodai*, A.M.N.H. (7), xv, p. 503 (1905). With it there is also a female from Formosa collected by Hobson at Tamsui; this is somewhat larger, the antemedial line is not clearly defined and the white dot is less distinct.

GEOMETRIDÆ.

Boarmia subochrearia, sp. n.

♂. Fore wings whitish ochreous, shaded with brown on costal area, freckled with brown on medial third, and clouded with darker brown and black on basal and terminal thirds; antemedial and post-

medial lines dark brownish, indistinct; discoidal lunule black set in a dusky cloud; terminal line black, black dashes between veins 4 and 6; fringes grey, ochreous at base and tips. Hind wings similar to fore wings, but the basal area is not clouded and the discoidal mark is punctiform. Underside more ochreous and without dark clouding at base of all the wings, clouding on terminal area blacker.

Expanse, 36 millim.

Collection number 1898.

A male specimen from Arizan (7300 ft., April, 1908).

Allied to *B. sublimis*, Butl.

Ectropis nigrosparsa, sp. n.

♂. Antennæ finely ciliated. Head and thorax pale brown, mixed with darker; abdomen pale brown, shaded with darker and dotted with black on back of basal segments. Fore wings pale brown, inclining to ochreous, finely speckled with darker brown on outer half and more densely on basal half; sub-basal line represented by black marks on costa and on median nervure; antemedial line black, bluntly angled below costa, intersected by black linear marks on the veins, originating in a black quadrate mark on costa; medial line black, forming outwardly oblique band from costa to lower angle of cell, thence sinuous to dorsum; postmedial line sinuous, represented by black dots increasing in size towards costa; subterminal line pale, with a white dot about middle, preceded by a blackish cloud towards costa and bordered by clusters of black scales below; terminal line black, lunulate; fringes pale, darker marked at tips. Hind wings pale brown, inclining to ochreous, freckled with darker, traces of blackish discoidal spot and a sinuous line beyond; terminal line as on fore wings. Underside whitish-brown, markings of upper side indicated, apical area of fore wings clouded with blackish.

Expanse, 40 millim.

Type in the British Museum. Rantaizan, Formosa (7500 ft.), May 15th, 1909 (Wileman).

Arichanna olivescens, sp. n.

♂. Fore wings whitish, irrorated with black, and powdered with olivaceous chiefly near the transverse lines, three black spots on the costa; basal line black, not extending below the median nervure; antemedial line represented by first costal spot and an upright chevron-like black mark on dorsum; postmedial line black, wavy, commencing in third costal spot, excurred round cell; below vein 2 it is broad, incurved, and unites with a short, upright bar on dorsum; subterminal line indicated by black-paired dots below costa, before middle, above dorsum, and a sagittate mark above vein 2; terminal dots black. Hind wings whitish, finely freckled with pale olive-brown, discoidal mark blackish; postmedial and subterminal lines black-brown, only distinct towards dorsum; terminal dots black. Underside whitish, freckled with pale olive-brown, markings of upper side indicated.

Expanse, 45 millim.

Collection number, 806D.

Two male specimens from Arizan (7300 ft.), August 8th, 1908.

Allied to *A. marginata*, Warr.

Lygris taiwana, sp. n.

♂. Head white, mixed with grey; thorax white, mixed with grey, and marked with black; abdomen greyish, segmental divisions whitish. Fore wings blackish-brown, inclining to fulvous brown on median area, traversed by sub-basal, antemedial, and postmedial white bands; these bands enclose brownish lines and are sinuous, the postmedial is projected between veins 3 and 5 almost to termen, and some of the enclosed lines are yellowish; discoidal spot black, oval, white-edged; subterminal line white, highly flexuous; terminal line white; fringes yellowish, black at base, marked with black at ends of veins. Hind wings and underside with colour and markings somewhat similar to those of fore wings, but the basal area is not so dark and is without white band.

Expanse, 27 millim.

Collection number, 820.

A male specimen from Arizan (7300 ft.), September 25th, 1906.

Comes near *L. erectaria*, Leech.

Sterrrha parallela, sp. n.

♂. Fore wings pale buff with two parallel dusky lines; discoidal dot black, pale on second line; postmedial line purplish-brown, indented before dorsum; area beyond postmedial purplish-brown, enclosing a spot of the ground colour towards apex; fringes pale buff mixed with purplish-brown. Hind wings similar to the fore wings. Underside as above but area beyond postmedial not purplish.

♀. Agrees with the male.

Expanse, 20 millim ♂; 23 millim ♀.

Collection number, 1646.

A male specimen from Arizan (7300 ft.), August 21st, 1908, and a female from Rantaizan (7500 ft.), May 4th, 1909.

Somewhat like *S. jakima*, Butl., but the male antennæ are finely ciliated.

Hypenorhynchus inobtrusa, sp. n.

♂. Fore wings grey sprinkled with olive-brown scales; antemedial line blackish, double, almost straight, only distinct on costa; postmedial line blackish, double, most distinct towards costa and about middle; interstices of postmedial and antemedial faintly ochreous towards costa; fringes checkered with black, preceded by a blackish geminate mark toward apex. Hind wings and underside fuscous.

Expanse, 17 millim.

Collection number, 1657.

A male, in poor condition, from Arizan (7300 ft.), August 6th, 1908.

Hypenorhynchus costimacula, sp. n.

♂. Fore wings greyish brown, silky, costa ochreous-brown marked with black; antemedial and postmedial lines brown, the first slightly sinuous, the second biangulate, black marks on costa before middle and on dorsum; black atoms on termen, fringes rather paler at tips. Hind wings greyish-brown.

Expanse, 14 millim.

Collection number, 903.

Two male specimens from Kanshrei (1000 ft.), August 18th, 1906. Three specimens from Formosa (Wileman) in the British Museum.

Eupithecia karapinensis, sp. n.

♀. Fore wings greyish-brown on basal and terminal thirds, the former tawny at base; medial third whitish; several irregular transverse black lines on the basal half of the wings; postmedial line black, finely waved, indented below costa, followed by a faint tawny band; discoidal spot black, distinct; subterminal line whitish, interrupted, terminating in a white spot above tornus; fringes grey, preceded by a black line. Hind wings whitish, traversed by several wavy brownish lines. Underside whitish, rather glossy, some of the lines beyond the black discoidal spot of upper side faintly reproduced on the fore wings; hind wings marked as above.

Expanse, 28 millim.

Collection number, 829.

A female specimen from Karapin (3000 ft.), January 8th, 1908.

Comes near *E. rufescens*, Butl.

Eupithecia taiwana, sp. n.

♂. Head whitish; thorax and abdomen brownish-grey mixed with darker brown. Fore wings whitish, powdered with minute black atoms, marked with brownish except on central area; sub-basal line blackish, not conspicuous; antemedial and postmedial lines black, the latter most distinct and sharply angled at end of cell; discoidal spot and terminal line black, fringes whitish, marked with brownish. Hind wings whitish, freckled with brown on dorsal area, veins on this area marked with black; terminal line black, fringes whitish. Underside much as above, but brown marks paler.

Expanse, 27 millim.

Collection numbers, 830, 1653D.

Two male specimens. The type from Arizan (7300 ft.), September 15th, 1906, and the co-type from Rantaizan (7500 ft.), May 4th, 1909.

Nearest to *G. insigniata*, Hübn.

Ptychopoda taiwana, sp. n.

♀. Pale whitish-brown, powdered with darker brown; antemedial line and medial shade indistinct; postmedial line blackish-

brown; area beyond postmedial dusky, traversed by a pale, rather sinuous band, most distinct towards the costa. Hind wings similar to the fore wings. All wings have a black discoidal dot and a pale terminal line; fringes whitish with black dots at their base. Underside as above, but silky.

Expanse, 22 millim.

Collection number, 894.

A female specimen from Arizan (7300 ft.), September 16th, 1906. There is a specimen from Formosa (Wileman) in the British Museum.

Allied to *P. decidua*, Warren.

Ptychopoda sinuata, sp. n.

♀ Fore wings greenish-grey; post-medial line whitish, dilated on costa, almost straight; subterminal line whitish, sinuous. Hind wings greenish-grey; medial line whitish, appearing to be a continuation of the postmedial of the fore wings; subterminal line whitish, sinuous.

Expanse, 24 millim.

Collection number, 902B.

A female specimen, in poor condition, from Rantaizan (7500 ft.), May, 1909.

Ptychopoda tainanensis, sp. n.

♂ Fore wings pale whitish-brown, with three irregular transverse brown lines, the outer one only distinct; discoidal dot black; terminal line brown, interrupted, preceded by small brownish clouds. Hind wings similar in colour and marking. Underside brown, powdered and suffused with darker brown. The antennæ are bipectinate.

Expanse, 13 millim.

Collection number, 900A.

A male specimen from Tainan (sea-level), June, 1906.

Comes nearest to *P. comparanda*, Warren, from Ceylon.

Ptychopoda deleta, sp. n.

♂. Antennæ with long ciliæ. Fore wings whitish-brown, powdered with rather darker brown; the only perceptible transverse line is the subterminal, this is paler and sinuous; some pale clouds on termen. Hind wings whitish-brown, powdered with darker, no discoidal mark or transverse line. Underside whitish with faint traces of three transverse lines on the fore wings.

Expanse, 18 millim.

Collection number, 1628A.

A male specimen from Kanshirei (1000 ft.), May 6th, 1907.

Near *P. insuavis*, Butl.

NOTES ON REARING MACROTHYLACIA (BOMBYX) RUBI.

By L. W. NEWMAN, F.E.S.

HAVING reared a quantity of *M. rubi* during the winter and noted some remarkable incidents in the process I have pleasure to place same on record.

During September, 1916, I collected some 300 wild larvæ; these were fed till hibernation on sallow (*Salix caprea*). In October, when all had finished feeding, large sleeves were placed over common laurel bushes; any other tree or bush would do, but laurel is less likely to make holes in sleeve during winter. About one foot of tightly packed moss was placed in the sleeves and the bottom of sleeves kept off the ground so that a current of air could get under, and all round, of course, these sleeves were right out in the open in a sunny place exposed to all weather.

During the frost in mid-January all were turned out and larvæ collected; several large glass and zinc-breeding cages were filled with wet moss about 10 inches deep, the larvæ placed in them, and the cages stood on the mantelpiece just over my anthracite stove which is always burning night and day and, kept well on, produced a temperature inside the cages of about 70° F. Daily the moss in the cages was well sprayed with warm water; in about an hour the frozen larvæ started to wake up and were soon crawling about. I noticed on the second day several had started to spin cocoons. After fourteen days I turned out the cages, and to my great surprise found that fully 50 per cent. of the larvæ were curled up low down in the moss fast asleep, and that in a temperature of well over 70° F., for low down in the wet moss it was much hotter than on the top. I found about 10 per cent. of dead larvæ and 40 per cent. of fine healthy pupæ, or larvæ in cocoons just about to turn. I now decided to try a bold experiment. I filled one of the cages to the top with damp moss and placed the larvæ in it; I then took it from my warm room and placed it on the hard frozen lawn amid snow and left it there all night; there was a very hard frost, and in the morning the cage was frozen to the ground and the contents a solid mass of ice. I made my stove very hot and got up a temperature of well over 80° F., and brought in the cage and stood it over the stove; in a short time it was enveloped in steam as the moss thawed, but I saw no movement of the larvæ for some time. After about three hours I saw a few crawling about, and later a good many. Next day I could see several forming their cocoons, so hoped all was well. In a week I was anxious to see what had happened, so very carefully turned out the cage. I found similar results as before; a few were dead, a nice lot of lively pupæ and larvæ in cocoons about to pupate, and other larvæ curled up asleep as before.

I now decided to try even more drastic measures with the remaining larvæ. I did as before, and as luck would have it, we had an exceptionally hard frost during the night. I have a gas ring for cooking, and I commandeered this. I placed flower-pots round it so that I could stand the cage on the top of them, the bottom of cage being about three inches above the flame. I now placed the cage thus, and also put a thermometer inside the cage on the top of the moss and kept my eye on it; very soon it got up to 100° F., and amid a mass of steam the larvæ were wildly crawling round and round the cage; by turning the gas lower I gradually got the temperature down to 80° F., and at this I kept it for forty-eight hours, by which time I could see larvæ spinning. I then removed it to my mantelpiece, and in due course carefully removed all moss. This final test gave me twenty-five sound pupæ, nine larvæ dead in cocoons, and remainder of larvæ dead.

An important point is to always spray the moss daily while the larvæ are being forced, as larvæ will dry up in their cocoons or produce mal-formed pupæ if the moss is allowed to get dry.

All cocoons as soon as removed were placed in a zinc cage, the bottom of which had wet sand about two inches deep, then a layer of wet moss on which the cocoons rested; the sand was kept moist by pouring a little warm water down the sides of the cage daily.

Plenty of twigs were placed in the cage for the newly-emerged imagines to crawl up on to expand their wings, and the cage kept at the side of the mantelpiece, so that the temperature was about 60° F.

The total result of fine pupæ was just over 50 per cent., and this is the best result I have ever had in rearing this insect.

Bexley,

February, 1917.

NOTES ON SOME OF THE LEPIDOPTERA OF THE BRITISH LINE IN FRANCE.

BY CAPTAIN H. DOUGLAS SMART, R.A.M.C.

(Continued from p. 42.)

Before going on to speak of the few micro-lepidoptera observed, I would like to add a few notes on the families already dealt with.

Since the previous notes were written I have added three species from the Souchez area.

I found two specimens of *G. c-album* in a wood there and larvæ of *B. rubi* and *P. bucephala*, the latter commonly.

A visit in November to a well-wooded village near Doullens, Somme, added several species to my list.

A spider's web produced remains of *Habrosyne derasa* and

Ellopiæ prosapiaria; a fine male *Pæcilocampa populi* came into a lighted room.

A walk in the woods resulted in no single specimen of the genus *Hybernia*, though I saw two *Oporabia dilutata*.

Larvæ of *Rumia luteolata* and *Abraxas sylvata* were seen, both on elm trunks; also ova of *Himera pennaria*.

Observations of the later flights of Pierids have shown me the following facts that may be of interest:

They emerge in the spring in the order *napi*, *rapæ*, *brassicæ*, but *napi* apparently takes less time over its generation than the other two. *Rapæ* and *brassicæ* preserve their relative order, and put in three flights in the year. *Napi* gains on them, appears first in the second and third flights, and this year put in a partial fourth flight synchronous with the third appearance of *brassicæ*.

The third flight of *napi* is of the *napææ* pattern, though by no means always strictly *ab. napææ*.

The fourth flight is smaller in size, and the green veins become more pronounced again.

The third flight of *rapæ* is chiefly remarkable for yellowness of the ♀; and that of *brassicæ* for ♀♀ with heavy black markings, and both sexes with very dark scales dusted over the under sides of the hind wings.

The Pyralides were fairly numerous, but produced nothing at all unusual.

Aglossa pinguinalis is common in farms all along the line, and is one of the most frequent trophies in spiders' webs in out-houses. These webs have now been left undisturbed for two years, and were a great help in making lists; thus, I have not yet seen a living *Gonoptera libatrix* in this country, but no cobweb is complete without one.

Pyralis costalis I found only in one dug-out near Fricourt, where there were eight perfect specimens.

P. farinalis is fairly common round Corbie, but I have not seen it elsewhere.

The genus *Scoparia* has been poorly represented.

Early in the year, on the Somme, *dubitalis* was the only abundant species; *ambigualis* was common, and *cembræ* distinctly uncommon.

In Artois I found *ambigualis* abundant, and saw a few *mercurella*.

Near Corbie I took a very worn insect that appeared to be *Nomophila noctuella*. It is common near Souchez.

Pyrausta purpuralis and *P. ostrinalis* were very common in the south and common in Artois.

P. cespitalis was common in Artois, but not in the south.

P. olivalis, common on the Somme.

Eurrhynpara urticata occurred everywhere, but not in large numbers.

Notarcha (B.) ruralis, abundant everywhere.

Ebulea crocealis, common on the Somme.

Spilodes palealis, one specimen near Souchez.

S. verticalis, common on the Somme.

Pionea forficalis, fairly common everywhere.

Orobena extimalis, common near Corbie.

Of the Hydrocampidæ, *C. lemnata*, *H. nymphæata*, and *H. stagnata* all swarmed in the Ancres Marshes, a district that was disappointing in Lepidoptera. One reason for this is perhaps the presence of extraordinary numbers of dragon-flies of every variety of size and colour. One would suppose that these would keep other forms of insect life in check, but they certainly seem to have had little effect on the may-flies and caddis-flies, which, with the China-marks, are liable to attack in both larval and imaginal stages.

C. lemnata I also found very common about one small pond near St. Pol in late August.

The Crambi have been very poorly represented, although the ground in most places has appeared most suitable; only a very few of the commonest species have come my way.

Of these the most noteworthy is *Crambus perlellus*, which, with var. *warringtonellus*, has been quite common in all districts. Another form of a yellowish colour, possibly another species, was occasionally seen near Corbie and Albert.

C. pratellus, common everywhere.

C. tristellus, very common near St. Pol and Souchez.

C. inquinatellus, less common in the same localities.

C. culmellus, universally common.

C. chrysonuchellus and *C. hortuellus*, in the Ancres marshes.

The number of Pterophori met with has been great; the number of species small.

The commonest, as in Britain, has been *A. pentadactyla*, which I have seen in most districts visited during the summer.

Of the others *C. ochrodactyla* was common near Amiens; *M. phæodactylus*, near St. Pol; *M. bipunctidactylus* in both places. *O. lithodactylus*, Bruay and Souchez. I took *L. lienigianus* near Arras.

Of the remaining families I have not much to say.

Tortrix podana was observed in Vaux-en-Amiennois.

T. xylosteana, in several places on the Somme.

T. ribeana was common everywhere.

T. viridana apparently occurs in all woods when these are oak-woods, but, as previously mentioned, was present in but small numbers this year.

T. forsterana was common everywhere.

Peronea maccana, common in a wood near Souchez.

P. sponsana, very common near St. Pol and Souchez.

P. variegana, very common near Corbie and Souchez.

P. schalleriana (type) and var. *comparana*, near Souchez, very common.

Teras contaminana, very common, Souchez and Bruay.

Argyotoxa conwayana, near St. Pol.

Hedya dealbana, common near Souchez.

Sericoris urticana, very common in Somme area.

Euchromia purpurana, common near Corbie.

Sciaphila virgaureana, common everywhere.

S. octomaculana, in one trench near Souchez.

P. lundana, abundant in Pas de Calais.

P. mitterbacheriana, common in Artois in June and abundant in Pas de Calais in August.

Grapholitha nigromaculana, near St. Pol; *G. trimaculana*, Corbie.

Pædisca oppressana, near Corbie.

P. solandriana, common near Corbie in late June, less common near Souchez in August. I saw only four with brown ground colour.

Ephippiphora brunnichiana, common in the Somme district and occurred near Souchez.

Stigmonota compositella, Somme.

Catoptria ulicitana, very common on the suitable ground I saw, near Souchez.

C. hypericana, near Bruay; in Arras district.

Symæthis oxyacanthella, abundant, Somme and Pas de Calais.

Eupæcilia curvistrigana, near Corbie.

Xanthosetia zægana and *hamana*, very common on all grassland, especially the former.

Chrosis alcella, common in the Somme area.

Tortricodes hyemana was one of the unexpected absentees, another of which was *Lemnatophila phryganella*.

Diurnea fagella, especially the paler forms, was abundant near Amiens.

Scardia cloacella was common near Corbie and *Blabophanes fenestratella* everywhere. The latter appears to be the predominant clothes-moth in North France. I met with *T. biselliella* only in Flanders, and *Æ. pseudospretella*, though often met with, was sufficiently uncommon to make one envy the lot of the French breeder of Lepidoptera.

Plutella cruciferarum, generally common.

Harpiteryx xylostella and *Phibalocera quercana* were both common in one wood near St. Pol.

Depressaria arenella, abundant in Flanders and Pas de Calais.

D. pulcherrimella, one specimen, near Souchez.

D. heracleana was seen near Souchez.

Bryotropha politella, Arras district.

Argyresthia pygmæella was taken near St. Pol.

The fact that I know little about the micro-lepidoptera, and that the little knowledge I have rapidly evaporates as the end of the list is approached, scarcely needs emphasising.

For valuable assistance, with identification of these smaller species, I have to thank Mr. B. Morley, of Huddersfield, and Messrs. Watkins and Doncaster.

NOTES ON REPORTS OF SOCIETIES.

BY F. N. PIERCE, F.E.S.

IN the February number of the 'Entomologist' there is a fund of material condensed into such a small space that it reminds one of the diner's reply to the obsequious waiter's query: "How did you find your steak?" "Oh, I found him at last, the little beggar was hiding under a brussels sprout." So we find in this month's 'Entomologist' most important statements almost buried among common-place records.

On p. 46, embodied in the report of the South London Entomological Society's proceedings, we find the momentous announcement of a Geometer new to science condensed into the following sentence: "Mr. Newman exhibited (5) a series of a new species of British Geometeridæ, which has recently been differentiated from *Lampropteryx suffumata* by the Rev. W. Metcalfe, and somewhat resembles *Eustroma silaceata*." Now I think I am correct in saying the last Geometer added to the British list was *Oporabia christyi* in 1900, described by the late J. E. R. Allen in 'The Record,' vol. xviii, p. 85, occupying four pages, and figured in the 'Entomologist,' vol. xxxiii, pl. II, figs. 7 and 8; and although there has been no addition to the list for seventeen years, the new species is now announced in two and a half lines of letterpress. The British collector who is thirsting for information has to be content with the official-like announcement, "has recently been differentiated." How, or why, or when, is left for the reader to fill in himself; yet what interesting pages might have been written in place of this brief paragraph.

On the next page, included in the report of the Derbyshire Entomological Society, we read that Mr. H. C. Hayward exhibited thirty-seven species of Micros not recorded in the county list of the Victoria County History. Embedded in a list of names we find the capture of *Sciaphila wahlbomiana* at Repton. *Wahlbomiana*! What a volume of pleasant memories this name conjures up in my mind during my search for the unknown. For who is bold enough to say what *wahlbomiana*, L. is? Wise men have tried to locate this will-o'-the-wisp, but, like the celebrated Mrs. 'Arris, it has never been seen; and this reminds me that reference to the Linnæan collection sheds some ray of light on this question. In the collection is a specimen of a

Tortrix with a huge pin, with a large wire head, stuck through a label which, I am assured by the courteous curator at Burlington House, is in Linnæus' own handwriting. This specimen, which one presumes is the original type and might easily pass as a worn *Sciaphila*, is undoubtedly a male *Orthotænia branderiana*, and, what is more, agrees with the Linnæan description of *wahlbomiana* in his twelfth edition. The mistake is easily accounted for, as Linnæus' type of the species *branderiana* is also in the collection, and is a female; this also agrees with the description of this species. What more likely than he should describe the male so different from the female as a distinct species. And here we have Mr. Hayward calmly proclaiming, without a single comment, that *Sciaphila wahlbomiana* is new to the Victoria County History. It certainly is, and he is to be congratulated on his discovery, while we await further particulars.

Lower down in the same list we get the astonishing record of another new British species, *Blatoterres glabratella*, which is dismissed by the line and a half: "This last species is not yet included in the British lists, but has been recently reported elsewhere." What is it? What is it like? Who has taken it? Where has it been taken? Where has it been recorded? All these and other questions spring up in one's mind, and again we say, why do they not tell us more? We are strong and brave and can bear to hear the worst; anything but this terrible suspense.

- 1, The Elms,
Dingle, Liverpool.

GARDEN NOTES.

BY CLAUDE MORLEY, F.Z.S.

(Continued from 1916, p. 248).

21. *A Beneficial Dipterous Larva*.—Upon several occasions in the course of the last decade, I have noticed larvæ, obviously Dipterous and apparently Stratiomyid, feeding upon the roots of the plantain (*Plantago lanceolata*, L.) that so disfigures lawns. These plants are usually eradicated in autumn and the fact doubtless accounts for my failure to breed the leathery larvæ, which are not full-fed till the late spring. On May 15th last, another larva was there discovered; this, being full-fed, pupated—with no earth—and shortly afterwards a female of *Chloromyia formosa*, Scop., emerged therefrom and confirmed my Stratiomyid supposition. The evacuated puparium superficially resembles (though with much shorter setae) that of *Pachygaster*, figured at p. 75 of his 'British Flies' of 1909 by Verrall, who tells us no more of the economy of the present species than that the larva

lives in garden mould and has been bred from wild rape, with no reference. After emergence, my female laid two batches, each consisting of about twenty, of brilliant orange and strongly elongate eggs; similar eggs were also laid by a specimen captured here on July 1st, 1905.

22. *Tragedies on Peas*.—In the last of these notes I referred to the relationship between Anthocorid bugs and Aphididæ in a direct manner. Shortly afterwards, on September 10th, an even more interesting, though indirect, instance of this association came under my notice. Upon a lot of peas were some Aphids, *Siphonophora pisi*, Buckt., which had exuded no mean quantity of honey-dew. Among them were several specimens of both the Anthocorid bug, *Triphleps majuscula*, and the dark-winged Dipteron, *Sciara thomae*. The attraction of the latter was certainly the honey-dew, for two or three were actually sucking it, just as they so frequently suck flowers; the former



had in the first instance come to attack Aphids, but the sweet-stuffed flies were so sluggish and "toothsome" that I actually caught two *Triphleps* with rostrum still inserted in their dead bodies.

23. *Any Port in Storm*. One of the problems that have exercised our minds from an early period is "Where do insects go to in bad weather?" Few entomologists could give a more satisfactory answer than the usual and vague one "Among the grass." Early in September, well before hibernation, I was lopping ash boughs and relieving the trunk of old ivy, at some fifteen feet above the ground, when I noticed quite a concourse of animals between the ivy stems and the tree. In the course of no more than an hour the following heterogeneous lot had appeared: Three beetles (*Aphthona atratula*, *Dromius 4-maculatus* and *Coccinella variabilis*); one Heteropteron (*Lycocoris campestris*); one Dipteron (*Pipunculus campestris*); the Neuropteron, *Pterodela pedicularia* in some numbers, with a *Chrysopa* larva; several species of spring-tails; and the snail, *Clausilia perversa*, Pult., not uncommonly. Not one of these species is in any way attached to ash; in fact, the *Aphthona* is almost always found upon *Helianthemum* or *Teucrium*, close to the ground; and all were there congregated for no other purpose than shelter.

24.—*The Dogwood Aphid*.—In this magazine (1908, p. 237) the remark will be found that in my experience *Schizoneura corni* is never seen on its name-plant. And this has remained true

until the 30th day of September last, when in passing I noticed the underside of a dogwood leaf appeared peculiarly dark. I examined it, and discovered the swart hue to be caused by an interesting concourse of insects: fourteen macropterous *S. corni* were giving off honey dew to the delight of one *Lasius niger* and a couple of Diptera, a *Phora*, and a *Hyetodesia*; while in the background lazily lounged a female Ichneumonid, *Promethes pulchellus*, in wait for any Syrphid grubs that might occur. Formerly this Aphid has been taken by me singly, *en voyage* only.

25. *Garden White's Parasites*.—On a low windowsill by a Southwold garden larvæ of the Braconid, *Apanteles glomeratus*, were in process of emerging from a caterpillar of *Pieris brassicæ* on September 19th, when a Chalcid fly was seen to be ovipositing in the latter's second segment. The spicula was already inserted when observed, and being worked with a very gentle vertical, and not entirely continuous, motion for some four minutes; it was then withdrawn. At 4 p.m. the same afternoon an Ichneumonid, *Hemiteles fulvipes*, was also ovipositing, but this time within the already-spun cocoons covering the *Apanteles* larvæ. At ten the following morning, the caterpillar was still moving about with some freedom and no sign of being moribund, though not leaving the *Apanteles* cocoons. On the 22nd inst. the *Pieris* was still alive, covering the cocoons, but unattached thereto; I then took the *Apanteles*, and, below their cluster, discovered the Chalcid still lurking. Two specimens of the Chalcid, of whose oviposition I give a rough sketch, emerged at a subsequent unnoted date; but no Braconids at all came forth, though the cocoons were retained for three years. This observation confirms Lyle's note (Entom., 1908, p. 249) as regards the Chalcid, but confutes it with respect to the *Hemiteles*.

NOTES AND OBSERVATIONS.

HIBERNATION OF *LAMPIDES BÆTICUS*.—Under date January 13th, 1917, Mr. C. E. Morris sends me from Le Cannet, A.M., the following very interesting notes on this subject: "Three very worn *L. bæticus* females seen as late as the first week in November in a wood near here. My experience is, Algerian pea-pods, larvæ and pupæ, produce imagines during December and January. Emergences: January 1st, 1914, one female, first; 5th, one male; 12th, two females; 18th and 20th, one female; 27th, three males and one female. 1915, dates about the same. Some Algerian (1914) larvæ pupated on the dried burst pod; others on the dry sand just under the surface, and a few on the sides of the box. This year (1916) eighteen pupated in a kind of nest together, *i. e.* each one spun up close to the other, and over one another, like a cluster of small cells. Certainly I had placed flower labels (wooden) leaning against the angles of the box, making a kind of triangular shaft, into which they almost all collected after promenading for quite a day. Of course, I do not mean to say they

all went there the same day, but that each one arrived there finally to pupate." In a postscript written January 14th, Mr. Morris adds: "Awful day, perishingly cold; hail, wind, rain, thunder and lightning. . . . I was never more surprised in my life than when I looked at my *L. baticus* and found three emerged, one a cripple, all males." Such weather as has been the rule at Cannes this winter must play havoc with exposed larvæ feeding throughout the bad season. Mr. Morris mentions six *Charaxes jasius* larvæ nibbling in captivity, but, in addition to adverse conditions of climate, he notifies that much of the forest timber is being felled in the Alpes-Maritimes for trench purposes, while the woodcutters, finding that the arbutus, which is the food-plant of *jasius*, burns well, are destroying it in quantities, and whole acres are being denuded of this splendid shrub-like tree.—H. R.-B.

FOOD-PLANTS OF *ACHERONTIA ATROPOS* AND HIBERNATION OF *LAMPIDES BÆTICUS*.—Writing from 7, Rue Mereille, Hyères, January 15th, Mr. Harold Powell reminds me (*cp.*, p. 17, *antea*) that he has already recorded olive as a food-plant for *A. atropos* in Tutt's 'British Lepidoptera, vol. iv, p. 433, where a similar observation is recorded in northern Italy by Calberla. He adds: "The favourite food-plant at Hyères appears to be the creeper *Solanum jasminoides*. With regard to *L. baticus*, there seems to be no doubt that this Blue is a continuous-brooded species in its warmer habitats, but I fancy that very few of the larvæ or pupæ resulting from the latest broods survive the winter on the Riviera. I have always found *baticus* very rare in the spring at Hyères, where it does not become abundant until well on in the summer. The few specimens I have taken here in the spring were in fresh condition, and had probably hatched out from pupæ that had been formed early in the winter, or else the larvæ had passed the winter. In my opinion, our supply depends mainly upon immigrants from a warmer climate. *Baticus* is common enough in late summer and autumn; I saw a specimen on the wing as recently as December 24th last, flying round a rosemary bush in a sheltered spot. I have partially reared larvæ on lucerne in October, but did not get them to pupate. At the beginning of October, 1902, I saw a female laying her eggs on flower-buds of *Ipomœa scandens*; I secured one of the eggs, which hatched in due course, but I lost sight of the larvæ. This seems a queer food-plant for *baticus*." M. Oberthür says that in certain Algerian localities, especially in the south, the generations of *baticus* should succeed one another almost without interruption.—H. R.-B.

CHEIMATOBIA BRUMATA AND FROST.—It may be interesting to note that *C. brumata* was flying freely here last night (February 7th), although it was freezing hard at the time, and although we have now had about four week's hard and unbroken frost. Altogether I noticed over a dozen individuals on the wing, and I took out my net and caught one for verification. Of course it is not unusual to see *C. brumata* out occasionally when the temperature is a little below freezing, but I think that it is a fact worth noting that he was on the wing after a month's hard frost, and before that frost had broken. At any rate, it is the first time that I have used a butterfly net amidst

crisp snow and hard ice. I might add that it froze hard all day yesterday, as well as in the evening, although the sky was dull and overcast for the first time for some days.—H. D. FORD; Thursby Vicarage, Carlisle.

YET ANOTHER FOOD-PLANT OF *TORTRIX PRONUBANA*.—On August 26th last I noticed that the leaves of plants of red valerian (*Centranthus ruber*) growing on the banks beside the parade were rolled as by a Tortrix larva. On searching these habitations I found many untenanted or occupied by an earwig, but I succeeded in finding three that contained Tortrix larvæ. These I took home and placed in a glass jar with fresh sprigs of the valerian, to which the larvæ at once took and ate ravenously and in which they eventually pupated, three specimens of *Tortrix pronubana* ultimately coming forth during the last week in September.—R. ADKIN; Eastbourne, February, 1917.

SCOPARIA PALLIDA, ETC.—It may help Mr. Thurnall in his search for the larva of this insect to know that the genitalia at once separates it from *cembrae*, and, indeed, it cannot be included in the same genus. The Scoparias divide naturally into two groups by the genitalia, and I believe as far as is known the larval habits of the two groups are different. *Cembrae* belongs to the group *Scoparia* and includes *dubitalis*, *ambigualis*, *ulmella*, and *basistrigalis*, all of which I understand, are root feeders. *Pallida* belongs to the group *Eudoria*, which includes *murana*, *truncicollella*, *frequentella*, *phaeoleuca*, *alpina*, *angustea*, *lineola*, and *resinea*. *Cratægella* being an offshoot from the *Eudoria* group, these, I understand, mostly are moss and lichen feeders. The Scoparias have the sacculus developed and projecting from the valva and strong cornuti. The Eudoreas have no projecting sacculus and no cornuti. From the ovipositer of the females of this last group the egg is laid deeply in the food-plant that is at the junction of the leaf to the stem or some other inaccessible place. In the former group I should expect to find the egg laid on the surface of the food-plant. Unfortunately I have only the mounts of a few species of females by me in my collection so cannot definitely give the oviposition of *E. pallida*.—F. N. PIERCE; 1, The Elms, Dingle, Liverpool, February 8th, 1917.

PYRAMEIS CARDUI AND VANESSA IO AT BRIGHTON.—On February 12th last a fine specimen of *Pyrameis cardui* was seen resting on a wall in Stanford Avenue, Brighton, basking in the sun. The day in question was very fine, and the wall was sheltered from a keen south-east breeze. On February 17th a live female *Vanessa io* was brought to me and has resumed hibernation. It was found flying in a sunny bedroom in Waldegrave Road, Brighton.—F. G. S. BRAMWELL; "Coniston," 1, Dyke Road, Drive, Brighton.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—The Annual Meeting was held on *Wednesday, January 17th, 1917*.—Commander J. J. Walker, M.A., R.N., F.L.S., Vice-President, in the chair.—No other names

having been received, the Fellows nominated by the Council were declared elected as Officers and Council for 1917.—The Balance-sheet was read by Mr. R. Wylie Lloyd, one of the Auditors, and adopted on the motion of Mr. F. H. Wolley-Dod, seconded by Mr. G. E. Frisby.—The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. H. Main, seconded by Mr. W. J. Kaye.—In consequence of the absence of the President through illness, his Address was read at his request by the Rev. Jas. Waterston, who showed a number of slides in illustration.—The Rev. F. D. Morice proposed a vote of thanks to the President, regretting his absence and its cause, and expressing the hope that the Address might appear in the 'Proceedings' of the Society.—The vote of thanks was carried unanimously, after being seconded by Mr. Hamilton Druce.—A vote of thanks to the Officers was passed on the motion of Mr. Stanley Edwards, seconded by Mr. J. Hartley Durrant, and each of the Officers said a few words in reply.

Wednesday, December 6th, 1916.—Commander J. J. Walker, M.A., R.N., F.L.S., Vice-President, in the chair.—Election of Special Life Fellows: Prof. L. C. Miall, F.R.S., Norton Way N., Letchworth, and Col. J. W. Yerbury, F.Z.S., 2, Ryder Street, St. James's, S.W., were elected the first Special Life Fellows of the Society.—Mr. J. C. E. Fryer exhibited, (1) specimens of the beetles *Anthicus bifasciatus* and the bug *Lygus rubicundus*, two species which have only been recorded in Britain from a restricted area in Cambridgeshire and Huntingdonshire; (2) specimen apples illustrating the serious injury caused by the bugs *Plesiocoris rugicollis* and *Orthotylus marginalis*, which appear to have adopted apples as a food-plant only within comparatively recent years.—Dr. H. Eltringham exhibited examples of *Papilio dardanus* ♂, taken by Mr. G. H. Bullock (British Vice-Consul at Fernando Po) near Santa Isabel, Fernando Po; also a curious example of *Danaida chrysippus* f. *alciippus* taken near Santa Isabel, Fernando Po, and entirely devoid of yellow pigment, the result being that the specimen had the appearance of a monochromatic representation of the insect.—Prof. Poulton said that he had received a fine series of Mylabrid beetles, including many pairs *in coitū*, collected by Mr. C. O. Farquharson from "ground-nut," *Arachis hypogæa*, L., at Moor Plantation (480–580 ft.), four miles west of Ibadan, S. Nigeria. The assemblage was found to break up into four species belonging to three genera or subgenera.—Prof. Poulton said that he had received several letters and boxes of specimens from Dr. Carpenter from South-west Uganda and German East Africa west of the Victoria Nyanza, and he felt sure that the Society would be glad to record the observations on this little-known area.—Mr. O. E. Janson exhibited a specimen of *Thaumusus gigas*, Oliv., a rare and remarkable Longicorn beetle recently received by him from Venezuela.—The following papers were read: "New Species of Hymenoptera in the British Museum," by Rowland E. Turner, F.E.S.; "Descriptions of South American Micro-lepidoptera," by E. Meyrick, B.A., F.R.S., F.E.S.; "Notes on some British Guiana Hymenoptera," by G. E. Bodkin, F.Z.S., F.E.S.—
GEORGE WHEELER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*December 18th, 1916.*—Annual Meeting, held at the Royal Institution, Colquitt Street, Liverpool, Dr. John Cotton, Vice-President, in the chair.—Messrs. Thomas Whittaker, Haldon, Barker's Lane, Ashton-on-Mersey, and G. Alan Griffen, 27, The Summit, Liscard, Cheshire, were elected members of the Society.—The following members were elected as Officers and Council of the Society for the ensuing year, viz.: President: L. West; Vice-Presidents: Dr. John Cotton, Wm. Webster; Hon. Treasurer: Dr. John Cotton; Hon Librarian: F. N. Pierce, F.E.S.; Hon. Secretary: Wm. Mansbridge, F.E.S.; Council: Messrs. C. F. Burns, J. W. Griffen, A. W. Hughes, J. Collins, R. Wilding, P. F. Tinne, M.A., S. P. Doudney, E. A. Cockayne, M.A., F.E.S., W. A. Tyerman, Wm. Buckley, Prof. R. Newstead, M.Sc., F.R.S., and Gervase F. Mathew, F.L.S., F.E.S.—Dr. Cotton read the Presidential Address. He took for his subject "The Collecting Grounds round Liverpool." The address dealt in a descriptive manner with the various headquarters for Lepidoptera within easy reach of the city, the good things to be found in each, and was interspersed with many humorous anecdotes of experiences and adventures met with when in quest of rare local insects.—WM. MANSBRIDGE, *Hon. Sec.*

January 15th, 1917.—Meeting held at the Royal Institution, Colquitt Street, Liverpool, Dr. John Cotton, Vice-President, in the chair.—Mr. Wm. Mansbridge read a paper entitled "Recent Experiments in Breeding *Aplectia nebulosa*." This was supplementary to previously described results, and interesting because of the confirmation of an experiment in 1914, where var. *robsoni* was bred from moths of the typical form of markings. Attention was also directed to a recurring variation of a leaden-grey ground-colour, for which the name *plumbosa* was proposed. The progeny of the various experiments were exhibited, and an animated discussion ensued.—WM. MANSBRIDGE, *Hon. Sec.*

RECENT LITERATURE.

Insect Enemies. By C. A. Ealand, M.A. Grant Richards. 1916.
6s. net.

IN this treatise of 223 pages we are given the description and life-history of a considerable number of the injurious insects to be found in Britain, together with some hints as to the methods by which their activities may be kept in check. A few small animals, near the insects but not really such, are included because they can quite well be treated with the insects. The grouping into forestry pests, household insects, warehouse pests, etc., though perhaps necessary, is rather artificial, as the author admits. In reading through the book interest centred on those insects which were considered in detail: one wished that all could have been treated with equal fulness. The conclusion arrived at finally was that the author had in view the enlightenment of his readers with regard to the insect enemies around them, rather than the providing of full technical details of the methods of combatting them. In fact,

general entomologists, and other observers of natural phenomena, will probably find the book quite as interesting as the economic entomologist pure and simple. There are a number of plates, containing fifty-three lightly-drawn figures of many of the insects referred to: usually these are particularly faithful to nature and most useful. Occasionally the diction is not quite lucid; but, considering the amount of detail, there are very few slips—*Sirex noctilio*, however (p. 43), must be intended rather than the very scarce *S. juvenus*. Since Mr. Ealand is giving instruction in entomology we are surprised at his using the out-of-date grouping of the natural orders given on pp. 24–26. So incongruous is the assemblage of individuals in the Aptera and Neuroptera that no wonder the diagnosis in these orders are faulty.—W. J. L.

OBITUARY.

CHARLES OWEN WATERHOUSE.

THIS highly respected entomologist passed away on February 4th, aged 73 years, after a long and fluctuating illness. Born on June 19th, 1843, he was the eldest son of the late G. R. Waterhouse, who from 1851 to 1880 was keeper of the Geological Department of the British Museum, and better known among zoologists as the author of the first two volumes of 'A Natural History of the Mammalia' (1846–48), and to entomologists in particular by his 'Catalogue of British Coleoptera' (1858). He was also godson to Darwin and Owen, who were friends of his father, but was not born in the official residence at Bloomsbury as was sometimes conjectured, which his age manifestly contradicts, though as a boy of nine years he lived in the Museum buildings. He was educated at University College School and at King's College, and at the age of twenty-three joined the entomological staff of the Museum in 1866, where he subsequently held the appointment of Assistant Keeper from 1905 till his retirement in 1910, when he was created a Companion of the Imperial Service Order.

The present writer first made his acquaintance in 1869 in the entomological room of the Bloomsbury building, an apartment much smaller and less specialised than the series of rooms now devoted to the Insecta at South Kensington. Many of us still remember the former entomological sanctuary, which was then occupied by A. G. Butler who worked at the Lepidoptera and had charge of several other orders of insects, our late friend was custodian to the Coleoptera; Fredk. Smith studied and arranged the Hymenoptera, while the spare Dickensian figure of Fras. Walker was to be seen engaged in his encyclopædic attempts to catalogue and describe beyond the capacity of any single entomologist. In this room also Dr. Baird sat and worked at other branches of zoology, in which he was eventually succeeded by Fras. Jeffrey Bell. Of the entomologists who then formed that staff, A. G. Butler is now the only survivor. The vicinity of the Museum then contained the offices or show-rooms of many

entomological dealers, of which the names of Janson (senr.), Higgins, Boucard, and Cutter were very familiar, they had usually fresh consignments to offer, and were much visited, for there were more collectors of exotic insects in those days than now.

C. O. Waterhouse was not a prodigious writer, though he published more than 200 separate papers in various scientific journals, etc. His principal contribution to entomological literature is to be found in the enumeration and description of the Coleopterous family Buprestidæ in the 'Biologia Centrali-Americana.' He wrote the text to 'Illustrations of Typical Specimens of Coleoptera in the Collection of the British Museum,' Part I, Lycidæ (1879), and projected and edited 'Aid to the Identification of Insects,' 2 vols. (1880-82 and 1882-90). In non-descriptive and more morphological work he wrote 'The Labium and Submentum in certain Mandibulate Insects' (1895), in 12 pages with 4 coloured plates, and did much good service in preparing supplements to Scudder's 'Nomenclator Zoologicus.' His writings were always commendably clear from those criticisms and personalities that tend to disfigure some entomological publications.

During the forty-eight years that I enjoyed the acquaintance of C. O. Waterhouse, he always proved to be a trustworthy and willing advisor in all entomological questions, while he was undoubtedly possessed of very considerable administrative capacity. In private life he had many responsibilities, which he faithfully discharged, and was a man of rectitude and high conception of family duties. From the ordinary, so-called, vices which most of us possess he seemed to be immune, and they troubled him not. He had been a "sidesman" at his church for many years, and had served as President of the Entomological Society of London.

W. L. D.

J. PLATT BARRETT.

WITH great regret we have to record the death, on December 27th, 1916, of Mr. J. Platt Barrett, in his 78th year. For over fifty years Mr. Barrett was engaged in the instruction of deaf and dumb children, and his leisure time was largely given to Nature study, the Lepidoptera more especially. He frequently contributed interesting notes, based on his own observation and experience in the field, to this Journal and also to other entomological publications.

Soon after retiring from his professional activities, Mr. Platt Barrett visited Messina, and he was in the midst of the destruction caused by the awful earthquake that occurred there on December 28th, 1908. Several records of his butterfly collecting in Sicily and Calabria were published in the 'Proceedings of the South London Entomological Society' and in the 'Entomologist.'

In the late sixties Mr. Barrett lived at Peckham, and entomological friends used to meet at his house. It was there, we believe, that the now flourishing Society just adverted to originated. Except during the years he resided at Margate, he was a member of the "South London" up to the time of his death, and was its President in 1877. He was also a Fellow of the Entomological Society of London.

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A. FORD, 36, IRVING ROAD, BOURNEMOUTH.

THE ENTOMOLOGIST.

Vol. L.]

APRIL, 1917.

[No. 647

A NEW GEOMETRID MOTH.

BY THE REV. J. W. METCALFE, F.E.S.

IN response to my friend, Mr. F. N. Pierce's challenge in last month's 'Entomologist,' I gladly give at once some particulars concerning the new Geometer exhibited by Mr. Newman at a meeting of the South London Entomological Society, and reported to have been captured by myself. This was not the first occasion on which the insect had been exhibited, and the previously expressed view that it was only a race of the variable *C. suffumata* led me to suppress my own opinion to the contrary until such time as it should receive further confirmation.

This has now been supplied through the kindness of Mr. Pierce himself, who has enabled me to examine critically his mounts of the genitalia. As might be expected, the genitalia, though much smaller, show a close similarity to those of *suffumata*, but at the same time such definite and constant differences as to leave no doubt but that we have here a distinct species. The chief points to notice are that in the ♂ the *anellus lobes* are much stouter and shorter, while the basal parts of these lobes, from which the long hairs spring, are of quite a different form. In the ♀ the shape of the *ostium* is markedly different. Mr. Pierce is himself satisfied that their differences justify the opinion I had formed on other grounds, that we have here two species.

I will now give particulars as to the facts which led me to form that opinion. I first captured the insect some ten years ago, flying in considerable numbers, in a remote locality in North Devon. The striking difference in the shape of the wings from those of *suffumata*, the small size, and the shining, silvery, ground-colour, at once attracted my attention. A subsequent visit led to further captures, and on coming to live in East Devon I was delighted to discover it again in a similar locality in this part of the county. In addition to this, Mr. Newman has now found a series in a collection made in Cornwall, where he reports that it was taken under similar conditions.

The species seems to be absolutely constant in form, and in all specimens I have taken, well over a hundred, there has not been

the slightest variation nor any approach to any of the known forms of *suffumata*. The general pattern and position of the wing-markings correspond closely to those of *suffumata*, but the dark markings are much reduced, especially on the outer third of the wing, and are very delicately outlined with silvery white. The small size, the shining, silvery, ground-colour, and the shape of the forewings, which are full and well-rounded (very unlike those of *suffumata*), serve to separate it at a glance. The hind-wings are devoid of markings, shining whitish-grey. Seen in a series the general appearance is most striking, and somewhat suggests a cross between *suffumata* and *silaceata*.

Whilst *suffumata*, so far as we know, is only single-brooded, the new species is, at any rate, partially double-brooded. Without especially looking for it in the autumn, I have taken one or two specimens of this brood on the wing, and Mr. A. W. Mera has succeeded in rearing an autumn brood from eggs with which I supplied him. Barrett, indeed, figures what he supposed to be a specimen of the second brood of *suffumata*, but the figure, except for the shape of wings, would be a very fair representation of the new species, an example of which it seems to me he not improbably had before him. The new species flies in company with *suffumata*, but does not appear until quite three weeks after the latter is well out. This has been my experience over several years in both North and East Devon, and I find that it is not of much use to look for it until well towards the middle of May.

Our knowledge of the food-plant is so far negative. It refuses to eat *Galium aparine*, the food-plant of *suffumata*. Mr. Mera persuaded it to take *G. saxatile*, but very unwillingly, and I think it will eventually be found to feed on one of the marsh Galiums, *G. palustre* or *G. uliginosum*. Mr. Newman suggests *Asperula odorata*. The localities where I have found it are exactly similar—the wettest and darkest parts of dense woods. Here, in East Devon, the spot is so swampy that if one slips off a grass tussock one will, as likely as not, go in up to the thighs in mud and water. It flies late, and hardly a specimen will be seen until well after dark.

To sum up the grounds for separating the new species from *suffumata* we have the following differences—size, shape of the wings and general facies, number of broods, time of appearance, food-plant, form of the genitalia, and, though flying in company with *suffumata*, an entire absence of any intermediate form.

I hope, with the help of Mr. Newman, to be in a position later on to give a full description of the insect in all its stages, and meanwhile tentatively propose for it the name *Cidaria otregiata*, after the ancient name of this place (Otregia), where it finds one of its few homes.

Ottery St. Mary,
March, 1917.

NOTE BY MR. A. W. MERA, F.E.S.

In the March number of the 'Entomologist' Mr. F. N. Pierce would much like to know something more of the new Geometer exhibited by Mr. Newman at one of the South London Entomological meetings a few months ago.

As I have had something to do with the species, perhaps it might interest Lepidopterists if I relate what I know of it.

Apparently the insect was first brought to notice by the Rev. J. W. Metcalfe, but most entomologists who had seen it declared it to be only a local form of *suffumata*. This opinion was hardly shared by myself, and about a year ago I exhibited, as a visitor to the Entomological Society of London, some specimens which Mr. Metcalfe had kindly sent me. Certainly I was not bold enough to announce them as a new species, and the exhibit appeared to pass without any special notice. I had already heard from Mr. Metcalfe that he had endeavoured to breed the insect, but had failed, owing to his not being able to find the food-plant, as the young larvæ would certainly not take to the usual diet of *suffumata*, viz. the common hedge-cleaver.

During early May last year Mr. Metcalfe gave me a chance of trying to breed them by sending me a few recently captured live insects. Unfortunately at the time the weather was hot, and the insects died on the journey; but in one of the boxes there were a few eggs which Mr. Metcalfe supplemented a little later on. The young larvæ I provided with a variety of plants, thinking probably they would take to some of the willow herb tribe, three of which I provided, but all these they rejected. I also tried the small, white bedstraw that grows freely on common land. To this, four of the larvæ attached themselves, and from these larvæ I had four insects the following August, showing clearly that they are a double-brooded species. From the four specimens I got a pairing again, and although I supplied them with the same plant as before, none of the larvæ would feed, and the race was lost. I should think probably that the galium was only a substitute which they would take to in confinement, and that the natural food-plant has yet to be discovered. Mr. Metcalfe tells me that there is no galium where the insect is taken, and it is local.

The fact that the insect is quite different in shape to *suffumata*, is double-brooded, and has a different food-plant, seems sufficient to establish specific rank. According to Mr. Metcalfe, the genitalia of the two species are remarkably alike, but I sent two of my specimens to my friend, the Rev. C. R. N. Burrows, for genitalia investigation, and he sees a difference, although apparently not great.

Mr. Newman's specimens appear to have come from another source, as they were collected by some observant collector in

Cornwall, and were placed in his cabinet between *suffumata* and *silacea*.

A. W. MERA.

Outwood, High Road,
Loughton.

NOTES ON NEW AND LITTLE KNOWN BRITISH APHIDES.

III.

BY FRED. V. THEOBALD, M.A., F.E.S., ETC.

18. *Pemphigus borealis*, Tullgren ('Arkiv. f. Zoologi,' v, No. 14, p. 142, 1909).

In 1904 I took a number of a species of *Pemphigus* in July on lettuce roots at Wye, and had labelled them *Pemphigus lactucarius*, Passerini (which is the same as Linnaeus' *P. bursarius*). I now find that they are the species described by Tullgren as *borealis* taken on poplars (*Populus*). It is possible that this insect migrates from the poplars to the lettuce and other plants.

I have not yet been able to identify it in Britain on poplars

19. *Prociphilus crategi*, Tullgren ('Arkiv. f. Zoologi,' v, No. 14, pp. 96-102, 1909).

This very marked Pemphigid, described by Tullgren, was sent me by Mr. E. Green from Camberley on June 13th, 1916, taken on hawthorn. A single colony sent showed much white flocculent wool and farinose matter, and consisted of about fifty alate females and some nymphæ; the former evidently hatched out in transit. The alate females were decidedly mealy in appearance and their wings dusted with a fine grey powder. In habit they were very sluggish.

The thorax of these alatæ was black, the abdomen green to a dull greyish-green.

The nymphæ a pale green. One apterous female sent was a dull greyish-green also.

Further colonies were received on the 17th in a fresher condition.

The "hawthorn" leaves sent with them had a fine mealy coating all over them, especially on their upper surfaces, and also much white wool where nymphæ were present in any numbers.

Alatæ continued to hatch out until July 3rd. These produced young in the breeding-jars, in which I had placed rooted grasses and various other plants, with the hope that the viviparæ might develop on the roots, especially as all the alate females moved

down to the soil and none seemed to take wing. However, I can find no trace of this Aphid on the roots of some fifteen plants where the alatae produced their progeny.

20. *Drepanosiphum acerina*, Walker.

A single alate female of this apparently uncommon species was sent me by Mr. Rymer Roberts on July 25th, 1916, taken on maple at Rothamsted. It was not as yellow as this species was figured by Buckton in his monograph, being a pallid yellowish-green to lemon-yellow; the two marked cross-bars on the abdomen were thick and the cornicles a rich pale chestnut-brown.

The species is, however, very marked.

21. *Aphis familiaris*, Walker ('Zoologist,' vi, p. 2219, 1848).

In 1848 Walker described several species of Aphides from the small bugloss (*Echium vulgare*) under the following names: *familiaris*, *adjuvans*, *adscita*, *conjuncta*, *basalis*, *lycopsidis*, *consueta*, *adjusta*, and *suffragans*. It seems to me that there are only two species amongst these, namely:

1. *Aphis familiaris* (including *adjuvans* and *adscita*).
2. *Aphis lycopsidis* (including *consueta*, the oviparous female; *adjusta*, the nymph; *suffragans*, the alate female; also *conjuncta* and *basalis*).

All Walker's bugloss species were found at Fleetwood in the autumn, evidently all together.

These species, as it appears, seem to have been founded both on different stages and colour variation of certainly no more than two true species.

On August 22nd, 1916, Mr. Bagnall sent me some Aphides taken on bugloss (*Echium vulgare*) at Stockport. These were undoubtedly Walker's *Aphis familiaris*, not recorded since the date of the original description. Most were apterae, but there were two alate females, unfortunately both too damaged to describe.

The apterae are pale green to yellow, rather shiny, with very short cornicles, which may be all pale or slightly dusky at the tips. This species seems to be very sluggish in its movements, and not easily removed from between the petioles of the blossoms. A few also were found on and under the leaves. Some black varieties occurred, and I fancy that these are merely parasitised specimens.

I also found this species on Romney Marsh, at Dymchurch, in Kent, in July, 1916. The apterae of *Aphis familiaris* have the antennae shorter than the body; in *Aphis lycopsidis* they are longer than the body.

In the alatae of *familiaris* (= *adscita*) the antennae are as

long as the body; in *lycopsideis* (= *suffragans*) a little longer than the body. Both have a dark thorax and green abdomen.

22. *Brachecolus stellariae*, Hardy.

So far this Aphid has only been recorded from the north of Britain.

On August 10th, 1916, Mr. E. E. Green sent me galled leaves and leaf-tufts of *Stellaria*, sp. ? from Camberley swarming with this Aphid. The leaves were bent upwards at their edges forming boat-shaped galls, so many at the apex of each plant that dense deformed tufts resulted. The infested leaves are paler than normally, some reddish and slightly swollen in patches, along each side of the mid-rib. The insects were mostly immature apteræ of a pallid green colour, the young covered slightly with white meal or fine down. They were readily shaken out of the galled leaves.

23. *Macrosiphum loti*, Theobald.

This green Macrosiphum, which I described from a few apteræ taken on *Lotus corniculatus* in July and August at Wye ('Trans. Sec. Ent. Congress,' p. 384, pl. xiv, fig. 2 A, 1912), has also been found at Bulverhithe, near Hastings, in Sussex, and has been sent me, I find, by Mr. Britten from Great Lalkeld in Cumberland; and from the two latter localities the alate female was described ('Journ. Eco. Biol.' viii, No. 3, p. 139, figs. 47 and 48, 1913). Recently I have taken this species at Freshwater in the Isle of Wight (viii, 1915); at Brockenhurst in the New Forest (viii, 15); and at Little Hadham in Herts (iv, 15). Mordwilko also records this species from Russia and places it in his new genus *Acyrthosiphon* ('Fn. d. l. Russie,' p. 185, figs. 82 and 83, 1914).

24. *Macrosiphum rubifolium*, nov. sp.

Apterous viviparous female.—Green; antennæ and cornicles dark; legs with much dark coloration. Antennæ longer than the body, arising from prominent frontal tubercles; basal segment larger than the second, with several hairs near apex forming a more or less prominent tuft; third segment longer than fourth, with 14–17 sensoria, not spreading to the apex, and with stiff clavate hairs; fourth and fifth about equal, with simple hairs; sixth long. Eyes dark. Proboscis green, dark at apex, reaching to the base of the third pair of legs. A small pale lateral tubercle on each side of the pronotum, and two small ones each side between the second and third legs. A few prominent hairs over the abdomen and on the head. Cornicles dark, very long, more than one-third the length of the body, curved outwards and projecting well beyond the cauda; apex markedly reticulate, remainder imbricated; in some the cornicles are deep brownish-green, paler just at the base, in others quite black. Cauda pale green to

dusky green, with six pairs of hairs, spinose and about one-fourth the length of the cornicles, acuminate. Legs long, green, apices of femora dark, most of the tibiæ darkened, especially at the apices; tarsi dark; femora and tibiæ hairy, especially the latter, towards their apices.

Length, 2·8 to 3 mm.

Alate viviparous female.—Green, with dark thorax; antennæ, cornicles and most of the legs dark; some dark markings on the abdomen. Antennæ longer than the body; basal segment considerably longer than the second, the third longer than the fourth, with 22–25 sensoria spread over about three-fourths of its length; fourth segment a little longer than the fifth; the sixth about as long as four and five; hairs simple. Proboscis dark at the apex, hairy, reaching to about the third pair of legs. Cornicles black, very long and cylindrical, apex reticulate, remainder imbricated. Cauda green, about one-sixth the length of the cornicles, with apparently four pairs of lateral hairs, spinose. Legs long and rather thin, base of femora green, apex black; tibiæ dark, especially at the apex; tarsi dark; femora and tibiæ hairy, especially the apex of the tibiæ. Wings much longer than body, normal venation.

Length, 3 mm.

Food Plants.—The bramble (*Rubus fruticosus*); and also on raspberry (*R. idæus*).

Locality.—Wye, July 14th and 22nd, 1915, and August 17th, 1916.

I found this species, in company with *Amphorophora rubi*, Kalténbach, on the leaves of brambles, and at first mistook it for *M. rubiellum*. It differs, however, in the sensoria on the antennæ in both forms, and in the very long cornicles and relatively short cauda. Later I found it on raspberries in the same year, and again on brambles in 1916.

25. *Macrosiphum euphorbiellum*, nov. sp.

Apterous viviparous female.—Pink, semi-transparent; antennæ pale, longer than the body; the basal segment larger than second; third longer than fourth, with two oval sensoria near the base; fourth about as long as the fifth; flagellum very pale; a few scanty hairs on the first three segments. Eyes black. Proboscis pale, rather thick, reaching to about the base of the third pair of legs. Cornicles pale pink, faintly dusky at apex, about one-third the length of the body, cylindrical, projecting beyond the cauda; apex faintly reticulate, very indistinctly imbricated on the remainder. Cauda pale pinkish-white, delicate in texture, very faintly spinose, rather thick and bluntly pointed, about half the length of the cornicles, with four pairs of pale lateral hairs and three dorsal ones near the apex. Legs pale pinkish, rather thick and long; tibiæ with numerous short pale hairs, a few on the femora.

Length, 1·8 to 2 mm.

Food Plant.—Spurge (*Euphorbia esula*).

Locality.—King's Wood, near Wye, April 25th, 1916.

I found a single colony only of this very pretty pink Aphid living in the young flower-tufts of the spurge. The young were also pale semi-transparent pink. It is an extremely sluggish species, with the antennæ carried over the back in repose.

I cannot identify this insect with any so far described from Euphorbia, namely, *Macrosiphum cyparissæ*, Koch; *Macrosiphum (Acyrtosiphon) cyparissæ propinquum*, Mordwilko; *Aphis euphorbiæ*, Kaltenbach; and *Aphis euphorbiæ*, Walker, the last a pale saffron species with short antennæ.

26. *Macrosiphum (Acyrtosiphon) genistæ*, Mordwilko ('Faun. d. l. Russie,' p. 144, 1914).

On various species of *Genista* growing at Wye I found a number of green Aphides in June, 1915, both alate and apteræ. They swarmed on the foliage and seed-pods and on the stems. These insects answer so closely to Mordwilko's Latin description of his *Acyrtosiphon genistæ* that I am recording it as that insect (unfortunately I cannot read the detailed Russian description). The third segment of the antennæ of the apterous female has 1-2 sensoria at its base; that of the alate female 20-26, spread over most of its length. The long thin green cornicles reach to about the level of the tip of the rather large green cauda; the cauda has five prominent hairs on one side, four on the other, and a subapical one. The cornicles slightly expand basally and are imbricated.

This *Genista* species comes very close to *pisi*, but as far as I can see the alate female differs in having many more sensoria on the third antennal segment.

27. *Myzus festuæ*, nov. sp.

Alate viviparous female.—Head and thorax brown, the thoracic lobes being more darkened; abdomen green with two rows of black spots on each side. Antennæ longer than the body, dark brown, except the base of the third segment and apex of the sixth; first segment much larger than second; third a little longer than fourth and not as long as the sixth, with 15-20 round sensoria along the whole length more or less in a line; fourth a little longer than fifth; basal area of sixth about one-fourth the length of the flagellum; all the segments imbricated. Proboscis rather broad, reaching to the base of the second pair of legs, dusky at the apex. Eyes large and black. Cornicles green, varying from dull green to pale brownish-green, rather more than one-third the length of the abdomen, cylindrical, well flared at apex and faintly imbricated. Cauda green, much thicker than cornicles and about half their length; finely spinose, with three lateral hairs on one side, two on the other, and one bent subapical one. Legs green, apices of tibiæ and tarsi dark, moderately long; tibiæ with a few short stiff hairs. Wings normal.

Length, 1.8 to 2 mm.

Apterous viviparous female.—Pale yellowish-green, pale green,

pale brownish-green to a dull greenish-pink. Antennæ a little longer than the body, green, except the sixth and apex of fifth segments, which are darkened; first segment much larger than the second; third longer than fourth, but a little shorter than sixth; fourth slightly longer than the fifth; the sixth about as long as four and five, its basal area one-fourth the length of the flagellum. Cornicles and cauda green; the former about one-third the length of the abdomen, cylindrical, rather thin, showing faint reticulation. Cauda rather thick and bluntly pointed, with three chaetæ one side, two the other, faintly spinose and about half the length of the cornicles and more than twice as broad. Legs green, except apices of femora and tibiæ, the latter with a few short stiff hairs.

Length, 1.5 to 2 mm.

The *nymphæ* have the antennæ relatively shorter than the alate or apterous females, and the wing-pads green or dusky green; the cauda being bluntly triangular and the cornicles relatively shorter than in the two mature forms.

Food Plant.—*Festuca ovina* var. *rubra*.

Locality.—Wye, May 25th, 1916.

This Aphid was found swarming on this grass under an old yew-tree in Wye churchyard by Mr. Langham and Mr. Efflatoum of Cairo. The grass was killed by the host of plant-lice, which in May were becoming alate. The apteræ were very sluggish, but the nymphæ, I found on examining the infected spot, readily fell off the narrow blades of grass. Mr. Efflatoum bred out the alatae which are here described.

The only Aphides recorded from fescue-grass are *Tychea trivialis*, Passerini, *Forda formicaria*, Heyden, and *Paracletus cimiciformis*, Heyden, all of which are root-feeders.

The only other Aphidinae from Gramineae are *Aphis donacis*, Passerini, *Aphis (Hyalopterus) arundinis*, Fabr., from *Arundo* spp.; *Aphis (Siphocoryne) avenae*, Fabr., from oats, etc.; *Aphis maidis*, Fitch, from corn and *Digitaria*, etc.; *Aphis annuae*, Oestlund; *Aphis holci*, Ferrari, on *Holcus*; *Aphis maidis-radialis*, Forbes; and *Aphis poae*, Hardy, on *Poa* sp. Of tropical species we have *Aphis adusta*, Zehntner, on *Saccharum officinarum*; and *Aphis sorghi*, Theobald, and *Aphis sorghiella*, Schouteden, from *Sorghum*. *Aphis mali*, Linn. (*pomi*, De Geer), has been recorded on *Triticum* sp. by Williams; *Aphis papaveris* (= *rumicis*) on *Zea* by Passerini; *Myzus persicae*, Sulzer, on *Zea* by Gillette and Taylor.

The insects described here are clearly none of these, and I cannot connect them with any Aphid I know. The *Aphis padi*, Kalt, so often mentioned on grasses, is not the same as *Aphis avenae*, the apple Aphid which migrates to Gramineae.

28. *Rhopalosiphum aconiti*, Van der Goot.

This species, described by Van der Goot in 1912 ('Tijds. voor Entomo.', lv, pp. 73-75, figs. 6 and 7, 1912), was sent me

by Mr. Fryer in July, 1916, from Yorkshire, taken on aconite. This is the only record I know of since Van der Goot described the species from Holland on *Aconitum napellus*. It is a very marked species when alate, the head and thorax shiny black, the abdomen clear rich deep green, with black cauda and shiny black cornicles. The antennæ are dark and a little longer than the body, the third segment with 45-55 sensoria along its whole length. The cornicles are variable in form, some seem almost cylindrical, others showing *Rhopalosiphum* form, but never very marked. I have only seen alate females and nymphæ from England.

Two other Aconite species are known, namely, *Aphis napelli*, Schrank (1801, 'Fn. Boica'), on *Aconitum napellus*, from Europe, and Karsch's *Myzus junckianus* (1887) on *Aconitum cammarum*, Linn., from America.

FURTHER NOTES ON BRITISH PLANT GALLS.

BY HAROLD J. BURKILL, M.A., F.R.G.S.

As stated in the January, 1916, number of the 'Entomologist,' the members of the London Natural History Society have been collecting records of the distribution of British plant galls, and by this method several fresh additions have been made to the lists of British insects and mites.

Specimens have from time to time been exhibited at the meetings during the past year, and the following notes have been largely compiled from such specimens. Many of them are apparently fresh records for Britain, and of these the most interesting are perhaps those from the Wye Valley region which was visited by six members of the Society during last summer and autumn for short holidays. The total list of galls noticed in that district amounts to over 160 species.

The following notes have been made from specimens shown at the Society's meetings during the year. The county is given in each case as some guide to the distribution of the galls:

Clematis vitalba, Linn.—Leaves curled and crumpled by *Eriophyes vitalbæ*, Can. West Glos.

Lychnis dioica, Linn.—*Contarinia Steini*, Karsch. Bucks.

Hypericum maculatum, Crantz.—*Perrisia serotina*, Winn. W. Glos. and Mon.

H. montanum, Linn.—*P. hyperici*, Bremi. Mon.

Malva moschata, Linn.—Leaves galled by *Eriophyes gymnoproctus*, Nal., recorded from Bucks in 1915 was found in 1916 near Oxted, Surrey (L. J. Tremayne).

Tilia platyphyllos Scop.—(i) Firm fleshy swellings showing on both sides of the leaves with a central woody cell containing the yellow larva. When mature this central cell falls out leaving a crater-like depression in the fleshy tissue. There may be many

galls on one leaf. When young they are reddish in colour but turn green later on. *Oligotrophus Reaumurianus*, F. Löw. W. Gos., June (L. B. Hall). (ii) *Eriophyes tiliae* var. *exilis*, Nal. W. Gos. (L. B. Hall).

T. vulgaris, Hayne.—(i) Margins of leaves rolled tightly downwards forming a hairy cavity. *Eriophyes*, sp. W. Gos. (ii) *E. tiliae*, var. *liosoma*, Nal., recorded previously from Derbyshire, was found in 1916 in West Gos.

T. cordata, Mill.—(i) The common nail gall of *E. tiliae*, Pagnst., was plentiful in both W. Gos. and Mon. Nearly all the galls were bright red or crimson in colour when observed on this species of lime, while those on the common lime, *T. vulgaris*, Hayne, in the same district were yellow or yellowish-green. (ii) *E. tiliae*, var. *liosoma*, Nal. W. Gos. and Mon. (iii) *E. tiliae*, var. *exilis*, Nal. W. Gos. (iv) *E. tiliaris*, Con. W. Gos. and Mon. (v) *E. tetratrichus*, Nal. Rolling the margins of the leaves up. W. Gos. and Mon. (vi) *Contarinia tiliarum*, Kieff. W. Gos. and Mon. (vii) *Perrisia tilianvolvans*, Rübs. Mon. (viii) *Oligotrophus Reaumurianus*, F. Löw. Plentiful in August in the mature condition in Mon., and also found in three places in W. Gos. (ix) Leaf margins rolled tightly downwards, and the centre of the leaf in places puckered into pits with the concavity on the under side filled with short hairs. *Eriophyes*, sp. Possibly the same as *E. tetratrichus*, Nal., above. W. Gos. and Mon.

Euonymus europæus, Linn.—(i) Leaf margins rolled tightly by *Eriophyes convolvens*, Nal. This species of mite which was recorded in 1915 from Surrey was found in 1916 in four localities in Mon., and is evidently well-established there. (ii) *Aphis euonymi*, Fabr. W. Gos.

Acer campestre, Linn.—(i) *Eriophyes macrochelus*, Nal., var. *erinea*, Trotter. W. Gos. (ii) Terminal leaves aborted, rolled and covered with short hairs. *Eriophyes*, sp. Mon. (iii) Leaves folded like a fan. In the folds live orange-coloured larvæ of *Perrisia aceris* var. *rubella*, Kieff. Mon. (iv) *Atrichosema aceris*, Kieff. Was found to be well-established in both W. Gos. and Mon.

Medicago lupulina, Linn. Leaves folded into a loose pod containing midge larvæ. *Perrisia*, sp. W. Gos.

Lotus corniculatus, Linn.—*P. loticola*, Rübs. W. Gos., Mon., and Herefd.

Vicia sylvatica, Linn.—Leaflets not swollen, but folded face to face, and enclosing a white midge larva. *Cecidomyia*, sp. Mon.

Lathyrus pratensis, Linn.—Leaves slightly swollen with the margins rolled upwards to meet each other forming a hollow pod, slightly yellow in colour, containing midge pupæ, pale yellow inclined to pink at the hinder end. *Perrisia*, sp. W. Gos.

Spiræa ulmaria, Linn.—Slight concavities on the under side of the leaves each containing a pale green larva of *P. pustulans*, Rübs. Previously recorded from Derbyshire, now noted from W. Gos. and Mon.

Rubus fruticosus, Linn.—*Diastrophus rubi*, Hartig., recorded from Bucks (J. Ross) and Berks (E. B. Bishop) both localities being at the foot of chalk hills. Two localities in Berks, one on greensand

and the other middle oolite, and from Bucks, chalk (L. J. Tremayne).

Potentilla erecta, Linn.—*Xestophanes brevitarsis*, Thoms., was found in North Derbyshire.

Rosa canina, Linn.—Margins of the leaves rolled tightly downwards forming a hairy cavity, caused apparently by *Eriophyes*, sp. Mon.

Pyrus torminalis, Ehrh. Mite galls of *E. pyri*, Pagnst., previously recorded from Middlesex, are now recorded from Bucks, Mon., and Herefd.

P. aria, Ehrh.—*E. pyri*, Pagnst. W. Gos. and Mon.

Lonicera perichlymenum, Linn.—The upper parts of the leaves curled and crumpled. Occupied by aphides. W. Gos.

Galium erectum, Huds.—(i) Leaves rolled by *Eriophyes galii*, Karp. Mon. (ii) Flower buds deformed by *Schizomyia galiorum*, Kieff. W. Gos.

G. mollugo, Linn.—(i) *Eriophyes galii*, Karp. W. Gos., Mon., and Herefd. (ii) *Schizomyia galiorum*, Kieff. Abundant in W. Gos., and Mon., also in Herefd. (iii) *Perrisia galii*, H. Löw. W. Gos., Mon., and Herefd.

G. verum, Linn.—*Eriophyes galii*, Karp. W. Gos.

G. aparine, Linn.—*Perrisia aparines*, Kieff. Surrey (E. B. Bishop).

Achillea millefolium, Linn.—Galls of the eel-worm, *Tylenchus millefolii*, F. Löw., were found in the Wye Valley on the Gloucestershire side of the river, in close proximity to the commoner gall caused by the midge, *Rhopalomyia millefolii*, H. Löw. I did not notice either species of the gall elsewhere in the district.

Senecio jacobæa, Linn.—Flower-heads swollen by *Tephritis marginata*, Fall. W. Gos.

S. aquaticus, Hill.—Flower-heads swollen, the base of each head being occupied by several very pale yellow midge larvæ. W. Gos.

Centaurea scabiosa, Linn.—*Eriophyes centaureæ*, Nal. Surrey (E. B. Bishop).

Convolvulus arvensis, Linn.—Leaves rolled by *E. convolvuli*, Nal. Found near Folkestone, Kent, by Miss Burkill.

Thymus chamædrys, Fries.—Heads galled by *E. Thomasi*, Nal. Herefd. (L. J. Tremayne).

Nepeta hederacea, Trev.—*Perrisia glechomæ*, Kieff. Herts (L. J. Tremayne) and Mon.

Lamium album, Linn.—Terminal leaves galled by *Macrolabis corrugans*, F. Löw. Middlesex.

Plantago maritima, Linn.—A large bed of this plant on the bank of the Severn, West Gos., had many of the stems and heads galled by the larvæ of *Mecinus collaris*, Germar. The plants were often under water as the tide washed over the spot, but the larvæ in the galls seemed to be none the worse for the periodical immersions of the plants.

Ulmus glabra, Huds.—*Tetraneura ulmi*, De Geer. Hants (L. J. Tremayne).

Salix fragilis, Linn.—(i) The flower-gall thought to be due to *Eriophyes triradiatus*, Nal., has continued to spread rapidly in the

London district, and nearly every tree between Putney and Kew Bridge on the Surrey bank of the Thames is galled. It has also been noticed at South Ealing, Brentford, Wormwood Scrubbs, and in St. James's Park. The galled tree in Red Lion Square, Holborn, was pruned by the local authorities last spring in an attempt to exterminate the gall, but there is one specimen that has appeared on it since then, and it will be interesting to see if the mites spread rapidly again over the tree. The gall is also to be found on some willows of an introduced species in Surrey. (ii) *Rhabdophaga rosaria*, H. Löw. W. Glos. and Middlesex. (iii) *Cryptocampus ater*, Jurine. W. Glos. (iv) *C. testaceipes*, Zadd., was plentiful in one place in Surrey last summer.

S. alba, Linn.—*C. testaceipes*, Zadd. In the same locality as the last.

S. caprea, Linn.—*Rhabdophaga heterobia*, H. Löw. W. Glos.

S. cinerea, Linn.—*Cryptocampus saliceti*, Fall. W. Glos.

Populus nigra, Linn.—*Pemphigus marsupialis*, Courchet, as well as *P. bursarius*, Linn, and *P. spirothecæ*, Pass, were plentiful on one tree in the Wye Valley, Herefordshire. All three species of galls have also been reported from Essex (J. Ross).

Carex pendula, Huds.—*Perrisia* (? *muricatæ*, Meade). W. Glos. (L. B. Hall).

Dactylis glomerata, Linn.—*Eriophyes tenuis*, Nal., W. Glos. (L. B. Hall).

SOME JAPANESE BEES.

BY T. D. A. COCKERELL.

THE bees recorded below are in the collection of the United States National Museum.

Sphecodes japonicus, Cockerell.

Tokyo, Japan, both sexes, September 14th and 19th, October 9th (*Dr. C. Sasaki*, 144, 172); Kiso-fukushima, July 23rd (*Sasaki*, 173). This species was described from the male, without any more definite locality than Japan. The female has the first abdominal segment red, the sexual differences in the colour of the abdomen being exactly as in the European *S. spinulosus*. The mesothorax of the female has extremely large coarse punctures, but on each side of the middle these are well separated on a shining ground, not nearly so dense as in *S. fuscipennis*. The head of the female is very broad. This is easily known from the other two species of *Sphecodes* recorded from Japan by the strongly reddish-fuliginous wings. There seems to be nothing in the description of *S. orvundus*, Vachal (male) which would contradict the suggestion that it is the male of *S. simillimus*, Smith.

Megachile (Oligotropus) sasakiella, n. sp.

♀. Length 10.5 m.m., narrow, parallel-sided; black, including legs and antennæ; head and thorax strongly and densely punctured; sides of face, cheeks, sides of thorax, and metathorax with dull white hair; thorax above almost bare, no band in suture between meso-

thorax and scutellum; mandibles very broad and short, quadridentate, not counting inner corner; facial quadrangle longer than broad, orbits converging below; clypeus very strongly and densely punctured, not keeled, the lower margin with low widely separated median tubercles; basal half of metathoracic area finely rugose, apical part smooth (though not polished) and somewhat shining, in complete contrast; tegulæ black with obscurely reddish margins; wings dusky; stigma piceous; tarsi with conspicuous yellowish-white hair on outer side, fulvous or inner; abdomen with very little hair, but the hind margins of segments have extremely narrow but distinct creamy-white hair-bands; segments 2 to 4 with deep transverse impressions; sixth segment rapidly descending, concave in profile; ventral scopa entirely creamy-white.

HAB.—Tokyo, Japan, August 30th, 1906 (*Sasaki*, 151). This is quite unlike the previously known Asiatic species, being a member of the North American subgenus *Oligotropus*. Compared with the type of *Oligotropus* (*M. campanula*, Rob.) it differs by the narrower face, more robust manibles, more coarsely punctured thorax, more closely and finely punctured abdomen, and much broader hind basitarsi. The broader type of hind basitarsus is found in the Californian *M. angelarum* Ckll.

Andrena alopeæ, n. sp.

♀. Length about 12 mm.; black, the abdomen very faintly greenish; head and thorax with abundant long fulvous hair, bright fox-red on occiput and thoracic dorsum, some dark hair on vertex; head very broad, facial quadrangle broader than long; facial foveæ very broad, reddish-brown; mandibles entirely black; malar space almost obsolete; process of labrum very broad and rounded; clypeus shining, strongly punctured, without a distinct impunctate band; antennæ black, third joint about as long as next two together; mesothorax entirely dull, with shallow hardly noticeable punctures on a microscopically cancellate surface; disc of scutellum polished and shining, with irregular distinct punctures; area of metathorax dull and granular, more or less rugose basally, not well defined; tegulæ fulvo-ferruginous; wings somewhat dusky, with a yellowish tint, stigma (which is well developed) and nervures ferruginous; b.n. meeting t.m.; second s.m. broad, receiving first r.n. a little beyond middle; legs more or less reddish, but dark, with pale hair; hind tibial scopa pale-golden, brown near base above, abdomen shining, with minute feeble punctures; second segment depressed about two-fifths; first two segments with long pale hair; segments 2 to 4 with conspicuous entire creamy-white hair-bands; caudal fimbria reddish-brown or chocolate.

HAB.—Japan (no exact locality), two from Dr. *Sasaki* (148). Superficially, this looks almost exactly like *A. extricata*, Smith (*fasciata* auctt.), but it is distinctly less robust, and has nothing of the fine regular abdominal punctures of *extricata*. It is not very close to any described Japanese species; by the faintly metallic abdomen it may be compared with *A. consimilis*, Alf., by the bright red thoracic hair with *A. biscutata*, Perez.

BRITISH NEUROPTERA IN 1916.

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

DURING the course of 1916 a considerable number of notes on the British neuroptera came to hand from various sources. Perhaps they contain little of special importance, as most of them have reference only to date and place of occurrence; but since the times and distribution of these insects in Britain are two of the points on which information is desired, the records obtained are, as a matter of fact, extremely useful. Any entomologist who assists with such records in this and other less known orders of insects is really doing necessary work in connection with the science to which he is devoted.

ALDER-FLIES.—Personally I first captured examples of *Sialis* in the New Forest on April 30th, which can scarcely be looked upon as an early date for so warm a month; but I perhaps missed seeing them previously. *S. lutaria*, Linn., is usually the earlier of the two British species of *Sialis*; but Mr. R. South met with it as well as the darker and much less common *S. fuliginosa*, Pict., from the 1st to the 14th of June in the New Forest.

SNAKE-FLIES.—On April 27th, Mr. G. T. Lyle bred a nice female *Raphidia notata*, Fabr. This he gave to me, and thoughtfully accompanied it by the cast larval and pupal skins. Our knowledge of the life-history of *Raphidia* is gradually being completed, and neuropterists have to thank Mr. Lyle for helping considerably towards elucidating it. From June 1st–14th, Mr. South took several of the same species in the New Forest. These were chiefly beaten from fir-bianches. From the beginning of June and onwards to the 14th he also took several examples of the much smaller *R. maculicollis*, Steph., in the Forest, in this case beating them usually from hawthorn blossoms. One was sent to him by Mr. G. Gulliver about July 24th—a late date for the species, I should say, in the south of England.

BROWN LACE-WINGS.—In the New Forest several specimens of *Osmylus chrysops*, Linn., were taken from June 1st–14th at Hurst Hill and near the Victoria Tile-yard (South); two nice examples were also secured on June 12th at Avonwater between Holmsley and Sway (L. Balcomb). One specimen of *Sisyra fuscata*, Fabr., was taken in the New Forest between the 1st and 14th of June (South). Of the genus *Hemerobius*, Linn., a number of species have been noted: *H. micans*, Oliv., one, June 8th–14th, New Forest (South); one, August 20th, Hurst Hill (W. J. L.); *H. nitidulus*, Fabr., one, June 1st–14th, New Forest (South), and one sent to him by G. Gulliver about July 8th; *H. humuli*, Linn., two, June 8th–14th, New Forest (South); *H. subnebulosus*, Steph., one, June 8th–14th, New Forest (South); *H. stigma*, taken on the wing at Esher Common,

Surrey, on January 15th (W. J. L.), two, June 1st-14th, New Forest (South), one, July 22nd, on the occasion of the South London Ent. and Nat. Hist. Society's excursion to Box Hill, probably beaten from yew (W. J. Ashdown); *H. concinnus*, Steph., five, June 24th, on the South London Ent. and Nat. Hist. Society's excursion to Netley Heath and district (Ashdown); *H. quadrifasciatus*, Reuter, one, about June 12th, in the New Forest, beaten from fir-trees between Rhinefield and Apsley Passages of Oberwater (South), one, June 24th, on the South London Society's excursion to Netley Heath, etc. (Ashdown); *Micromus paganus*, Linn., one, June 24th, on South London Society's excursion to Netley Heath, etc. (Ashdown), one, July 3rd, at Chalfont Road, Bucks (South).

GREEN LACE-WINGS.—Of these delicate insects a considerable number of species have come to hand: *Chrysopa flava*, Scop., seven or eight, June 1st-14th, New Forest (South), one, July 30th, Eastbourne, Sussex (South), one, July, Whalley Range, Manchester (sent by T. A. Coward); *C. alba*, Linn., eight or nine—June 1st-14th, New Forest (South), two, on South London Society's excursion to Netley Heath, etc., on June 24th (W. J. L.); *C. flavifrons*, Brauer, one, on the excursion just mentioned (W. J. L.); *C. prasina*, Ramb. (= *aspersa*, Wesm.), three, June 1st-14th, New Forest (South); *C. ventralis*, Curt., one June 12th, New Forest (South), one, June 17th, near Oxshott, Surrey (W. J. L.); *C. perla*, Linn., four, June 1st-14th, New Forest (South). Belonging to this group, though the colour is ruddy-brown instead of green, are two British insects belonging to the genus *Nothochrysa*, McLach. Mr. South took both species during the summer—*N. capitata*, Fabr., two, June 1st-14th, Oberwater, in the New Forest, beaten from oak near the place where *H. quadrifasciatus* (above) was captured; *N. fulviceps*, Steph., one, August 12th, Stanhope, Co. Durham. Both are scarce, the latter being decidedly rare. There is a close resemblance between them, but *N. fulviceps* is perceptibly the larger species.

SCORPION-FLIES.—Eleven records of these curious insects have come to hand, but all refer to the two common species: *Panorpa germanica*, Linn., two males, June 3rd, near Horsley, Surrey (W. J. L.); three females, June 8th-14th, New Forest (South); one female, June 24th, on South London Society's excursion to Netley Heath (W. J. L.); one female, July 1st, Wisley district, Surrey (W. J. L.); a male and a female, August 8th, near Rhinefield, New Forest (W. J. L.). *Panorpa communis*, Linn., one male, June 8th-14th, New Forest (South); one female, June 24th, on South London excursion just mentioned (W. J. L.); one male, July 29th, near Rhinefield, New Forest (W. J. L.); two females, August 8th, near Rhinefield (W. J. L.); one, on the Gloucestershire side of the Wye Valley, opposite Tintern, August 19th.

(H. J. Burkill); one male, August 20th, at Hurst Hill, New Forest, resting on bracken (W. J. L.). Scorpion-flies, at any rate in the New Forest, seem to like to rest on the bracken-leaves. Most, or all, of those I have met with this summer in the Forest were on bracken, and I had noticed the same habit previously. It is not clear why this plant should have an attraction for them.

Kingston-on-Thames,
March, 1917.

BUTTERFLY COLLECTING IN THE PYRÉNÉES-ORIENTALES.

BY JAMES R. McClymont.

I PASSED the summer of 1916—mid-June to early September—
at Vernet-les-Bains, which is situated in the broad valley of the
Cady at an elevation of about 2100 ft. It is in the department
of Pyrénées-Orientales and about thirty miles from the sea.
When I went there I had no intention of collecting butterflies
but their great abundance invited to the pursuit, and I obtained
a net with an opening seven and a half inches wide—a mere toy
in fact. The aim I set before myself was extensive rather than
intensive. I mean that I tried to ascertain how many species
and varieties I could capture, and I devoted seven weeks to the
pursuit. The result was that I caught fifty-three species and
seven varieties. I have taken considerable pains to identify
these.

As all my specimens were obtained within a radius of two
miles from the Thermal Establishment no truly alpine species
appear in the list.

I soon noticed that although butterflies might be caught
anywhere in the vicinity there were certain spots which they
particularly affected. I address this portion of my paper to
those who are acquainted with the charming locality of which I
write. Amongst the favourite spots was the path which leads
past the tennis ground on the left bank of the Cady. There
*Parnassius apollo** glided unexpectedly into my tiny net, and
there I captured *P. napi* var. *napeæ*. A very rough path which
followed for a short distance a disused mine tramway, and
eventually lost itself on the hills in the direction of Saborre,
yielded *Limenitis camilla*. On the path to the Plateau de
Badaball *Satyrus aleyone*, var. *vernetensis*, Obthr. abounded.

I began to collect on July 6th and took my last specimens on
the 25th of August. I divide the species and varieties caught

* The magnificent form *apollo pyrenaicus*, Obthr., is beautifully figured from
this locality in 'Lépid Comparée,' Fasc. viii, pls. cc, cci. A whole volume is
devoted to this species, and constitutes the most completely illustrated monograph
yet issued (H. R.-B.).

into two sections, the first of which contains those caught in July or in July and August, the second those caught in August only.

Those caught in July or in July and August were *Parnassius apollo* ♀; *Aporia crategi* ♂ and ♀; *Pieris brassicæ*, *P. rapæ*, *P. napi*; *Euchlœe cardamines*, *E. euphenoides* ♂; *Leptidia sinapis* ♀, *L. duponcheli* (see *infra*); *Colias edusa* ♂ and ♀; *Gonepteryx rhamnii* ♂ and ♀, *Limenitis camilla*; *Melitea didyma* ♀, *M. deione*, *M. athalia*, *M. parthenie* ♂ and ♀; *Argynnis aglaia* ♂, *Dryas paphia* ♂; *Polygonia C.-album*; *Eugonia polychloros*, *Pyrameis atalanta*, *Vanessa io*, *Melanargia lachesis*, *Satyrus alcyone* ♂ and ♀; *S. circe* ♂; *Hipparchia semele* ♀; *Pararge mœra*, var. *adrasta* ♀; *P. megara* ♂; *P. egeria*, *Epinephele janira* ♀; *E. tithonus* ♂; *E. pasiphaë* ♂; *Aphantopus hyperanthus* ♀; *Cœnonymphe arcanius*, *Erebia evias* (this is a very late date), *Thecla æsculi*, *Læzopsis roboris* ♂; *Chrysophanus dorilis* ♀; *C. phlæas*, *Aricia medon*, *Polyommatus icarus* ♂ and ♀; *Agriades escheri*, *Celastrina argiolus* ♂; and *Adopœa linea*.

The following species, varieties, and sex not caught in July were met with in August: *Iphiclides podalirius*, var. (? *protesilaus*) † ♂ and ♀; *Pieris napi* var. *napæe*; *Leptidia sinapis* var. *erysini*, *L. sinapis*, var. *diniensis*, *Melitea didyma* ♂, *Melanargia galatea*,* *Hipparchia briseis* ♀; *Satyrus statilius*, var. *allionia* ♀; *Cœnonymphe pamphilus* ♂; *C. pamphilus*, var. *lyllus*; *Agriades bellargus* ♂; *A. corydon* ♂; *Carcharodus alceæ*; *Thanaos tages* ♀; *Hesperia sao*, *Agriades sylvanus* ♂; and *Erynnis comma* ♀.

In addition to these I saw at least two other butterflies which I failed to identify. One of them was, or resembled *Euvanessa antiopa*. It took to flight and soared out of reach and quite left the locality. This happened in the valley of the Šahorre. The other resembled the variety of *podalirius* which I caught, but was of a much darker yellow tint.

Iphiclides podalirius, var. (? *protesilaus* ♂ and ♀), † August 2nd, 1916, and August 4th, 1916. Both examples differ from *podalirius* and from *feisthamelii* in having only a narrow black streak instead of a broad black band along the inner margin on the upper surface of the hind wing. The abdomen, instead of being black as in *podalirius*, is black above and white below, and the division between the two colours is very sharp and well defined. The hind margin on the upper surface of the hind wing is strongly ochreous in one example (♂) and slightly so in the other (♀). In this respect and in the ground colour, which is very pale straw, the examples resemble *feisthamelii*. But, otherwise, they are dissimilar from that variety as described and depicted in Lang's 'Butterflies of Europe.'

* As *M. galatea* is not known to occur in the same locality as *M. lachesis* in this region, a further note is desirable (H. R.-B.).

† Cp. following note (H. R.-B.).

'*Leptidia duponcheli*,' Stgr., I am informed that this example, caught July 6th, 1916, is *Leptidia sinapis*, ab. *sartha*, Rühl. I can perceive no difference from *duponcheli*.*

Dryas paphia, L., ♂, July 6th, 1916. The two rows of black spots near the hind margin on the upper surfaces of the hind wings are repeated as dull olive-green spots on dull greenish-purple on the under surface.

Chrysophanus dorilis, Hf., ♀, July 15th, 1916. This was the only example seen. The under surface is very bright, that of the fore wing is orange, particularly bright in the centre, that of the hind wing yellow, and it has the normal spots (the usual summer form of the Eastern Pyrenees, H. R.-B.).

Menton, Alpes-Maritimes,
France.

IPHICLIDES (PAPILIO) PODALIRIUS, VAR. FEISTHAMBLII.

Var. *feisthamelii*, Dup., *gen. vern. miegii*, Th. Mieg. — In connection with Mr. McClymont's observations the following notes from my MS. Catalogue may be of interest.

Apparently this form does not extend into France much beyond the foothills of the Pyrenees, and there only in the eastern region, the two forms meeting at Gèdre (Htes.-Pyrénées). Bromilow mentions ab. *miegii* with the type in the Alpes-Maritimes, but probably he confused this form with ab. *zancleus*, Zeller. At any rate M. Oberthür, who has carefully considered the distribution of *feisthamelii*, offers no evidence in support of an extended range eastward in this direction. Departmental records as follows:—

Arège.—An intermediate form at Lavelant (Caradja).

Aude.—The *gen. vern. miegii* is the form taken by the late Mr. A. S. Tetley at Axat in June, 1909.

Haute-Garonne.—*Miegii* and *feisthamelii*; Arguènos, St. Béat, Aspè (Caradja).

Hautes-Pyrénées.—One example, confirmed as such by M. Oberthür, taken with the type at Gèdre, Gave du Pau; representing the western limit; *miegii* also occurring "at the lower end of the high valleys of the department, as at Gèdre" (Rondou).

Hérault.—Typical *podalirius* only (Oberthür).

Pyrénées-Orientales.—M. Rondou says that *feisthamelii* replaces the type in the spring at Le Vernet, meaning, I suppose, the form *miegii*. M. Oberthür says that here the

* Both Lang's figures and descriptions are most misleading, and the latter especially vague and incomplete. *L. duponcheli* was not recorded from the Pyrenees until quite recently, when Mr. Bethune-Baker, collecting in 1913, reported a single example of the *gen. ast. astivalis*, Bellier, taken between Vernet and the Col. du Cheval Mort. I failed to identify it in 1905 when there. Dr. Verity figures (Rhopal. Palæarct., pl. xxxix, fig. 52) a form of *sinapis*, *pseudoduponcheli*, Verity, Le Vernet, and I expect this is the form now returned as ab. *sartha* (H. R.-B.).

summer and spring forms overlap, occurring also in the plain of Rousillon, at Amelie-les-Bains, and at Corsavy from March onwards to September. Mr. Tetley reported *miegii* at Le Vernet in June, 1907; Spröngerts, *feisthamelii* at Sorède, and Dr. T. A. Chapman *miegii* at the beginning of April at Amelie-les-Bains.

Both M. Oberthür and Dr. Verity consider this to be a distinct species. The former states that he has never found the two flying together, either in the Pyrénées-Orientales or in Spain (Andalusia), and Mr. Powell confirms this observation for Algeria, where typical *podalirius* does not occur at all. Mr. Powell has bred the Algerian *gen. æst. lotteri* at Lambèse, and figures larva and pupa *in situ* on the food-plant (Lépid. Comparée, fasc. vii, pl. 20), adding that all green pupæ produced *lotteri*.

An exhaustive account of the Algerian *I. feisthamelii* is published in fasc. x (*loc. cit.*, pp. 21-33), and forms figured, pl. cclxxvii, var. *undecimlineatus*; pl. cclxxvii bis, fig. 2258 bis, var. *primularis*, Obthr., and *gen. æst. lotteri*, female, fig. 2258 ter.

H. ROWLAND-BROWN.

NOTES AND OBSERVATIONS.

SOME STEPHANIDÆ.—Mr. Morley (*antea*, p. 35) mentions Cameron's *Stephanus rufo-ornatus*, and, while correctly placing it in the sub-genus *Parastephanellus*, transforms the specific name into the remarkable compound "*rufidornatus*." On my protesting against this, I was informed, first, that he objects to the juxtaposition of two vowels, and always alters such names wherever met with. I question whether anyone has a right to act in this arbitrary manner. Secondly, that one such altered name had been quoted without comment. This appears to me merely to emphasise the need of watchfulness. Thirdly, as to the word: it is said to be formed on the analogy of "*lividus*" or some similar Latin word containing a "*d*" in the last syllable. Will someone who has a better knowledge of Latin than I can boast of kindly state whether the above compound is permissible? In any case, I consider the original to be preferable.—ERNEST A. ELLIOTT; 16, Belsize Grove, N.W., February 27th, 1917.

INSECT DISAPPEARANCES AND REAPPEARANCES.—Looking back over a long life in which entomology has been my chief hobby, I am unable to note "that there seems to be a tendency in a great many moths to appear in periodical cycles and then disappear again" ('Entomologist,' December, 1916, p. 284). This, of course, is an individual experience; and the "tendency" may be proved to exist by overwhelming testimony from other observers, who will, it is hoped, give the results of their observations.

The subject is a very interesting one, so interesting that it tempts me to add a little on insect disappearances and reappearances.

The sudden disappearance of *Chrysophanus dispar* from 1845 to

1847 has never been satisfactorily explained, and no cycle, I am told, has yet restored *Aporia crataegi* to its haunts of sixty years ago, excepting Kent, where it may have been reintroduced from the Continent. Nor would the reappearance of *C. dispar* at all astonish me, since attempts have been made for some time to establish Dutch specimens said to present no difference to the aborigines.

Turning to moths, *Trigonophora flammea (empyrea)* has apparently disappeared from its Sussex haunts for years. Other examples of total and inexplicable disappearances could be given, but I refrain from treading further on what may be delicate ground. I will only say, as having some bearing on this part of the subject, that all my attempts at transplanting lepidopterous insects have been total failures, although every care was taken to select what appeared to be identical habitats.

So much for what seems inexplicable. But there are insect disappearances which are as permanent as the examples given, and which admit of explanation. In my experience I have known a colony of *Plebeius agon* exterminated in a small, isolated area in a few hours by over-collecting. Some years ago *Pieris napi* was abundant near Chester, the females especially being heavily charged with black. Next year there were none, farming operations having destroyed the food-plants. *Cænonympha tiphon (davus)* vanished from a spot which was entirely changed by a growth of trees. Another limited locality for this butterfly was reclaimed and cultivated, and, of course, *tiphon* disappeared.

We now reach the fact that "all species are commoner one year than another." In considering this part of the subject the year 1916 stands out as a dismal illustration, and, as far as my observation in this district was concerned, I agree with Colonel Rattray that it was a disastrous year for the collector. *Pieris brassicæ* and *P. rapæ* appeared in their usual numbers (a few years ago *P. brassicæ* almost disappeared), but these species struck me as being the only ones whose numbers were normal. In September, 1915, *Pyrameis atalanta* could be seen commonly enough in the park feeding on the big daisy-like flowers of *Senecio clivorum*, or on the long blue flower-spikes of *Buddleia albiflora*. So engrossed were they that I frequently picked them off with finger and thumb when they closed their wings, and then letting them fly again. In 1916 I did not see one or even a larva. A few *Vanessa io* (absent in 1915, and rare for some years back) took their place; colonies of *io* caterpillars were seen last June on nettles outside the town two miles away.

A very unusual feature in the past season was the almost total disappearance of *A. urticæ*. Probably the inclement spring—continued well into June—had much to do with diminished numbers, but the wandering habits of the butterflies just mentioned will account for districts being sometimes missed in the distribution of species.

I observed a similar falling off in the number of moths in 1916 Ivy was not attacked by larvæ of *Boarmia rhomboidaria*, Jerusalem artichoke, and other plants by *Arctia lubricipeda*, or loganberry by *Odontopera bidentata*, and the numbers of perfect insects of these species was correspondingly small. (It is remarkable how different

is the caterpillar of *bidentata* when taken from Scotch firs—humped and marbled with greens and reds—but the moths as closely like each other as in the case of *Acronycta tridens* and *A. psi.*)

Dragonflies, on the whole, were also few. *Æschna grandis*, one of our commonest, was conspicuously scarce, but *Æ. cyanea* was frequently seen close to Chester, a specimen being captured in a chemist's shop.

But it is an ill wind that blows nobody good. The disastrous 1916 even affected insect garden pests. *Abraxas grossulariata* (always severely typical), *Halia vauaria (wavaria)*, and the well-known sawfly refrained from violent attacks on gooseberry bushes, while the extraordinary show of roses was probably due to the almost entire absence of the common green *Aphis*. (A strawberry bed in my garden was nearly ruined in 1915 by the latter pest.) Referring again to roses, it was interesting to watch one or two leaf-cutting bees (? *Megachile circumcincta*) cutting semi-circular pieces out of the leaves, rolling them up under their legs so as to present the smallest possible obstruction to the air in flight and then disappear in a hole in a brick wall so inconspicuous that the flight of the insect had to be followed with the eye before the hole could be discovered.

Wild bees evidently suffered from the cold spring. In 1915 they were abundant—*Bombus lapidarius*, *B. terrestris*, var *lucorum*, and *B. muscorum = agrorum*. A similar fate befell saw flies and hover-flies.—J. ARKLE; 25, King Street, Chester.

THE BARRETT COLLECTION.—Lepidopterists will be interested to hear that the collections of the late Mr. J. Platt Barrett were bequeathed to the Horniman Museum. They include many beautiful aberrations of butterflies and moths, among them the extraordinary *lachesis*-like example of *Melanargia galatea* taken by Mr. Barrett in North Kent, and similar to that figured and described by the late S. Stevens in the 'Entomologist' (vol. ix, p. 193). It is figured (Pl. xii) in the Proceedings of the South London Natural History Society for 1915-16. The collection also contains rich series of Sicilian butterflies taken during his residence at Messina.—H. R.-B.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—January 11th, 1917.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—The death of Mr. J. Platt Barrett was announced.—Mr. Brooks reported *Hibernia defoliaria* taken by Mr. B. S. Williams, quite freshly emerged, in January.—Mr. Moore, the deep green Sphingid, *Euchloron megera*, from South Africa.—Rev. F. M. B. Barr, his captures of the past season in Staffordshire and in the Wye Valley, with *Agriades coridon* aberrations from Royston, and including *Leptosia sinapis*, *Brenthis selene*, *Eulype hastata*, *Venusia cambrica*, etc.—Mr. Hugh Main, a cage made by him to facilitate the breeding of Geotrupid beetles and to allow full observation of the digging of the galleries, massing the pabulum, laying the ova, feeding and growth of the larva, etc., and read a paper, his observations being frequently at variance with those previously recorded.

OBITUARY.

ARTHUR ERNEST GIBBS, F.L.S., F.Z.S., F.E.S.

1859-1917.

AMONG the many entomologists whose loss we have had to deplore during the past two or three years there is none who will be more surely missed than Arthur Ernest Gibbs. Small in stature but of abundant energy, to whatever he put his hand, whether in business or in the exercise of his many scientific hobbies, he displayed the same zealous ardour, convinced that if a thing is worth doing, it is worth doing well. His entomological enthusiasms soon carried him beyond local interests, but he will always be remembered as one of the first of his county to show keen concern for its fauna, flora, and geology, and of his work in this direction the Herts County Museum at St. Albans, to which he gave himself devotedly from the days of its endowment and erection, stands a permanent memorial. It is chiefly as a lepidopterist, however, that his loss is deplored by his many friends, colleagues, and correspondents beyond the ancient city which throughout his life was to be his home. Here under the shadow almost of St. Alban's Abbey, and for many years in the old house on the site of the monastic fields—Kitchener's Meads—he formed his collections, local and universal. For consignments of specimens from the palæarctic, and tropical regions of Central and South America were continually arriving, and I think it was a first visit to the Vosges in 1908 which began a series of butterfly hunts on the Continent and in Algeria terminated only by the outbreak of the war, when he was actually at Lyons, on the way to "fresh woods and pastures new." His activities in the London Societies were multifarious. He was elected a Fellow of the Linnean in 1886; of the Entomological in 1906, serving on the Council 1912-14, and at the time of his death again elected to the Council, where he was a much valued member of the Business Committee, his skilled knowledge as printer and man of business serving the Society in good stead. "Across the water" he was equally well known as a member of the South London Natural History Society, of which he was a vice-president; and he was also a Fellow of the Zoological. Indeed, he was an admirable example of the saying that it is the busiest men who have most leisure for the amenities of life. To the 'Entomologist' he contributed interesting papers on his expeditions to the Vosges, the Jura, and Algeria; to the 'Entomologist's Record' a useful account of explorations in Bosnia and Montenegro. The Transactions of the Herts. Natural History Society, of which he was sometime secretary and actual president, bear eloquent testimony to his love for the local fauna, the presidential address for the past year being devoted to "The Satyrid Butterflies of Hertfordshire, with a short Study of *Pararge egeria*," a copy of which, illustrated by a finely-coloured plate, he sent me with a cheerful letter, from what alas! was to prove the death-bed of his useful and happy career. He leaves a mother, a widow, and three daughters to whom we, his brother entomologists, offer our sincerest sympathy.—H. R.-B.

OCTAVIUS PICKARD-CAMBRIDGE, M.A., F.R.S.

1828-1917.

THE Rev. Octavius Pickard-Cambridge, who died on March 9th must have been the sole survivor of the brilliant coterie of entomologists who made a name for themselves in the early Victorian days, when it was the fashion to regard the student of lepidoptera as an amiable lunatic, or at best "a spectacled dilettante." An enthusiastic naturalist throughout his long life, he will be remembered chiefly as premier authority on Arachnida—his principal study—embodied in several important works, 'Specific Descriptions of Trap-door Spiders,' 'The Spiders of Dorset,' and not least the article on Arachnida which appeared in the ninth edition of the 'Encyclopædia Britannica.' In addition to these works, the most important, perhaps, is his share of the descriptions of the spiders—the greater part—in the 'Biologia Centrali-Americana'; the account of the spiders of the second Yarkand Mission; and the two monographs on the British *Chernetidea* and *Phalangidea*—unique of their kind. He also published every year, for over fifty years, an annual report of new and rare species in various periodicals, the majority in the 'Proceedings of the Dorset Field Club,' of which he was one of the moving spirits ever since its foundation in 1875. As rector of Bloxworth and Winterborne Thomson, Dorset, for close upon half a century, he was placed in a region well suited to his scientific tastes, and he made the most of his opportunities. His first entomological contribution to the 'Zoologist' (1853), "On Robber Bees; the Phenomenon thus denominated attributed to the Presence of the Honey Moth," is dated from Southport. In 1854 he recorded "The Transformations of *Heliothis dipsacea*," and in 1855 appeared an interesting paper on the much-debated "Corporeal Sensations of Insects." Besides being the captor of the sole British example of *Hypena obsitalis*, his name is familiar to lepidopterists of the present generation as being the first to record *Everes argiades* as a British insect in the 'Entomologist' (vol. xviii, pp. 249-252). On August 18th, 1885, his son, Charles Owen, captured a female on Bloxworth Heath, and two days later, while hunting together, his son Arthur turned up the second specimen, a male, at the same spot. So far as I know we have no other eye-witness account of *argiades* taken alive in this country, and after thirty-two years we are forced to the reluctant conclusion that the "Bloxworth Blue" has not established itself upon our shores; nor is there reliable evidence that the Dorset captures represent the survival of an indigenous British race, as in the case of the Norfolk *Hesperia armoricanus*, Obthr. While Mr. Pickard-Cambridge was a first-rate microlepidopterist, his research work upon Arachnida secured his election as a Fellow of the Royal Society, of which body he must have been nearly the *doyen*, if not in point of date of election, at least in point of years. He was also a member of the Bournemouth Society of Natural Science of the "eighties." But his great age interfered little with his physical or mental activities, and the family tradition is carried on by his sons, one of whom, Mr. A. W. Pickard-Cambridge, is Fellow and Tutor of Balliol College, Oxford. H. R.-B.

* Cp. the amusing and characteristic paper "Brockenhurst Revisited" ('Entomologist,' xxix, pp. 146-149).

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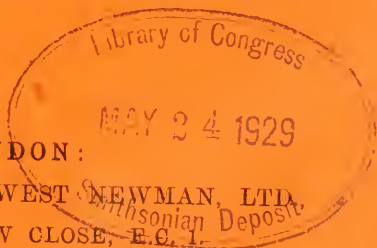
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A. FORD, 36, IRVING ROAD, Bournemouth

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[No. 648

CHRYSOPHANUS DISPAR, AND OTHER BUTTERFLIES AT ST. QUENTIN.

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

THE Allies' advance is from henceforward on ground familiar to many lepidopterists. It remains to be seen how far the awful havoc wrought by the retreating enemy, and by our own and the French guns driving him Rhinewards, will have affected the happy hunting-grounds of Aisne, Marne, and Nord. St. Quentin, entomologically speaking, has a special interest for the British collector. It was supposed to be a last stronghold of a form of *Chrysophanus dispar*, over the identity of which much ink has been slung on both sides of the Channel—last known, I say, because when the indefatigable M. Charles Oberthür organised a search party to locate the Large Copper in the St. Quentin marshes—well, the Large Copper had disappeared, *more anglico*. There is a lively account of this expedition in fasc. iv of 'Lépidoptérologie Comparée,' with the usual fine figures of French (Bordeaux) and British *dispar* for comparison. The expedition failed apparently to run *dispar* to earth hereabouts, except as represented by forty specimens in a dealer's glass case. I need not enter further into the subject of differentiation by colour of the under side. Suffice it to say that the size of the largest French examples was equal to that of the largest British, and since Mr. Bethune-Baker has proved beyond doubt that var. *rutilus* co-existed with typical *dispar* in the fens of Cambridgeshire and Huntingdon, the determination by size (for sale-room purposes) of "genuine British *dispar*" is less conclusive than ever. I believe the pins are now accepted as convincing evidence, but I am sure Boisduval, for example, would not have tolerated Doubleday's short pins for a moment.

My copy of the 'Catalogue des Lépidoptères de l'Arrondissement de Saint-Quentin,' par M. Dubus, Capitaine au 87^e de Ligne, published first in the 'Proceedings' of the Société Académique of that famous city, has lost its title-page. I believe the first part made its appearance in the 1879 volume. However that may be, we find (p. 182), under 80. *Hippothöe*, L., var. *dispar*, Dup., the following interesting note:

“ This butterfly, which has not been found previously except in England, has been taken by M. Gronnier ” [this is the same M. Gronnier who was not at home when the Oberthür expedition called for information], “ of St. Quentin, in the Rouvray marshes. . . . It is found rather commonly in England in marshy fields in the environs of Huntingdon and Cambridge.”

But I think, for “ it is found,” the printer is responsible, not M. Dubus, and that “ *on le trouve* ” should read “ *on le trouva* ”—which makes all the difference.

At all events, St. Quentin was thenceforward visited by Parisian and other foreign collectors—and there are plenty of St. Quentin examples to witness in their cabinets—until either the precise locality was lost, or became the secret of wisely uncommunicative individuals on the spot—or, least likely under the circumstances, the locality itself was destroyed.

Anyone familiar with the environs of St. Quentin in peace time will recognise the likeliness of the terrain for our species, the numerous streamlets falling into the river and canal, fringed with osier and willow and green with the giant dock and every manner of marsh flora; the spongy meadows, the shelving weedy clay banks admirably fortified by Nature against the too frequent incursions of the destroyer. From the military point of view these obstacles are of minor importance in the operations of modern war, but they guard the preserves of millions of tiny creatures.

Yet, curiously enough, the war has already restored the lost *dispar* to the north of France, and in localities which by now must be far beyond echoes of the Hymn of Hate. Of this I am apprised by M. René Oberthür—*ex-Armoricâ semper aliquid novi!*—who, in his last letter to me, and while our Allies were still hibernating in the trenches, informed me that several localities had been discovered during the year 1916 under the very guns of the foe, and if—as, alas! must be expected—much of the butterfly woodlands and meads of St. Quentin have been reduced to splinters and mounds of disrupted earth, it is some consolation to think these localities at least may have escaped.

One wood in particular—most favoured by lepidoptera—has no doubt suffered the common fate at the hands of the unspeakable Hun. The Bois d’Holnon, in the opening weeks of April, was about as unhealthy a spot as any of the shell-scorched forests of Picardy. This name, and that of other equally once attractive woods, appear one after the other in the communiqués of the French and British Commands. In Holnon both generations of *Pontia daplidice* found their home, with *L. sinapis*, *T. w-albnnm*, *T. ilicis*, *Z. quercûs*, *A. corydon*, *N. semiargus*, *L. sibylla*, the great *L. populi*, and glorious *A. iris*, while the Bois de Savy, at no great distance, contained *A. ilia*. Holnon shared with St. Gobain the greater number of Argynnid and

Melitæids, including *I. lathonia* and *B. ino*, *M. artemis* and *M. dictynna*: Of the Vanessids, *A. levana* and *E. antiopa* (taken in the city gardens also); *Erebia medusa* (once); *P. achine*; and, last of all, *C. hero*; while the Rouvray *dispar* marshes were also shared with *C. tiphon (dorus)*, a rare insect in France. For moths the same wood was a very "New Forest." But I think I have said enough to convince the entomologist that the destruction of the Bois d'Holnon may have desolated one of the most fruitful localities in the north of France. I have been told that that other and larger forest east of Laon, where so many of us have hunted day and night—the forest of Samoussy—has practically disappeared; that though for more than two years and a half not a gun has been fired in this region, the Germans have razed the forest to the ground and left barely a bush to mark the site where we watched our first *Melitea maturna* poised on the privet bloom, or marked the elusive *Limenitis populi* down from his leafy heights to the little mud patch in the forest glade which was its own particular and chosen wet canteen. Never again shall we dare to bribe with a bottle of "demi-rouge" the guard of the Laon-Liart non-stop to let us down from his van at Samoussy "halte"; never again of a June night will the "all-sorts" man trundle our paraphernalia from the aforesaid "halte" through the dense mysterious tunnels of the forest of our dreams to the little farm-house, auberge, and general store, whose presiding genius announced himself to the world—entomological and otherwise—as E. Hemmery, Représentant en Vins. I trust that he, good man, may have taken with him his *vins en gros*—if he had not handed on his inn to "Successeurs" before the storm broke. They were too good for Teuton tastes. At all events, may we see *hippotohœ* again a gleaming fire among the grasses of Samoussy, and live to decide upon the spot for the nth. time the specific identity or otherwise of *aurelia* and *athalia*.

NOTES ON *CNEPHASIA INCANANA*, STPH.:
SINUANA, WILK.

BY W. G. SHELDON, F.E.S.

I AM indebted to the kindness of Mr. F. C. Woodbridge for a rather long series of *C. incanana* taken by him at Aviemore last year, which was sent to me as *C. sinuana*? The specimens were much smaller than examples of that species found in the south of England, the wing expanse being about 19 mm., but otherwise they appeared to me to be pretty typical *C. incanana*; to make certain of their identity, however, I sent on a male to Mr. F. N. Pierce with a request that he would examine the genitalia; Mr. Pierce has kindly done this and informs me that they are true *C. incanana*.

Understanding from Mr. Woodbridge that he had obtained considerable numbers of specimens, and *C. incanana* being usually scarce, I wrote for further particulars, which he has now sent, and as they are of much interest I quote them in full.

Mr. Woodbridge says, *in litt.* :

“I got them by beating the lower boughs of Scotch Fir and Juniper bushes in Rothiemurchus Forest, near Aviemore, Inverness-shire last August, and also the preceding August, plentifully. I looked for traces of *S. nutans* (blue-bell), but could not find any. In August I should have expected to have found traces of the seed-heads, but the leaves would have disappeared. I inquired from the people I was staying with whether the English blue-bell was found where I got the insects, which was close by, but they did not appear to know it at all. The whole of the ground under the pine-trees is covered with heather and bilberry and does not look suitable for blue-bell, except in one or two places. The moth is local, but fairly plentiful during the first two weeks in August, close to Coylum Bridge, at the side of the beginning of the path leading on to the Larig Pass to Braemar. It flies, or rather beats out, better at dusk, and when beaten out then flies. If beaten out in the daytime it usually dives into the heather. I have never been to Aviemore in May or June and so do not know what flowers there are then in the place where I took this insect, but I should not think there is much other than bilberry, heather, and cranberry. I should expect that the larvæ feed upon bilberry.”

It will be remembered that Mr. E. R. Bankes, in ‘Entomologists’ Monthly Magazine,’ xxxv, p. 105, describes the larvæ of this species from specimens sent to him by Dr. H. H. Corbett from Doncaster; these larvæ feed amongst the flowers of *Scilla nutans*, and Mr. Bankes adds that he learns from Mr. Elisha that from spun-up flowers of *Chrysanthemum leucanthemum*, collected by himself in a wood in North Kent, he has occasionally bred a few examples of *C. incanana*, together with many of *C. pasivana*.

It seems probable, therefore, that in common with so many species of the group, *C. incanana* is a general feeder.

Youlgreave, South Croydon;
March 31st, 1917.

NEW SPECIES OF GEOMETRIDÆ FROM THE PHILIPPINES.

BY A. E. WILEMAN AND RICHARD SOUTH.

THE four species here described were taken at Haight's Place (7000 ft.), Pauai, in the sub-province of Benguet, Luzon.

Niphonissa luzonensis, sp. n.

♂. Fore wings greyish-brown, finely sprinkled with blackish, and with a rosy flush on terminal area; antemedial line black, slightly expanded on the costa, biangulate below; discoidal spot blackish, almost round; postmedial line blackish, nearly straight, externally clouded with blackish. Hind wings brownish-grey faintly irrorated with dusky, discoidal spot blackish; postmedial line dark brown, tapered towards costa, followed by a slender parallel line.

♀. Fore wings ochreous brown, suffused with darker brown and sparsely sprinkled with blackish; antemedial line as in the male, but rather blacker; postmedial line black, outwardly edged with whitish, costal end near apex; discoidal spot whitish outlined or ringed with black. Hind wings ochreous brown sprinkled with purplish-brown; discoidal spot whitish, ringed with purplish-brown; postmedial band purplish-brown, darker on its inner edge, tapered towards costa. The termen of fore wing in the female is more deeply excised, and the apex rather more produced than in the male.

Expanse, 46 mm.

Four specimens were captured in 1912—one female on November 9th, another on the 30th of that month, and one example of each sex on December 1st.

Allied to *N. albiguttulata*, Bastelberg, and comes between that species and *N. obliquaria*, Moore.

Arichanna nigrolineata, sp. n.

♂. Head and thorax white, collar black, patagia edged with blackish; abdomen white, barred with black, sides tinged with ochreous, ochreous hairs on the terminal segments. Fore wings white, costa marked with black near base, basal line black; antemedial line black, outwardly angled at median nervure, incurved below vein and where it joins a black dash from base on dorsum; medial line black, sinuous, originating in a black spot on the costa, bidentate below cell; discoidal spot black, linear; postmedial line black, sinuous, its inner edge dotted with black on the veins; subterminal line black, almost straight, connected with black lunular terminal line by five black bars—three towards apex and two towards tornus; fringes white barred with black. Hind wings white, with black discoidal spot and traces of three transverse lines on the dorsal area; terminal line black, lunular; fringes white, finely barred with black. Underside similar to above, but the markings are not so distinct.

Expanse, 38 mm.

Two male specimens, December 2nd and 3rd, 1912.

Allied to *A. maculata*, Moore (*plagiogramma*, Hampson).

Xandrames postmarginata, sp. n.

♂. Fore wings greyish-brown, mottled with black-brown; antemedial line broad, black, excurved; postmedial line broad, black, sinuous; a very broad, outwardly oblique band lies beyond the post-

medial line; this is flecked with brown towards costa, shaded with brown towards termen, limited on its inner edge to vein 4 by the postmedial line, outwardly edged by a broad black line, which unites with a black blotch on the terminal area; a white tapered streak runs from tornus to the inner edge of white band at vein 3; apical area rather browner than the discal area; fringes white, marked with black beyond the white band. Hind wings fuliginous, broadly bordered with white on terminal area, fringes white. Underside fuliginous, with white markings as on fore wings.

♀. Similar to the male, but the white band of fore wings without brown shading towards tornus.

Expanse, ♂, 86 mm.; ♀, 98 mm.

A female taken on November 7th, 1912, and a male on the 30th of the same month.

Allied to *X. dholaria*, Moore, but distinguished by the broad white bands of the wings.

Sarcinodes luzonensis, sp. n.

♂. Silvery-grey with a faint pinkish tinge, clouded and freckled with pinkish-brown. Fore wings have three oblique transverse lines, the first internally edged with silvery-white and slightly curved; the third, which is also silvery-white on its inner edge, runs to the apex and is parallel with the second, except on the costa; subterminal line wavy, chiefly indicated by white dots on the veins. Hind wings have two parallel brown lines, the inner inclining to black, and the outer edged with silvery-white; subterminal line whitish, wavy; dorsum white from base to first transverse line. Fringes of all wings brown, except on dorsum of hind wings, where they are white. Underside pale brown, suffused with darker and freckled with fuscous; terminal area clouded with rufous brown, becoming orange at tornus; postmedial line dark brown, inwardly oblique to vein 2, thence direct to dorsum, where it appears to join a dark brown antemedial line on the hind wing; beyond the line on each wing is a rather broad dusky shade, which is outwardly limited by a pale crenulate line; subterminal line as on upper side.

Expanse, 58 mm.

Two male specimens captured on December 3rd, 1912.

Very similar to *S. aquilinearia*, Walk., but more rosy in colour, and the transverse lines are rather different in contour. The antennæ are shorter and are pectinated for only two-thirds of their length instead of three-fourths, as in *S. aquilinearia*.

DIPTERA IN DORSETSHIRE.

BY F. H. HAINES, D.P.H., M.R.C.S., etc.

THE following are some of the species of the few Dipterous families indicated, which I note in this neighbourhood:

DIXIDÆ: *Dixa astivalis*, Mg.

STRATIOMYIDÆ: *Pachygaster Leachii*, Curtis, on windows; *Oxycera pulchella*, Mg.; *O. trilineata*, F.; *Nemotelus pantherinus*, L.; *N. notatus*, Ztt.; *N. nigrinus*, Fln.; *Stratiomys potamida*, Mg., common (I have not found *S. chamæleon*, L.); *S. furcata*, F.; *Sargus cuprarius*, L.; *S. iridatus*, Scop.; *Microchrysa flavicornis*, Mg.; *M. cyaneiventris*, Ztt.; *Beris vallata*, Forst.; *B. claripes*, L.

LEPTIDÆ: *Leptis tringaria*, L.; *L. nigriventris*, Liv.; *L. lineola*, F.; *Atherix Ibis*, L.; *Chrysopilus cristatus*, F., very common.

TABANIDÆ: *Hæmatopota crassicornis*, Whlbg.; *Therioplestes micans*, Mg., common; *T. distinguendus*, Verr., is even commoner here than *Tabanus bromius*, L.; *T. solstitialis*, Mg., I have taken in the New Forest, not here; *Atylotus fulvus*, Mg. I believe I have seen *Tabanus sudeticus*, Zlr., at Bloxworth, once only, whereas it is common in the Forest. *T. autumnalis*, L., *Chrysops cæcutiens*, L., *C. quadrata*, Mg., and *C. sepulchralis*, F., are all very common, *C. relictæ*, Mg., is somewhat rarer. The melanotic variety of *C. cæcutiens* is almost as common as the type. *C. sepulchralis* is confined to the wet heaths.

BOMBYLIDÆ: *Bombylius discolor*, Mik., *B. major*, L., *B. minor*, L., common on many of the heaths, especially those towards Poole Harbour. *Anthrax fenestratus*, Fln., common. *A. circumdatus*, Mg., very common on the heaths, It was more in evidence than almost any other insect on Studland Heath, in 1911, in which year I saw a specimen on a roadside hedge, at Moreton, as early as May!

THEREVIDÆ: *Thereva nobilitata*, F.; *T. plebeia*, L.

ASILIDÆ: *Philonicus albiceps*, Mg.; *Asilus crabroniformis*, L., very common. *Dymachus trigonus*, Mg.; *Eutolmus rufibarbis*, Mg.; *Machimus atricapillus*, Fln.; *Neoitamus cyanurus*, Lw.; *Epitriptus cingulatus*, F.; *Dioctria ælandica*, L.; *Dioctria rufipes*, Deg. I have two specimens like *D. rufipes*, but with almost immaculate yellow femora and the anal cell is closed, even slightly before the margin! *D. Baumhaueri*, Mg.; *D. linearis*, F.; *Leptogaster cylindrica*, Deg.

PIPUNCULIDÆ: *Pipunculus campestris*, Ltr.; *P. confusus*, Verr.; *P. xanthopus*, Thoms. (?)

SYRPHIDÆ: *Paragus tibialis*, Fln.; *Pipizella virens*, F.; *P. Heringi*, Ztt.; *Pipiza noctiluca*, L. Other forms of *Pipiza* occurring here seem to tend towards *fenestrata*, Mg., *bimaculata*, Mg., *signata*, Mg., and *lugubris*, F. *Orthoneura elegans*, Mg.; *O. nobilis*, Fln.; *Liogaster metallina*, F.; *L. splendida*, Mg.; *Chrysogaster splendens*, Mg.; *C. hirtella*, Lw.; *C. virescens*, Lw.; *C. chalybeata*, Mg.; *C. solstitialis*, Fln.; *Chilosia scutellata*, Fln.; *C. pulchripes*, Lw.; *C. variabilis*, Pz.; *C. vulpina*, Mg.; *C. illustrata*, Harr.; *C. grossa*, Fln.; *C. albipila*, Mg.; *C. impressa*, Lw.; *C. albitarsis*, Mg.; *C. fraterna*, Mg.; *C. Bergenstanumi*, Beck.; *C. proxima*, Ztt.; *C. cynocephala*, Lw.; *Platyichirus*

manicatus, Mg.; *P. peltatus*, Mg.; *P. scutatus*, Mg.; *P. albi-*
manus, F.; *P. immarginatus*, Ztt.; *P. clypeatus*, Mg.; *Pyrophæna*
granditarsa, Forst.; *M. mellinum*, L.; *M. scalare*, F.; *Leucozona*
lucorum, L.; *Ischyrosyrphus laterarius*, Müll.; *Didea fasciata*,
 Mcq., occurred in large numbers in Bere Wood, May 20th, 1912.
Catabomba pyrastris, L.; *C. selenitica*, Mg.; *Syrphus albostratus*,
 Fln.; *S. tricinctus*, Fln.; *S. venustus*, Mg.; *S. lunulatus*, Mg.;
S. nigricornis, Verr. ?; *S. torvus*, O.-S.; *S. annulatus*, Ztt.; *S.*
lineola, Ztt. ?; *S. grossulariæ*, Mg.; *S. ribesii*, L.; *S. vitripennis*,
 Mg.; *S. latifasciatus*, Mcq. ?; *S. nitidicollis*, Mg.; *S. nitens*, Ztt.;
S. corollæ, F.; *S. luniger*, Mg.; *S. bifasciatus*, F.; *S. balteatus*,
 Deg.; *S. cinctellus*, Ztt.; *S. cinctus*, Fln.; *S. auricollis*, Mg., var.
maculicornis, Ztt. I have taken *S. euchromus* at Edenbridge,
 Kent, not here. *S. umbellatarum*, F.; *S. compositarum*, Verr.;
S. lasiophthalmus, Ztt.; *S. barbifrons*, Fln. ? I have specimens
 very like *S. latifasciatus*, but with black-haired scutellum, also
 what appears to be a variety of *S. compositarum*; *Sphærophoria*
scripta, L., var. *dispar*, Lw., var. *nigricoxa*, Ztt.; *S. menthrastris*,
 L., var. *picta*, Mg., var. *teniata*, Mg.; *S. flavicauda*, Ztt., var.
nitidicollis, Ztt. The forms of *Sphærophoria*, occurring in this
 neighbourhood, appear referable, more or less certainly, to the
 varieties mentioned above. *Xanthogramma ornatum*, Mg.; *X.*
citrofasciatum, Deg., common in the spring. *Baccha obscuri-*
pennis, Mg.; *B. elongata*, F.; *Ascia podagrica*, F.; *A. dispar*, Mg.;
A. floralis, Mg. ?; *Brachyopa bicolor*, Fln., common. *Rhingia*
campestris, Mg.; *Volucella bombylans*, L.; *V. inflata*, F.; *V.*
pelluceus, L.; *Eristalis sepulchralis*, L.; *E. æneus*, Scop.; *E.*
cryptarum, F.; *E. tenax*, L.; *E. intricarius*, L., var. *juvvus*,
 Verr.; *E. arbustorum*, L.; *E. pertinax*, Scop.; *horticola*, Deg.;
E. pratorum, Mg. I have two specimens which appear to be this
 species. *Mylatropa florea*, L.; *Helophilus trivittatus*, F.; *H.*
pendulus, L.; *H. versicolor*, F.; *Criorrhina berberina*, F.; *C.*
oxyacanthæ, Mg.; *C. floccosa*, Mg., on *Anthriscus sylvestris*, May
 12th, 1914; *C. asilica*, Fln.; *Xylota segnis*, L.; *X. sylvorum*, L.;
Syritta pipiens, L.; *Chrysochlamys cuprea*, Scop.; *Sericomyia*
borealis, Fln.; *S. lappona*, L.; *Chrysotoxum cautum*, Harr.; *C.*
octomaculatum, Curt.; *C. elegans*, Lw.; *C. festivum*, L.; *C.*
bicinctum, L.; *Callicera ænea*, F., one specimen, East Lulworth,
 June 11th, 1912; *Microdon mutabilis*, L.

CONOPIDÆ: *Conops vesicularis*, L.; *C. quadrifasciata*, Deg.;
C. flavipes, L.; *Physocephala nigra*, Deg., not uncommon, especi-
 ally at Morden, where it occurs on *Rhododendron* blossom in
 June. I have taken it at Moreton on *Ajuga*. *P. rufipes*, F.;
Oncomyia atra, F.; *O. pusilla*, Mg. ?; *Sicus ferrugineus*, L.;
Myopa testacea, L.; *M. fasciata*, Mg. ?.

TACHINIDÆ: *Gonia fasciata*, Mg.; *G. capitata*, Deg.; *G. ornata*,
 Mg.; *Echinomyia grossa*, L., very common; *E. fera*, L.; *Fabricia*
ferox, L.; *Servillia lurida*, F., common; *Alophora hemiptera*, F.

Mitogramma punctatum, Mg., very common near the burrows of Colletes.

ANTHOMYIDÆ: *Lispe tentaculata*, Deg.

HIPPOBOSCIDÆ: *Hippobosca equina*, L., Rempstone Heath; *Ornithomyia avicularia*, L.

BRAULIDÆ: *Braula cæca*, Nitz.

Brookside,
Winfrith, Dorset.

SOME STEPHANIDÆ: WITH DESCRIPTIONS OF NEW SPECIES.

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

(Continued from p. 36.)

Stephanus comma, sp. nov.

♂ only. Body black, with sparse brick-red markings and the antennæ very long. Head semicircularly rugose in front and transsulcate below the scrobes; cheeks and temples smooth, finely punctate; tubercles small and transverse; vertical carina prominent; occiput trans-striate, with its basal margin truncately reflexed. Antennæ very slender, nearly as long as body, with the joints well discreted; first flagellar joint thrice longer than broad, and two-thirds as long as second, which is two-thirds as long as third. Thorax confluent and superficially punctate, with the somewhat short prothorax transcarinate; semiannular part smooth at base; mesopleuræ longitudinally bisulcate, metapleuræ rugulose and above sulcate. Scutellum smooth, with its basal sulcus crenulate. Abdomen double length of head and thorax, finely alutaceous and somewhat shining, with the petiole minutely transaciculate and apically subexplanate; valvulæ not small; abdomen 18 mm. and petiole 8 mm. in length. Hind legs slender, with the cylindrical coxæ 4 mm. and femora 5 mm.; the latter bidentate beyond their centre, with smaller teeth. Wings slightly infumate hyaline; lower nervure of the external submedian cell deflexed in the form of a comma at the base, apically wanting; hind wing with costal nervure only, emitting a slight spurious nervure from its apex below the three frenal hooks.—Black: with the head except mandibular apices and the tubercles and centre of occiput, the base of antennæ, sides of second and of fourth segments basally, whole of the third, anterior legs except coxæ, and apical third of hind femora including their two teeth, bright brick-red. Hind tibiæ basally black, reliquæ desunt. Stigma and nervures black costal and whole of the external submedian cells conspicuously darker.

Length, 27 mm.

Dr. W. M. Graham captured the type, "in forest on trunk of tree," on May 29th, 1907, at Obuasi, in Ashanti. In collection, British Museum.

Stephanus crassicauda, sp. nov.

♀. Head coarsely and irregularly rugose, a central longitudinal trans-striate sulcus on occiput; posterior margin of head simple; temples finely punctate, prominent and glabrous above; cheeks as long as scape. Antennæ with second and third flagellar joints of equal length and a little longer than first. Neck of pronotum short, with three strong transcarinæ; semiannular finely trans-striate, its posterior margin narrowly smooth; mesonotum coarsely punctate; scutellum smooth, with diffuse and rather fine puncturation; meso- and metapleuræ alutaceous and dull, with a few punctures, latter separated by a sulcus from the median segment, which is scabriculous and centrally trans-striate. Abdomen with petiole trans-striate, 8 mm. long, as is also remainder of abdomen; apical segments discally emarginate; terebra 27 mm. long, its sheaths somewhat unusually stout and abruptly pointed, ferrugineous, with a white band before the equally broadly black apex. Hind legs with coxæ elongately pilose and sparsely transcarinate; femora smooth and pilose, with two long and very slender teeth; tibiæ constricted in basal third and again beyond middle. Wings slightly infumate, external submedian cell darker and a pale space beyond it.—Black: a white spot on cheeks; base of flagellum ferruginous; anterior legs, hind trochanters, constricted part and apex of hind tibiæ and the hind tarsi fulvous.

Length, 26 mm.

The type in British Museum bears a label "Australia, 1866," only. The co-type, in the same place, is much smaller; body 20½ mm.; abdomen 13 mm.; petiole 6½ mm.; terebra 19 mm., it was taken by F. P. Dodd, March 5th, 1903, at Townsville, Queensland.

A few scattered notes upon odd species contained in the British Museum may not be without value in adding to the known distribution, etc., of these peculiar and interesting insects. One remarkable fact is that, though well over a hundred species have now been described, Mr. Elliott informs me that nothing whatever respecting their ecdyses and economy has yet been definitely ascertained; here and there one meets instances in which—as in the case of *Stephanus comma* in the last number of the 'Entomologist'—the insect is said to have been taken upon tree-trunks; on the stump of a tree; and, as in the case of the Cuban *S. brunneus*, both sexes have been found emerging from holes in wood. I would, both from this circumstance and the fact that in their structure they approach much more closely to the *Pimplid Xoridides* than any other group of the Ichneumonidæ, suggest that they will be found to be true (probably eckto) parasites of lignivorous Coleoptera of the longicorn family Cerambycidæ and their allies. Recent collecting has been on a much broader scale than during any part of the last century, and we may perhaps—excepting the Neotropical Region—regard our knowledge as sufficiently full, especially touching the

Ethiopian Continent, from which nearly all those I have seen were traceable to cognate kinds. The insects are commonest in the Tropics, though extending thence to Victoria in the south and about 45° latitude in the north, since they are known from both Germany and Ontario. None occur in Britain.

Stephanus rubripes, sp. nov.

♂ ♀. Head with face strongly trans-rugose; arcuately on vertex; temples smooth; posterior margin of head bordered; cheeks shorter than scape. Second and third flagellar joints of equal length and rather shorter than first. Neck of prothorax short, centrally longitudinally impressed, with one strong basal carina; semiannular part widely aciculate with the extreme base smooth; mesonotum coarsely punctate with central shoot space; mesosternum flat and polished. Scutellum smooth, impunctate. Mesopleuræ smooth with three or four irregular rows of punctures; metapleuræ closely rugulose throughout, separated from median segment by a smooth sulcus and a carina; median segment with rather dense and large shallow punctures. Abdomen 13 mm. in length, with petiole 6 mm. and transaciculate, slightly shorter than the remaining segments together; base of second segment feebly rugose, remainder smooth and shining; terebra as long as body, sheaths broadly white-banded before apex. Hind legs with coxæ slender and strongly trans-striate; femora smooth and shining, bidentate; tibiæ longer than femora and constricted in basal third, five-jointed in ♀, three-jointed in ♂; all the tibiæ and hind femora elongately pilose. Wings brown, centrally darker.—Black: mouth parts and genal orbits testaceous; anterior legs except coxæ and trochanters bright red, hind femora and tarsi except apically and apical two-thirds of tibiæ red.

Length, ♂ ♀ 22 mm.

Two pairs, including the typical female, were captured by C. M. Woodford, Esq., in the Solomon Islands about 1886; a female (labelled by Cameron with the MS. name "*Megischus Frogattii*, type, Cam.") and two males were also there taken during July–August, 1909, by W. W. Froggatt. These are in the British Museum.

Diastephanus Salomonis, Westw.

Stephanus Salmonis, Westw., 'Thesaur. Entom.,' Oxon., 1874, p. 128.

"Niger; capite utrinque linea alba pone oculos, collo postice transverso striato, metancto areolato, coxis posticis transverse-striatis, dimidio apicali femorum posticorum et basali tibiæ castaneo, tibiis anticis parum dilatatis basi rufis; tibiis tarsisque intermediis castaneis; alis parum flavescentibus, venis omnibus mediis discoidalibus oblitteratis; abdomine in individuo unico perdito.

"Expans. alarum antic., 1 in., 10½ in."—Westwood, *loc. cit.*

This species has never been adequately described; and Schletterer queries its synonymy with his new *Stephanus pallescens*, which is incorrect. An examination of the broken type in Mus. Brit. (which was not labelled as such) shows the whole outer orbits to be broadly pale stramineus; the anterior legs infuscate, with the tibiæ basally ferruginous; the occiput arcuately transrugose, with a slight longitudinal sulcus; the prothorax apically entirely glabrous, discally deplanate and laterally vallately elevated; the semiannular smooth, with a few apical transcarinæ; the metanotum covered with large circular and not confluent punctures, but no areæ; the hind femora black with their apex only beneath and laterally red; the basal half of their tibiæ also red; the mesopleuræ subglabrous, with a few large superficial punctures; the second and third flagellar joints of equal length, and the first one-third shorter; the mandibles are fulvous and, most noticeably, the whole face below scrobes, together with the inner orbits above them, pale stramineous. The hind tarsi appear to be triarticulate and the specimen, consequently, a ♀.

Superficially it resembles my *S. rubripes* from the same locality.

The type was captured in the Solomon Islands during the voyage of H.M.S. "Herald" in 1856, and has hitherto remained unique. But, along with the above *S. rubripes*, C. M. Woodford captured a second female there about 1886; this has the abdomen smooth, 10 mm. in length, with the trans-striate petiole $5\frac{1}{2}$ mm., the second segment basally constricted and slightly rugulose, and the black terebra 15 mm. in length. Unlike the type, its hind femora are black only basally above.

Dia-stephanus tertianus, sp. nov.

♀. Head finely reticulate throughout; posterior tubercles and vertical carina small; cheeks much longer than scape; temples smooth; posterior margin of head simple. Second and third flagellar joints of equal length and about half as long again as first. Neck of prothorax longitudinally sulcate, laterally obliquely carinate; semiannular part microscopically sculptured and dull, without any smooth posterior margin; mesonotum entirely destroyed by pin. Scutellum dull and diffusely punctate. Mesosternum shining, finely alutaceous; mesopleuræ alutaceous and sparsely punctate; metapleuræ finely transcarinate, not separated from median segment, which is finely reticulate and sparsely punctate. Abdomen 7 mm. and petiole 3 mm. in length, with petiole transaciculate and shorter than the remaining segments, which are dull; terebra $10\frac{1}{2}$ mm., or rather shorter than body, entirely black. Hind legs with coxæ narrow, dull, and apically transaciculate; femora dull, tridentate; tibiæ longer than femora, constricted to middle. Wings hyaline; stigma lanceolate, centrally translucent, nervures brown.—Black: head, base of antennæ, prothorax, apex of petiole, base of second

segment, basal two-thirds of third and legs red ; base of hind femora and a mark inside apical third of hind femora black.

Length, 12 mm.

Lesapi River, Mashonaland ; November, 1897 (Guy Marshall).

Diastephanus frontilinea, sp. nov.

♀ only. Head broad behind the eyes ; face finely reticulate and white-pubescent ; vertex longitudinally aciculate ; occiput very finely and closely transaciculate ; frontal tubercles prominent and distinctly acuminate, the three anterior rather the larger ; basal margin of head reflexed. Antennæ filiform ; first and third flagellar joints apparently of equal length and shorter than the second, but the junctures obscure. Thorax slender and subcylindrical ; prothorax apically linear and transmulticarinatè, the semiannular smooth and shining ; mesonotum very short, shining, and sparsely punctate ; mesopleuræ finely alutaceous and pubescent, with a few scattered punctures ; metanotum coriaceous between the very large and confluent punctures ; metapleuræ smooth and finely subaciculate transversely, with a deep superior sulcus. Scutellum large and deplanate, smooth and shining, with a row of three punctures on either side. Abdomen slender ; petiole transaciculate, 3 mm. in length ; base of second segment narrowly scabrous, remaining segments smooth, with the disc of sixth acutely emarginate apically ; abdomen $5\frac{1}{2}$ mm. ; terebra 9 mm. Hind legs with coxæ transstriate ; their femora alutaceous, with two large teeth, an obtuse basal one and other central denticulations ; their tibiæ as long as femora, constricted to a little beyond centre and there internally excised ; tarsi three-jointed. Wings narrow and quite hyaline ; stigma lanceolate, with its edges alone dark.—Black ; with the mouth parts, inner and outer orbits testaceous ; a longitudinal line down centre of frons from apical tubercle to antennæ rufescent, as also are all five tubercles ; base of head indefinite rufous ; anterior tibiæ testaceous ; tarsi red. Terebra white-banded before apex.

Length, $10\frac{1}{2}$ mm.

The unique female is from the Pusa Collection, and was captured at Ranpur, on the border of Assam and Eastern Bengal on July 20th, 1905. It is the first member of this genus from the region.

Diastephanus alutaceus, sp. nov.

♀ only. Body rufescent, entirely alutaceous and dull throughout. Head finely transrugose in front ; all the five frontal tubercles small but acute, vertex with a prominent transcarina behind basal ocellus ; occiput feebly transstriate, with its basal margin bordered. Antennæ as long as head and thorax, with all the flagellar joints distinctly discreted, the second and third equal and half as long again as the first. Thorax deplanate ; prothorax not strongly elongate, its disc longitudinally subsulcate centrally and sides transcarinate only near apex ; semiannular part basally explanate ; meso-

notum small and trilobed, punctate in front; mesopleuræ smooth and pubescent; metanotum deplanate, not punctate, obsoletely trans-striate centrally before apex; metapleuræ confluent therewith. Scutellum not longer than broad, apically obtuse, apically margined on either side, with its basal sulcus crenulate. Abdomen hardly smoother apically, dull; petiole shorter than rest of segments; second segment basally constricted, the sixth apically emarginate; abdomen 6 mm.; petiole $2\frac{1}{2}$ mm.; terebra 8 mm. Hind legs stout; coxæ as femora, which are strongly incrassate and beneath both bidentate and basally angulated; tibiæ rather longer, compressed only to centre and there incised; tarsi three-jointed. Wings lacteous-hyaline, basal nervures and centre of stigma infuscate; a conspicuous circular infumate spot in the external submedian cell and another, very faint below the radius.—Rufotestaceous; the eyes, ocelli, mandibular apices, frenum conspicuously, extreme base of petiole, the thyridii of second segment and a circular spot on either side of the fourth quite black; femoral teeth white; terebral sheaths rufescent, with their apices and those of the flagellum nigrescent.

Length, 10 mm.

The type, in the British Museum, was captured by H. Swale on May 12th, 1914, at Lonely Mine, in Rhodesia.

Fœnatopus Natalicus, Westw.

Stephanus Natalicus, Westw., 'Thesaur. Entom. Oxon.,' 1874, p. 127, pl. xxiv, fig. 8, ♂ ♀.

♂ ♀. This species is extremely similar to *D. alutaceus* in all but one or two essential details of structure. Superficially it may be distinguished by having the whole apex of the metathorax discally black; the apices of segments 2 to 4 and base of the second infuscate, with apex of the hind coxæ, base, and a transverse band before apex of their femora, nigrescent. The apex of petiole flavescent; and both abdomen and wings with no dark spots.—The sculpture is distinct in the transcarinate vertex, shorter and transversely striate prothorax, superficially punctate metanotum, more slender hind tibiæ, which are constricted to well beyond their centre; a third (basal) tooth below the hind femora; hind coxæ apically transaciculate. Stigma lanceolate and not centrally infuscate; but the main difference is, perhaps, the prolongation of the median nervure between the discoidal and external submedian cells.

The measurements are alike in both, and the present ♂ hardly smaller; length 10 mm.

In the British Museum is an old pair from Fred. Smith's collection, labelled "Port Natal," and a female, bearing a green ticket, also so localised; probably all were there captured by the Swedish collector Gueinzius about 1859. The elongate median nervure places this species in *Fœnatopus*; it is not a *Neostephanus*, as placed by Enderlein, 'Zool. Anzeig,' xxviii, 1905, p. 474.

Parastephanellus levicollis, sp. nov.

♀. Head finely and evenly trans-striate; vertex coarsely trans-carinate, temples smooth and shining; posterior margin of head bordered; cheeks smooth, and a little longer than scape. Antennæ with second flagellar joint half as long again as first, the third half as long again as second. Prothorax with neck very short and smooth; semiannulate part smooth, with a few fine punctures, as also is the mesonotum. Scutellum quite smooth, divided from mesonotum by crenulate lines. Mesopleuræ and metapleuræ obsoletely shagreened, not punctate, the latter separated from metanotum by a basally obsolete carina; median segment centrally smooth, apically rugulose, and basally with a few large punctures. Abdomen smooth, with petiole very finely transaciculate, shorter than remainder; second segment basally somewhat elongately attenuate; abdomen 5 mm. in length, petiole 2, and the black terebra 11 mm., longer than body. Hind legs with coxæ transaciculate, their femora smooth, with a few setiferous punctures; tibiæ longer than femora, constricted to their centre. Wings hyaline, with the stigma and nervures piceous.—Black: antennæ and palpi infuscate; base of antennæ, mandibles, except apically, clypeus and frons fulvous; face and whole external orbits and all the tarsi whitish.

♂ differs in having the whole head except the whitish external orbits a dull red; base of occiput nitidulous; the basal flagellar joints longer, though in the same proportion, propleuræ dull testaceous, anterior femora and tibiæ piceous.

Length, ♂ ♀, 9 mm.

A single pair of this bright species has been taken in the Ding-Ding Island of the Indian Ocean during 1896 and 1900; these are now in the British Museum.

Neostephanus Pentheri, Kieff.

‘Bull. Soc. Hist. Nat. Metz.,’ ser. 3, iii, 1911, p. 101, ♂.

The type of this species was captured by Dr. Penther at Zerua in South Africa during November. In the British Museum is a second, which considerably extends the known range, since it was captured in (doubtless on the coast of) Angola in Central West Africa by J. J. Monteiro about 1873. The mesopleuræ are closely granulose, dull, and the metapleuræ shining, trans-striate, and above, carinate.

Stephanus pachylomerus, Schlett.

‘Berl. Ent. Zeit.,’ xxxiii, 1889, p. 98, ♀.

Schletterer records the type from Gaboon; the Imperial Bureau has received two females from the Gold Coast: one taken by A. E. Evans in 1913 and the other at Aburi by W. H. Patterson during 1912–13.

Stephanus tibiator, Schlett.

Loc. cit., p. 293; André, 'Spp. Hym. d'Europ.', vii bis, p. 484, ♂ ♀.

Besides those mentioned in my first paper ('Entomologist,' 1917, p. 34), I have seen a ♀ in the British Museum which extends its range to German (*olim!*) East Africa, where S. A. Neave found it at "Vy," on the Ruaha River, during mid-December, 1910. It is entirely typical.

Hemistephanus ruficeps, Cam.

Megischus ruficeps, Cam., 'Biol. Centr.-Amer.', lx, p. 420, pl. xviii, fig. 9, ♀.

Stephanus capitatus, Schlett., 'Berl. Ent. Zeit.', xxxiii, p. 151.

This species is not a true *Stephanus*, as supposed by Schletterer, and consequently Cameron's name stands. In Fred. Smith's collection is a ♀ captured by Bates "on the Amazon" in the middle of last century, though the species was not described till 1887, and then from no nearer than Panama.

Hemistephanus Damelicus, Westw.

Stephanus Damelicus, Westw., 'Thesaur. Ent. Oxon.', 1874, p. 126, pl. xxiv, f. 2, ♀.

Enderlein has described ('Arch. f. Naturgeschichte,' lxxvii, 1901, p. 196) a species from Malaysia, which he supposed synonymous with that of Prof. Westwood; but this is not the case. The latter is from "Australia," and in the British Museum is a single ♀ agreeing therewith in every respect; but the neuration—hardly touched upon by its author—places the species in *Hemistephanus*, while Enderlein's is a true *Stephanus*. Swan River, in Western Australia, taken long ago, probably by Boulay.

Parastephanellus rufidornatus, Cam.

Stephanus rufo-ornatus, Cam., 'Tijds. v. Entom.', xlviii, 1905, p. 45, ♂.

This is by far the commonest species of *Stephanidæ* in Eastern Australia; numerous examples of both sexes were captured about Mackay in Queensland in November, December, March, and April by Turner; French found it in Victoria during September, 1901; and two others are from Swan River in Western Australia. The ♀ has not before been noticed, but differs very slightly from the ♂ in having the terebra as long, sometimes slightly longer, than the body; both sexes are a

little variable in colour, with the basal segment red or black or red and black; the size runs from 5 mm., with terebra 6 mm., to 14 mm., with terebra 15 mm.

Diastephanus rothkirchi, Schulthess.

Diastephanus rothkirchi, Sch., 'Deut. Ent. Zeit,' iii, 1914, p. 283, ♀.

Described from the Cameroons. A very typical female was captured at Mlanje in Nyassaland on January 2nd, 1914, by S. A. Neave (Imp. Bureau Entom.).

Diastephanus togensis, Stadelmann.

Stephanus togensis, Stad., 'Entom. Nachr.,' 1895, p. 80, ♂, ♀.

Stephanus togensis, Enderlein, 'Arch. f. Nat.,' lxxvii, 1901, p. 202.

A female of this species, from the same source, was also taken by Neave at Mount Mlanje in Nyassaland on December 7th, 1912. It was described from Bismarckburg, where Conradt found it first in 1893.

NOTES AND OBSERVATIONS.

NOTES ON THE LARVA OF *DAPHNIS NERII* IN INDIA.—The occurrence of this moth, and especially of its larva, is so rare in England, that I think the following notes on the species in India may be of interest. I have found the larva feeding on oleander (*Nerium odorum*) at Bannu, N.W.F. Province, in the Murru foothills, Punjab, and at Rae Bareilly, U.P., and it is widely distributed over other parts of India. I kept twenty larvæ which I found at Rae Bareilly, and obtained ten moths from them.

The egg is spherical and light yellow in colour, laid singly on the food-plant.

The larva passes through five distinct stages, during which there are some curious changes. *First stage*, up to about three weeks old: Horn long, straight, and black. Body uniform yellowish-green, turning after a few days to green. The young larva feeds on the tender shoots, and when resting lies along the midrib of a leaf, in which position it is very difficult to find. Towards the end of this stage a double ocellus, white, edged with black, appears on each side of the third body-segment, the legs turn pink, and a yellow lateral stripe appears on each side. There are several changes of skin. *Second stage*, up to about five weeks old; Horn green, thick for half its length, ending in a long point. There is a black ring about half way up the horn. Head and body apple-green. The legs turn red, spiracles black, and nearly all the final markings appear in miniature. The double ocelli gradually coalesce, and turn blue with a dark edge.

There is a change of skin from the first to the second stage, but none during the second stage. *Third stage*, up to about seven weeks old: Horn bright orange-yellow. The long point disappears, the horn becoming sausage-shaped and bent downwards. The ocelli, spiracles, white lateral lines and spots are strongly marked. Legs dark red. There is a change of skin from the second to the third stage, but no further change of skin till the final one into a pupa. *Fourth stage*, up to about eight weeks. There is no change in the horn, but the head, which was previously green, turns dark brown, and a dark brown divided spot appears on the first body-segment. The second and third segments and part of the fourth turn bright yellow. The ocelli are very beautiful, shading from the deepest blue to white. After about a week in this stage the larva becomes very restless, ceases feeding, and leaves the food-plant. In a few hours it turns to the *fifth and final stage*. The horn is unchanged, but a dark dorsal line appears on the second and third segments, broadening out on the third segment to a dark brown band covering the back up to the base of the horn. The lower parts and last segment turn orange-yellow. In this stage the larva is on the ground, searching for a suitable place to spin its slight cocoon.

It turns to a pupa in about ten weeks from hatching. The pupa is reddish-brown. The head, thorax and wings are enclosed in a yellow and semi-transparent case. There is a black central line, continuous on the thorax and wing-cases, broken on the back. The spiracles are surrounded by black spots, and the whole body is dotted with black.

The moths emerged in about fourteen weeks from the hatching of the larva.—F. B. SCOTT, Capt. I.A.; Aden, February 27th, 1917.

BLASTOTERE ("BLÆTOTERES") GLABRATELLA IN BRITAIN.—On p. 64 of the March issue of the 'Entomologist' Mr. Pierce asks, among other questions, where the occurrence of *B. glabratella* in Britain was recorded. The name of the genus is not quite correct, but if the moth *Blastotere glabratella* is meant, then this species was recorded by Lord Walsingham in the 'Entomologists' Monthly Magazine' for the year 1906 at p. 169.—ALFRED SICH.

A QUESTION OF LATINITY.—Noticing Mr. Elliott's inquiry as to correctness of Latin form, I venture to reply. The name *rufo-ornatus* is not a compound word at all, but a double word, as is properly shown by the hyphen; such names, clumsier than simple ones, are not to be imitated, but their use is recognised (*Lychnis flos-cuculi* and *Strychnos nux-vomica* of Linnaeus, *Oinophila v-flavum* of Haworth, etc.), and violates no rule of Latin. The name *rufidornatus* is not Latin at all; a Roman grammarian would not have understood its formation unless Mr. Morley had been good enough to explain it to him. The good Latin word *lividus* offers no analogy; in that case there is no insertion of a letter, but *-idus*, a recognised adjectival termination with a definite meaning (corresponding to the English -ish, as in *flavus*, yellow, *flavidus*, yellowish), is affixed to the stem *liv-*. The adjectival termination *-ius*, implying simple connection, is far commoner, occurring in thousands of words, and, in fact, *livius* is

itself a good Latin word—the name of the well-known historian Livy—and therefore requires no added letter to make it euphonious to a Latin ear.

Latin and Greek were chosen as the basis of scientific nomenclature in order that its terms might be comprehensible to educated men of all nations and languages; this end will not be attained if individualistic writers substitute their own practice for that of the Greeks and Romans. — EDWARD MEYRICK; Thornhanger, Marlborough, April 6th, 1917.

AGRIADES BELLARGUS IN 1916.—So common is *Agriades bellargus* in its special haunts generally that any little accession or diminution in numbers is likely to go unnoticed, but sometimes its numbers are so greatly increased that they cannot be overlooked, and the season of 1916 appears to have been one of these occasions. First as to this immediate neighbourhood—the sea end of the South Downs. Unfortunately circumstances did not admit of my getting any note of the spring emergence, but of the autumn emergence odd specimens were on the wing on the slopes under Beachy Head as early as July 29th—fully a fortnight to three weeks earlier than usual. By the middle of August it was abundant, and from that time till the first week in September it was vastly more so than I have known it to be for many years. Then, again, at the extreme western end of the parade is a grassy bank, of but a few square yards in extent, that still remains in its pristine condition. Here *A. bellargus* has occurred so long as I can remember, but for many years past only very sparingly, but towards the end of August last it occurred there in the greatest profusion, the specimens jostling one another for a seat on the blossoms of *Centaurea*, of which numbers of plants grow among the grass. Nor were the South Downs alone affected, for on a sunny slope not far from the village of Otford, in Kent, probably now the nearest locality to London where *A. bellargus* may still be found, and where for many years it has been so scarce that one thought themselves lucky if half-a-dozen specimens were secured in a day's collecting, the June emergence was positively abundant, and the autumn emergence but little less so. Had the year been a particularly fine one we should probably have taken the abundance of specimens that I have mentioned as a matter of course, but the year 1916, with its record for the south-east of England of more than two hundred hours of sunshine less than the average, an excess of some nine inches of rain, and a mean temperature of practically the average, but which was kept up largely by the mildness of the winter months, seems hardly a time to expect such happenings. It would be interesting to know whether the foregoing are mere isolated cases, or whether the species throughout its somewhat restricted British range occurred in similar abundance.—ROBERT ADKIN; Eastbourne, March, 1917.

(Another instance of a superabundant Lycænid in 1916 is *A. corydon* in the Chilterns. It simply swarmed in its old haunts in August, weather despite.—H. R.-B.)

NOTE ON *CERCERIS ARENARIA* (HYMENOPTERA).—On July 29th last a strong colony of *Cerceris arenaria*, L., in a sand-bank on West Knighton Heath, were busy at 4 p.m. My son excavated several burrows, and found that in every case they were stored with *Otiorrhynchus picipes*, F., alone. No other prey whatever was excavated, but I netted one ♀, about to enter her hole, who was carrying, and dropped as I boxed her, a very good specimen of *Hypera polygoni*, L.—F. H. HAINES; Brookside, Winfrith, Dorset, March 18th, 1917.

THE OX-WARBLE, OR BOT FLY.—The Royal Agricultural Society of England have just issued a leaflet, prepared by the Society's Zoologist, Mr. Cecil Warburton, M.A., of the School of Agriculture, Cambridge, giving particulars of the history of the insect and advice to farmers and cattle-breeders as to the methods to be adopted for its destruction. Copies of the leaflet can be had on application to the Secretary, Royal Agricultural Society of England, 16, Bedford Square, London, W.C. 1.

HYPENA OBSITALIS IN BRITAIN—A CORRECTION.—Mr. Milman writes to draw attention to my statement (*antea* p. 96) that the late Rev. O. Pickard-Cambridge was captor of the sole British recorded example of *Hyphenia obsitalis*. As may be seen by reference to the February number of this magazine (p. 44), Mr. Milman reported an example taken in 1908 by Mr. E. J. Milman, and published the occurrence, curiously enough, within a few weeks of the decease of the original authority. I must apologise to Mr. Milman for an oversight due to the obituary notice of Mr. Pickard-Cambridge being sent to press extremely late.—H. R.-B.

SCOPARIA, Hw.—Through the kindness of Mr. Pierce, I have been able to see the 'Transactions of the Entomological Society' for 1911, parts iii and iv, containing Dr. Chapman's article on this and allied genera. I have read it with great interest, and think his arrangement of our British species (p. 507), founded largely on structural details, cannot be beaten. This arrangement I shall follow in a small fresh collection I am now making. That the genus *Scoparia* was capable of division I have long been aware, moss feeders and (as far as we are at present aware) root feeders; but we have a good deal to learn about the larvæ of the latter. What is known about the larva of the common *ambigualis*, for instance? Stainton, Merrick, and Merrin all state that it is a moss feeder, whilst Dr. Chapman clearly shows it (*loc. cit.*) to belong to the other group. Can any one give me any definite information about the larva and its food plant? With regard to *pallida*, it evidently is intermediate (between *Scoparia* and *Eudorea*), and for this reason it is placed in the sub-genus *Witlesia* or *Wittleisia*, for in Dr. Chapman's paper it is spelled both ways. It may be of interest to remark that Whittlesea is spelled "Witesie" in the Domesday book. The fact that surprised me most was that *Cratægella* was *not* nearly allied to *frequentella*; in fact, it stands by itself, so far as our British species are concerned, in the sub-genus *Dipleurina*. Reverting to *pallida*, Mr. Pierce, in the March issue (p. 68) states, in reply to my note in the February number, that it comes in the group *Eudorea*; as a matter of fact, it is one of the

links connecting the two genera *Scoparia* and *Eudorea*. I think, although sub-generically separated, it is not a great way from *cembra*. In Dr. Chapman's arrangement, if we remove the foreign species immediately preceding it, only *basistrigalis* stands between the two, *S. phaeoleuca*, Z., *perplexella*, Z., and *pyrenæalis* being the foreign species intervening. I hope some of our younger collectors will turn their attention to these very interesting insects, and since Mr. Whittle has bred *pallida* I hope he will soon be able to tell us something about the larva of this rather anomalous insect.—A. THURNALL; Wanstead, Essex, April 19th, 1917.

ABUNDANCE DURING DAYTIME OF *HiBERNIA DEFOLIARIA* IN EPPING FOREST.—I wish to record the unusual appearance during the daytime this year of *Hibernia defoliaria* on February 18th.

In normal seasons the emergence of *H. defoliaria* in Epping Forest begins in November, and during the last twelve years I have found it to be most prolific and in the best condition during the second and third weeks of December. Its emergence usually continues into January, but after the end of December the caught insects are generally in a rather worn condition. At the period when this insect is most prolific, however, it is seldom met with during the daytime, the insects hiding among dead leaves. This winter, owing presumably to the very low temperature obtaining during the latter half of December and the whole of January, the emergence of *H. defoliaria* was held up, and this led to the unusual occurrence which I am recording. After seven or eight weeks of intensely cold weather it suddenly turned mild on Saturday, February 17th, and when strolling through the Forest in the evening I found the woods enveloped in a thick mist of a fairly warm temperature. This induced me to visit the Forest again the following morning, Sunday, February 18th, and on nearly every tree-trunk I found a ♀ example of *H. defoliaria*, and on several trees I counted as many as four and five on each. Male examples were also to be found not uncommonly on the tree-trunks, and most of them were still drying their wings. I estimate that during the three hours I spent in the Forest I must have seen about 500 ♀ examples and about 50 ♂ examples of *H. defoliaria* all freshly emerged. During the last few years this species has been noticeably affected by melanism, and during December, 1914, I took 12 fine melanic ♂ examples, the total number of melanic ♂ examples which I had taken up to that time, *i. e.* during the previous twelve years, being altogether 3. Melanic ♀ examples are also to be met with, and are pitch black, the mottled markings of the typical ♀ form only showing on the thorax. On the Sunday in question, of the 500 ♀ examples seen, 5 were of the black melanic form, which gives a fair approximation of the percentage of melanic examples. I should think 1 per cent. is now a very fair average for the melanic form both for ♂ and ♀ examples.—R. T. BOWMAN; 108, Station Road, Chingford, E. 4.

LATE EMERGENCE OF *ERIOGASTER LANESTRIS*.—As evidence of the backwardness of the season, it may be of interest to record that *E. lanestris*, from 1915 larvæ, began to emerge on the 20th inst.—PERCY C. REID; Feering Bury, Kelvedon, April 22nd, 1917.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 25th, 1917.*—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Annual Meeting.—The balance sheet and report of the Council were read and adopted. The President declared the following elected to fill the several offices and Council for the ensuing year: President, H. J. Turner, F.E.S.; Vice-Presidents, R. Adkin, F.E.S., and A. E. Gibbs, F.L.S., F.Z.S.; Treasurer, T. W. Hall, F.E.S.; Librarian, A. W. Dods; Curator, W. West; Editor of 'Proceedings,' H. J. Turner, F.E.S.; Hon. Secretary, Stanley Edwards, F.L.S., F.Z.S.; Council, S. R. Ashby, F.E.S., W. J. Ashdown, K. G. Blair, B.Sc., G. Brooks, F. W. Frohawk, F.E.S., M.B.O.U., D. R. Morford, C. W. Sperring, A. E. Tonge, F.E.S., and W. West, L.D.S.—The President then read his address, "Shakespeare and Insects."—Votes of thanks were passed to the various officers and Council for the past year.

February 8th, 1917.—The President in the chair.—The Rev. D. M. Darwell, of Dagpole, Woodeford Wells, was elected a member.—Mr. A. W. Buckstone exhibited series of *Zygana lonicera*, *Z. trifolii*, and *Z. filipendulæ* from many British localities, and read a paper on the local racial characters shown, and gave an analysis of the markings on the undersides. A short discussion ensued.—Mr. Hugh Main, the curious double cocoons spun by a species of *Coniopteryx*.—Mr. H. Moore, various Bombycine moths from Ashanti, including *Bunea alcinöe*, *Lobobunea phædrusa*, *Gynanisa ethra*, *Nudaurelia butleri*, *Imbrasia epimethea*, *Microgona herilla*, and *Carnegia mirabilis*.—Mr. Bowman, a unicolorous slate-coloured example of *Cuspidia (Acrionicta) megacephala* from Hackney Downs.

February 22nd.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—An exhibition of lantern slides.—Mr. West (Ashtead), slides showing androconial scales of several species in each of the families of butterflies represented in the British fauna.—Mr. Hugh Main, slides showing (1) ova of the earwig *in situ*; (2) a series of details of the life-history of a small burrowing beetle common in Epping Forest; (3) a series illustrative of the transformations of *Dytiscus marginalis*; (4) a series of the habits of the larva of *Cicindela campestris*.—Mr. Bunnett, slides illustrating all stages of a colony of *Vanessa io* and a few of the *Hydra* and *Volvox globator*.

March 8th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—The death of Mr. A. E. Gibbs, Vice-President, was reported. Mr. W. J. Ashdown exhibited examples of all the species of Surrey Coleoptera, which he had taken during the season of 1916. Beetles were generally abundant throughout the year.—Mr. Newman read a short paper, "The Rearing of *Macrothylacia rubi*."

March 22nd.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. A. Buckstone exhibited series of the March and July broods of *Tephrosia bistortata*, bred from an Oxshott female taken in April, 1914, including a female which had remained in pupa two winters from June, 1914, to February, 1916. He also showed *T. crepuscularia*,

taken in various Surrey localities during May, for comparison. A discussion ensued.—Mr. Edwards, a box of exotic Lepidoptera.—Mr. Turner, a photograph of the larval cases of the fifteen more easily obtainable species of the British *Psychidæ*, taken by the Rev. C. R. N. Burrows, who was desirous to obtain fresh specimens for structural examination. Mr. Turner also showed imagines of several of the commoner species of the genus *Lithocolletis*, and made some remarks on their life-history.—Mr. Adkin exhibited an early work by John Ray.—HY. J. TURNER.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquitt Street, Liverpool, *February 19th, 1917*.—The President, Mr. Leonard West, in the chair.—A discussion and exhibition of "Backyard Insects," to which most of the members contributed, was the feature of this meeting. The exhibits, mainly common species of Lepidoptera, were of such considerable interest, from the point of view of distribution, that it was decided to devote another evening to the same subject next session. Mr. West contributed the following Diptera from St. Helens: *Chrysis ignata*, *C. rubii*, *Thereva nobilata*, the silver-tail fly; *Leptis scolopacea*, *L. lineola*, *Sarcophaga carnaria*, and several species of Dolichopodidæ.

March 19th, 1917.—The President in the chair.—Mr. F. N. Pierce exhibited *Blastotere glabratella*, Zell., an Argyresthid moth belonging to the *illuminatella* group, captured near Repton, Derbyshire, by Mr. C. H. Hayward. The species was introduced to the British list by Lord Walsingham in 1906 from specimens taken in Norfolk, and it has since been taken near King's Lynn by Mr. Atmore; the Derbyshire record, therefore, seems to indicate that it is spreading in Britain. Mr. Pierce also exhibited a series of drawings of the male genitalia of the Palæartic *Psychidæ* executed by the Rev. C. R. N. Burrows from recent preparations made by himself; the exhibit further included most of the British species with their cases. Mr. W. Mansbridge showed a series of *Scoparia ambigualis* and its melanic variations from the West Riding and East Lancashire.

April 16th, 1917.—Mr. R. Wilding in the chair.—The following were elected members of the Society, viz.: Mrs. M. Hughes, L.L.A., Wallasey, Cheshire; Miss Rose Egerton, Seacombe, Cheshire; and the Rev. F. M. B. Carr, Alvanley Vicarage, near Helsby, Cheshire. Mr. Wm. Mansbridge read a paper describing the work and methods of the Lancashire and Cheshire Fauna Committee. In spite of the present handicap of circumstances due to the war an immense amount of work has been done, especially in the less studied orders. The Committee has been fortunate in enlisting the assistance of a large number of specialists in the different branches of natural science, whose services are at the disposal of all field-workers for advice and identification of species. Already a large number of species have been added to the county lists, and a smaller, but still satisfactory number, have been described as new to science. Mr. F. N. Pierce showed series of *Catoptria amulana*, *C. tripoliana*, and from the late S. Steven's collection a series of reputed *C. decolorana*; also a specimen of *Eupacilia manniana*, which, from an

examination of the genitalia, he had found to be a dwarfed *Argyrolepis cnicana*; Mr. Pierce also gave some critical notes on *Ephesia elutella* and *E. passulella*. He was followed by Mr. W. Mansbridge, who exhibited the latter species in illustration of his report. Mr. S. P. Doudney had a long series of *Porthesia similis*, from which larvæ taken on the same hedgerow at Huyton, near Liverpool, in which many of the females had tail-tufts brown instead of yellow, except for a slight admixture of yellow hairs; all the males were normal.—WM. MANSBRIDGE, *Hon. Sec.*

RECENT LITERATURE.

The Orthoptera of Devon. By C. W. BRACKEN, B.A., F.E.S. From the 'Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art,' 1916, xlviii, pp. 267-282.

NOT sufficiently often do we see so well worked out a paper on a group of insects belonging to a particular area as is this which Mr. Bracken read Plymouth on July 20th, 1916. Why is it that other counties are not doing in this respect what Lancashire and Cheshire, Yorkshire, and Devon are able to do? Setting out primarily to complete and correct Mr. Parfitt's paper of 1881, Mr. Bracken has eventually given a full, interesting, and eminently readable account of the present state of our knowledge of the Orthoptera of Devon. His nomenclature and arrangement are thoroughly up to date, and he has worked hard for some time to bring the records as far as possible up to date also. As a result he is able to say that nearly all the British species of the order are found in Devon. There is one plate, illustrating the earwig, *Anisoblabis annulipes*, Luc., and the locustid, *Conocephalus dorsalis*, Latr. We are glad to hear that Mr. Bracken has already attacked another group of Devonshire insects.

W. J. L.

From Proceedings of the United States National Museum. Vol. 51 (1917).

No. 2156.—"A Contribution to our Knowledge of the White Flies of the Sub-family Aleyrodinæ (Aleyrodidae)." By A. L. QUAINANCE and A. C. BAKER. Pp. 335-445, with Plates 32-77.

This paper is based on material from various parts of the world, chiefly Oriental regions and tropical North America, in the collections of the United States Museum and the Bureau of Entomology.

No. 2171.—"A Generic Synopsis of the Coccinellid Larvæ in the United States National Museum, with a description of the larva of *Hyperaspis binotata*, Say." By ADAM BÖVING. Pp. 621-650, with Plates 118-121.

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[No. 649

IPHICLIDES PODALIRIUS FEISTHAMELII, AND *MELANARGIA LACHESIS* IN THE WESTERN, AND EASTERN PYRENEES.

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

My note on *Iphiclides podalirius feisthamelii*, Dup., in the Pyrenees following Mr. McClymont's observations (*antea*, pp. 91-92) was already in the press when I received from my friend, M. P. Rondou, of Gèdre, a copy of his 'Lépidoptères nouveaux pour la Faune Pyrénéenne' (Procès-Verbaux de la Soc. Linn. de Bordeaux, 1906 and 1916). The later extract contains an interesting note on the possible extension of *feisthamelii* in the western Basses-Pyrénées, which calls for some comment. As is well known, I believe, typical *podalirius* is not reported from Spain. Seebold, in his 'Catalogue of Bilbao Lepidoptera,'* reports that at Bilbao *feisthamelii* entirely supersedes the type. Thus, M. Gelin, one of the joint authors of the 'Catalogue des Lépidoptères observés dans l'Ouest de France,' suggested some years ago to M. Rondou that *feisthamelii* should reach northwards into France in the west, as in the east. "From the fact that no one has reported it yet" (*i. e.* 1900), "it does not follow that it does not occur there," he writes. But in their catalogue, first published in the 'Memoires de la Soc. Hist. et Scient. des Deux-Sèvres,' Niort, 1912, MM. Gelin and Lucas make no mention of the occurrence of *feisthamelii* in the French Biscay country, and having visited localities myself from Hendaye to Bayonne in 1891, 1905, and 1911, I can testify that the type asserts itself completely in this direction, and that, I think, is also the experience of the several British collectors, including Miss K. M. Hinchliff, Mr. H. J. Elwes, Mr. A. H. Jones, and Mr. W. G. Sheldon, among others who have explored the same region. I should say, therefore, that *feisthamelii* does not cross the Bidassoa; it will be interesting, however, to determine if, on the Spanish side between Bilbao and St. Sebastian, the type overlaps the variety or subspecies. Seebold does not help us. His catalogue is strictly confined to the environs of Bilbao, and there

* 'Catalogo de los Lepidópteros observados en las alrededores de Bilbao.' ('Ann. Soc. Esp. Hist. Nat.,' t. viii, May, 1879, Madrid.)

is a wide mountain region between this district and the frontier at Fuenterrabia. But he appends to the list of butterflies the remark that of the local species *P. feisthamelii*, *R. cleopatra*, and *T. telicanus* are the only three suggestive of a south European fauna. From its occurrence so far north-west it is clear, therefore, that *feisthamelii* can exist, and supersede the type under other than meridional conditions. Elsewhere on the Spanish side of the central Pyrenees, as Lord Rothschild informs me, we find the same phenomenon, e.g. above Caunterets, and in the Valée d'Arzas, otherwise d'Ordesa, from Gavarnie, cited by M. Oberthür ('Lépid. Comparée,' fasc. v, Aragon, legend to pl. m.c.). Larraldé ('Catalogue des Lépidoptères des Basses-Alpes,' 1895, p. 19) does, indeed, mention a single example of "var. (*sic.*) smaller than the type resembling *feisthamelii*," taken at Guiche, in the valley of the Adour, about fifteen miles east of Bayonne; but that is the only record known to me of a western form approaching *feisthamelii*.

There seems no *geographical* reason, however, why the Spanish form should not extend northwards, for M. Rondou's latest contribution to our knowledge of the butterflies of the Pyrenees includes the capture of *Melanargia lachesis* (another Spanish butterfly) in the Basses-Pyrénées at Oloron, where it flies in company with *M. galatea*, but at a later date than that when *galatea* first appears. This record is of special interest, not only because it demonstrates the western penetration of the Pyrenees by *M. lachesis*—hitherto only reported from the Pyrénées-Orientales and as far north as the Pont du Gard—but because it goes to confirm the specific distinction of two very closely-allied insects. In a footnote to Mr. McClymont's observation of *galatea* at Le Vernet I ventured to suggest a re-examination of the specimens taken by him, as hitherto the concurrence of the two species there has not been satisfactorily established. On the other hand, there is no question that somewhat further away from the mountains on the frontiers of the same Department but actually in Aude, they fly together. M. René Oberthür informed me in 1915 that near Cépie, thirteen miles south of Carcassonne, in the valley of the Aude, he discovered an area of intermixture where also *galatea* develops a special and characteristic form. Another point of contact, this time actually within the borders of the Pyrénées Orientales, is suggested by M. Oberthür's remark ('Lépid. Comparée,' fasc. iii, p. 344) that examples of *galatea* from the forest of Boucheville are in his collection. This forest is situate on the borders of the Departments of Pyrénées-Orientales, and Aude, in the extreme north-west of the former, and between Fenouillet on the eastern and Axat on the western side of the line. Hitherto, British lepidopterists do not appear to have touched this particular locality, but I notice that the late Mr. A. S. Tetley ('South Pyrenees in Early June,' 'Entomologists'

Record,' xxii, p. 58, 1910) says that "the exploration of the big forests to the east of Axat proved very disappointing . . . Butterflies were almost wanting, entirely absent from the meadows"; where *galatea* might have been expected thus early in these latitudes. M. Rondou's statement that M. René Oberthür met with *galatea* in the Pyrénées-Orientales in 1908, though no particulars or dates are otherwise forthcoming, probably refers to the Boucheville locality. Meanwhile, the war has interfered with further investigation of the Cepie district, but it may be hoped that in happier times M. René will resume his researches if the great Oberthür collection does not already contain examples of what may prove to be intermediates between *lachesis* and *galatea*.

Harrow Weald,
April 1st, 1917.

SOME REMARKS ON THE DISTRIBUTION AND DEVELOPMENT OF SPECIES AND SUBSPECIES OF THE SATYRINE GENUS *MELANARGIA*, MEIGEN, IN ITALY, FRANCE, SPAIN, AND ALGERIA.

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

THERE are three species of the genus *Melanargia*, Meigen, which seem to have been developed from a common stirps within comparatively recent times; four, if *Melanargia lucasi*, Rambur, is to be regarded as something more than the North African form of *M. galatea*. They are *Melanargia lachesis*, Hb., *M. galatea*, L., and *M. iapygia*, Cyr. *M. galatea*, either typical or in its southern habitats as var. *procida*, Hbst., is common throughout the greater part of Central and Southern Europe, though it does not exist in Spain south of the Cantabrians, and in certain of the French Departments neighbouring on the Mediterranean west of Var. Its northern limits are in the United Kingdom, in Yorkshire; it does not occur in any of the Scandinavian countries, and in the north-east the life-line may be drawn through Breda in Holland, Lüneberg, the Harz Mountains to Bremen and Elberfeld, extending east apparently (according to Speyer not north of $52\frac{1}{2}^{\circ}$ N. lat.), over the great plain no further than Lievland, and the Volga region between Bugulma and Ufa where it is rare, and thence south to Sarepta through the Steppe ('Geographische Verbreitung der Schmett. Deutschlands und der Schweiz,' vol. i, p. 190). Reaching, also along the Karpethian to Rumania and throughout the Balkan peninsula, it pervades North Asia Minor, finding its southern extreme at about latitude 34° (?), being superseded hereabouts by *M. titea* and *M. teneates*.*

* Cp. "Butterflies of Syria and Palestine," Miss M. E. Fountaine ('Entomologist,' xxxv, p. 99, 1902.)

The distribution of *M. lachesis*, on the other hand, is curiously limited almost to the Iberian peninsula, although as I have shown in the preceding note, it descends the Cantabrians, on the northern slope, and extends even into the Western Pyrenees, while at the other end of the mountain barrier it penetrates into France through Perpignan from Catalonia as far north as the famous Pont du Gard, and no further east in this direction than the western limits of the Department of Bouches-du-Rhône.

Assuming *M. galatea* to be nearest the ancestral form, as I suggest, *Lachesis* may be regarded as a species developed therefrom under peculiar local conditions—conditions judging from the known distribution of the species not repeated, for example, in the Italian and Balkan Peninsulas, each of which Mediterranean regions have *Melanargias* characteristically their own; e. g. *M. arge* and *M. pherusa*, in Central and Southern Italy, and in Sicily respectively, and *M. larissa* in the Balkans and the east of Europe; though the former pertain rather to the *Occitanica*, Hbst. (*Syllius*, Esper) group than to that under immediate review. Neither of these three species occurs in North Africa.

It is perhaps worth remark in this connection that whereas *M. galatea* in Northern Asia Minor, in the Balkans, in Italy, and in a limited portion of the Mediterranean Riviera co-exists with *Larissa*, *Iapygia*, *Occitanica*, *Arge*, and *Pherusa* respectively, this partnership is not extended in Spain to *Lachesis*, while, as we shall see, the only *Melanargia* co-existent with *Lucasi* is *Ines*, which latter species, again is confined to the central and north-west coasts of North Africa and the warmer regions of the Iberian peninsula, though in Central Algeria, where apparently *Lucasi* is non-existent, Lord Rothschild records *Occitanica*.*

In fact until we come to the northern area of distribution, it is apparent that elsewhere *Galatea*, or its prototype, has either developed new species or subspecies supplanting it, or marched upon identical routes with other members of the genus.

Mr. E. G. B. Meade-Waldo† speaks of *M. lucasi* at the beginning of July as “abundant on the great Atlas, most frequent in woods. . . . A very large and pale form was taken in the central plains in June, and also on the high tableland above Agurygur on June 23rd.” He further remarks of the Atlas country that, while these mountains have developed comparatively few alpine forms, most of the species in the remote regions are common to the Mediterranean littoral.

Thus the intermediate position and development of *M. lachesis* between the Algerian and Atlas *Lucasi* and northern *Galatea* becomes the more interesting as a study of distribution among palæarctic species.

Mr. Wheeler, in his paper on the genus *Melitæa* ('Proc. Ent.

* 'Novitates Zoologicæ,' vol. xxi, p. 307.

† 'Trans. Ent. Soc. Lond.,' 1905, p. 374

and Nat. Hist. Soc. S. London,' 1914-15), in connection with the *Cinxia* group, comments upon the puzzle of its origin. "The absence of high mountain or really arctic species of the group," he writes, "and the fact that it reaches further south both in Asia and Africa than any other group of the genus, points distinctly to its more modern origin. . . ." *Mutatis mutandis* the same conclusion presents itself in the case of the genus *Melanargia*. Tutt ('British Butterflies,' p. 377) enumerates his subject-group as follows :

Family Satyridæ,
Sub-family Erebiinæ,
Tribe Erebiidi,
Genus *Melanargia*,

and suggests that it is less an ancient race evolved from a rigorous climate than a race successfully modified to withstand that climate, bearing out my proposition, also, that *Galatea* in particular, and *Melanargia* in general, has come north-westward from Asia Minor, and not, *vice versâ*, moved south and south-westward *viâ* Palestine, Egypt, and the North African littoral. Thus he figures *Galatea* at the very top of the butterfly stirps and therefore farthest removed from the Hesperiidæ, and Heterocera, as the most specialised, on the strength of the pupa showing no movable abdominal incision, and being rigid and incapable of movement, as with *Erebia*.

It is, of course, permissible to speculate that the westward migration of *M. galatea*, resulting in *M. lucasi* in Algeria followed the line above indicated through Egypt and Cyrenaica at a time when this region was less desiccated and barren than within the range of historical record. *M. titea* and *M. tenentes*, obvious derivatives of *Galatea* or *Larissa*, reach southwards from the Armenian grasslands through a part of Palestine; yet therefrom the trend is in a south-easterly, not in a south-westerly direction, and the fact that no *Melanargia* exists in the fertile Nile valley and delta, strengthens the probability of an original exodus north and north-west of the genus across the Balkans where, according to Geike, there is no sign of glaciation, to Central and Western Europe.

For *Lachesis*, at all events, there is no known locality in North Africa, and therefore no area of intermixture, due to the Gibraltar barrier, and this being so, it is open to conclude that *Lachesis* has developed from the *Galatea* of the North Mediterranean (= *Procida*), and at a later period than that when Europe and Africa were joined at this point; otherwise it is not easy to account for the failure of *Lachesis* on the North-West African littoral.

I am led to believe on botanical authority that certain species of grasses occurring in, roughly speaking, the *Larissa-Galatea* region of Armenia present a somewhat parallel peculiarity of

distribution, and that, while absent from Southern Palestine and North-Eastern Africa, they actually recur in the North Mediterranean region and in Western North Africa; they are, e. g., *Erianthus ravennae*, *Chrysopogon gryllus*, *Phalaris nodosa*, and *P. cærulescens*. It may be a coincidence and nothing more, and I do not know whether our Asiatic and Mediterranean species feed upon any or all of the grasses named, but the fact remains that these grasses appear to have a similar, though not as wide a range of distribution as the butterflies under review, and that where *Melanargia* is absent they too are wanting; but this is rather a hypothesis than a proved fact, and requires far more knowledge of plant distribution than I possess even to discuss.

It also constitutes a curious exception to the rule of the sub-specification of *Galatea* that, whereas *Galatea* is absent from the whole of the Iberian Peninsula except in a corner of the extreme north-west, *Galatea* in the Apennine, in Apulia, Calabria, and Sicily is continued to the last outpost in this direction towards Africa. I suggest, therefore, that *Lucasi* cannot be the *fons et origo* of *Lachesis* and the *Galatea* north of the Pyrenees, but that *Galatea*, streaming down the then Apennine system, may have crossed by the long submerged bridge to what is now North Africa, and developed under conditions similar to those of Sicily the form or subspecies *Lucasi*, which seems to exist in Sicily to this day.* Geologically speaking, "la parente de l'Atlas avec l'Apennin s'accuse à la fois. . . ."

Further, it should not be forgotten that, though *M. ines* occurs in North-West Africa with *M. lucasi galatea*, there is no member of the *Ines-Occitanica* group in the Asia Minor region. And this again suggests not only the derivation of *Ines* from the *Galatea* stirps, but that it has found a place in the Western Mediterranean fauna from the east-to-west advance *via* the northern and Italian line of distribution.

To sum up, then, it is not improbable that *Lucasi* is the immediate offspring of the Italian *Galatea*, from which, as stated in Sicily, it is sometimes indistinguishable, and that *Lachesis* has developed from the northern *Galatea* as an ultimate dominant species, and that where *Galatea* meets and disappears before *Lachesis*, this is due not to reversion to a *Lucasi-Lachesis* form coming from the south, but to the termination of the conditions favourable to the development of *Galatea*. And this at a point where the eastward-derived *Galatea* north of the Mediterranean, and from the foothills of the Alps, fails to assert itself; so that the area of intermixture, to which I drew attention in my note on *M. lachesis* in the Eastern and Western Pyrenees (*antea*, p. 122), marks the union of the western-borne *Galatea* with the *Galatea*

* I am strongly of opinion that some of the *M. galatea* exhibited by the late Mr. Platt Barrett at the South London Society and the subject of a paper in the 'Proceedings,' 1915-16, are true *M. lucasi*.

which have, so to speak, become *Lachesis* in the course of their development over the Spanish Peninsula.

I find support for my theory in M. Oberthür's exposition of the affinities of *Lucasi* ("Lépid. Comparée," fasc. iii, 255-6), also showing the extent of the collateral route distribution in the group with the *Iapygia* (= *Clotho*, Hb., or rather according to Hübner's description = var. *Suwarovius*, Hbst.), and *Galatea* of Calabria. Allard (Ann. Soc. Fr., 1867), in his "Notes sur les Insectes de l'Algerie," actually refers *Clotho*, var. *Atropos* to *Lucasi*, Rambur; but, apart from bionomic differences, M. Oberthür clearly demonstrates that the wing markings of these Sicilian *Melanargias* approximate far less closely to *Iapygia* than to *Galatea*.

M. Oberthür has no difficulty in distinguishing the *Iapygia* of Sicily—the dark form (= *Atropos*) superficially not unlike the female *Lucasi*—from that species. He remarks that, whereas in *Lucasi*, on the underside of the hind wings, the last nervure originating at the base and abutting on the inner margin, is marked by a dusky streak doubled for a half of its length, forming a sort of Y, with the stem of the letter towards the anal angle, in *Iapygia* the nervure is similarly represented, but the line is straight and without the fork. In the case of *Galatea* this dusky nervure is also forked, but with the branch reaching internally ("dans le sens interne"); while in *Lucasi* the bifurcation is made externally. With the limited number of *Lucasi* under my observation, I do not pretend to challenge this distinctive character, but I am bound to say that the diverse direction of the dusky nervure fork in the *Lucasi* before me hardly corroborates M. Oberthür's diagnosis. Certainly he does not propose to suggest this as a test character. "I believe," he writes, "that for the present we ought to consider *Lucasi* as a good species, contiguous at once to *Galatea*, *Larissa*, and *Iapygia*," all of which species exhibit the peculiarity to which he draws attention. But then M. Oberthür is not at all partial to distinction by sub-species, and is as reticent on the subject as Frühsdorfer is fertile of invention—a sub-specifist gone mad!

(To be continued.)

FIVE NEW SPECIES OF PYRALIDÆ, BELONGING TO THE SUB-FAMILY EPIPASCHIANÆ, FROM FORMOSA.

By A. E. WILEMAN AND RICHARD SOUTH.

Spectrotrota catena, sp. n.

♂. Fore wings ochreous brown, powdered with darker chiefly between the transverse lines; costa dotted with white; antemedial

line white, broad, outwardly bidentate; postmedial line represented by a chain-like series of white spots, indented above dorsum; discoidal spot black; terminal line black, double, interrupted at veins, enclosing a whitish line; fringes pale grey, traversed by two darker lines. Hind wings fuscous, tending to ochreous-brown beyond the postmedial series of white spots; terminal line and the fringes as on fore wings, but the latter are rather paler. Underside fuscous, inclining to ochreous-brown on terminal area; postmedial line of upper side indicated on all wings.

Expanse, 36 mm.

Collection number, 1350.

A male specimen from Arizan (7300 ft.), August 21st, 1908.

Stericta dubia, sp. n.

♀. Head, thorax, and abdomen whitish-brown, partly reddish tinged; posterior edges of abdominal segments marked with blackish. Fore wings whitish-brown, powdered with blackish most strongly on basal two-thirds; antemedial and postmedial lines paler, the former nearly erect, and the latter excurved beyond cell; discoidal dot black; costa marked with black between ante- and postmedial lines; terminal dots black; fringes whitish-brown, varied with dark brown and blackish, a pale line at their base. Hind wings dark fuscous; fringes greyish, preceded by a pale line. Underside fuscous, paler on dorsal area of each wing.

Expanse, 18 mm.

Collection number, 1326A.

A female specimen from Kanshirei (1000 ft.), August 27th, 1907.

Stericta tripartita, sp. n.

♂. Head and thorax black-brown, the latter mixed with ochreous brown; abdomen ochreous brown, clouded with russet-brown, banded with black-brown on the second segment. Fore wings black-brown on basal and terminal thirds, ochreous brown on medial third, the latter clouded with russet-brown; antemedial line pale ochreous, almost straight; postmedial pale ochreous, gently curved from costa to middle, thence almost straight to dorsum, and dividing off a triangular section of the black-brown terminal area; discoidal spot black; terminal line ochreous, inwardly edged with black; fringes greyish-brown, rather glossy. Hind wings dark fuscous; discoidal mark slightly darker, but indistinct; terminal line and fringes as on fore wings.

Expanse, 16 mm.

Collection number, 1326.

One example of each sex from Kanshirei (1000 ft.), the male captured March 3rd and the female July 12th, 1908.

Allied to *S. basalis*, Leech.

Orthaga confusa, sp. n.

♂. Head and thorax white, speckled with blackish; abdomen

white, speckled and barred with blackish. Fore wings white, speckled with blackish; antemedial band black, irregular edged; postmedial line whitish, curved round outer end of cell, thence wavy to dorsum near tornus; discoidal mark black, a blackish streak from below it to dorsum, a blackish spot above it extending to costa; terminal area broadly bordered with black, the inner edge irregular and diffuse; terminal line black, interrupted, dusted with whitish on each side; fringes white, dotted with blackish between the veins. Hind wings dark fuscous; fringes paler, whitish at base. Underside of fore wings dark fuscous, whitish on dorsal area; of hind wings whitish, sprinkled with fuscous on costal area; discoidal dot and postmedial line fuscous.

Expanse, 17 mm.

Collection number, 1336.

A male specimen from Kanshirei (1000 ft.), July 21st, 1908.

Comes near *O. oerata*, Butler.

Orthaga centralis, sp. n.

♀. Fore wings greyish, clouded with olivaceous brown in the form of diffuse transverse bands placed before and beyond the middle; a black spot in the cell and another at outer end of the cell; a white spot between the black ones; below this is a diffuse whitish band tapered to dorsum; some whitish scales on costa above the white cell spot; postmedial line black, curved, serrate, slightly indented below costa and above dorsum, outwardly edged with whitish; subterminal line black, rather broad, interrupted at ends of the veins; fringes pale, mixed with black at ends of the veins. Hind wings blackish, with traces of a pale, irregular line beyond the middle; fringes as on fore wings. Underside whitey-brown, suffused with blackish on the fore wings; hind wings broadly bordered with blackish, and traversed by a curved, serrated, blackish line.

Expanse, 33 mm.

Collection number, 989A.

A female specimen from Arizan (7300 ft.), August 30th, 1908.

Allied to *O. chionalis*, Kenrick, from New Guinea.

ON CERTAIN STEPHANIDÆ.

BY ERNEST A. ELLIOTT.

Parastephanellus rubripictus, nov. nom.

In the 'Arch. Naturg.,' lxxvii, 1901, p. 196, Dr. Enderlein described both sexes of a species of *Parastephanellus* from Milne Bay, the Bismarck Archipelago, and Borneo, which he considered identical with *P. damellicus*, Westw., and states that the description agrees completely.*

An examination of these descriptions reveals striking differences, which quite preclude all idea of the two being varieties of the same species.

In *P. damellicus*, Westw., the neck of pronotum is smooth, metanotum with a series of short striæ at base only, hind femora tridentate, head piceo-rufous with a white streak on cheeks below eyes, petiole and red legs. In Enderlein's supposed *damellicus* the neck of prothorax is coarsely longitudinally striate, metanotum longitudinally striate throughout, hind femora bidentate, head black with face and cheeks red-brown, petiole black with a tendency to become red-brown, anterior legs red-brown, hind legs black, their femora sometimes rufescent.

These differences, especially the dentation of hind femora and the coloration of the head, are characters clearly separating the two species; the synonymy is therefore *Parastephanellus rubripictus*, Elliott, = *damellicus*, Enderl. nec. Westw.

Dr. A. Roman, writing in the 'Archiv. für Zool.,' Stockholm, 1917, xi, no. 4, p. 4, proposes to withdraw the "genus," more correctly "subgenus" *Hemistephanus*. Enderl., as being merely a group of species of *Stephanus*, s. str. His reasons are: 1st, that this purely American group differs from *Stephanus* only in a single wing-character. If such character is consistent, and the group, as far as we know, confined to South America, surely this one character suffices to justify the erection of a subgenus. 2nd, that there is at least one transition form (an undescribed species from Matto Grosso, Brazil), having the second discoidal cell only very narrowly open. This slightly open cell is found in many species of *Stephanus*, s. str. 3rd, that all the large species belong to *Stephanus*, and nearly all the small ones to *Hemistephanus* (in S. America). It is a fact that the species of the latter subgenus are smaller, and may be taken for what it is worth. 4th, that the sole N. American *Hemistephanus*, *H. texanus*, Cress., differs in sculpture and colour from the S. American species and appears to join on to the N. American species of *Stephanus*.

Cresson states, that the wings of his unique specimen were too much damaged to be described. I am inclined to consider it to be a *Stephanus*, and do not know on whose authority Roman places it under *Hemistephanus*. To the latter genus belong *Megischus maculipennis* and *M. submaculatus*, Westwood, as is proved by an examination of the types in the British Museum.

I am of opinion, that Enderlein's subdivisions, with the addition of *Neostephanus*, Kieffer, should be retained. Whether called "groups" or "subgenera," they are certainly of use in facilitating the arrangement and determination of the ever increasing number of known species of *Stephanidae*.

BY CLAUDE MORLEY.

THE other autumn, in A.D. 62, as Suetonius Paulinus was strolling through the forest of Celtic Saegham, just before the monks had cut the name to Soham, he plucked and chewed the rubus berries; and, while doing so, I saw him fling one of them away with an impatient "ruidus!" Anon. we passed a cherry-cheeked Iberian whistling, as his swine gorged mast pannage from the beech. "Heus! porcarius est rufus," Paul exclaimed: the swine were clean and pink like a young summer's afterglow, so jocundly I continued, "Et porcæ sunt rufidæ!" His eye came twinkling round at me, as though to say a language a'in't worth much that's cribbed, cabined, and confined. Surely, if you (like Charles Lamb) allow the polish of the town derived from *πολις* and the rustiness of the country life accumulated out of *rus*, then *RUFIDORNATUS* is but the easing of a stay-lace.

Monks' Soham,
May, 1917.

TWO NEW SPECIES OF *DIASTEPHANUS*, ENDERL.

BY E. A. ELLIOTT, F.E.S.

Diastephanus flaviceps, sp. nov.

♂. Frons alutaceous, dull; vertex and occiput in front arcuate rugose, becoming transverse towards the posterior margin, which is simple; temples smooth. First and second flagellar joints of equal length, 3rd a little longer. Prothorax almost smooth; mesonotum trans-striate in front, central row of punctures and lateral impressions distinct; median segment coarsely punctate. Petiole trans-striate, a little longer than rest of abdomen, which is smooth and shining. Hind coxæ trans-striate, femora smooth, tridentate; tibiæ compressed to beyond middle. Wings hyaline.—Black; face, frons, base of antennæ and anterior legs flavo-testaceous, cheeks pale red, occiput dark red, apex of prothorax and the hind femora rufescent.

Length, 11 mm.; abdomen, 7½ mm.; petiole, 4 mm.

The type, in the British Museum, bears a label: "F. Sm. coll. 79, 22," without further indication of habitat.

Diastephanus flavifrons, sp. nov.

♂. Frons irregularly rugose, vertex trans-carinate, occiput trans-striate, its posterior margin bordered, temples smooth. Second flagellar joint not quite twice as long as first, 3rd nearly as long as first and second together. Prothorax trans-striate, deeply impressed at apex; mesonotum centrally smooth, laterally rugose, lateral impressions distinct; mesopleuræ finely strate, metapleuræ punctate. Petiole trans-striate, as long as rest of abdomen, which is smooth and shining. Hind coxæ trans-striate; hind femora smooth, biden-

tate. Wings hyaline with red and green iridescence.—Black; face and lower half of frons white, the colour sharply separated, the lower margin of the black forming an inverted **W**, apex of mandibles broadly black, frontal tubercles rufescent; 2 basal antennal joints pale red, apex of pronotum, 2nd and 3rd abdominal segments, anterior tibiae and tarsi rufescent.

Length, 11 mm.; abdomen, 8 mm.; petiole, 4 mm.

Hab.—West Sarawak; G. E. Bryant, collector, iv, 1914. Type in the British Museum.

This species is clearly distinguished by the remarkable colour of the head, the white colour being rendered especially conspicuous by the sharp demarcation above and the unusually largely black mandibles below. The iridescent wings are not noted in any other species of this subgenus.

16, Belsize Grove, N.W., 3,
April 28th, 1917.

DESTRUCTION OF WHEAT BY WASPS.

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

HITHERTO it appears to have been unknown that wasps attack and destroy corn in any way; therefore the following facts regarding this apparently newly acquired and very destructive habit is worthy of record in this journal.

On August 20th last year, while walking along the edge of a wheat field at Mickleham, Surrey, I noticed that the heads of corn were in a greatly damaged condition, and the cause of the mischief was soon apparent, as numbers of wasps were busy at work gnawing the corn. Along the entire length of the field, which was about 300 yards long and for about 5 or 6 yards wide from the edge inwards, all the ears of corn appeared more or less damaged, as shown by the two examples represented in the accompanying drawings. As will be seen one has the basal half completely stripped, leaving the stem bare. I watched a quantity of the wasps at work, which proved to be the common wasp (*Vespa vulgaris*). Upon tracking them to the nest, I found it about one-third of a mile distant from the field and situated in the end of a building, which they entered under the eave. The whole of the damage was caused by the individuals of the one nest. The area of apparently total destruction amounted to a belt of about 300 yards long by 5 or 6 yards wide, and probably a considerably larger portion extending over the field.

Probably this destructive habit has been acquired for the purpose of collecting nesting material, and should it become a generally adopted one among the different species of social wasps, it may tend to very serious consequences in future to the wheat crops of this country.

The accompanying illustrations appeared in the 'Field' for October 14th last, and the block has been kindly lent by the



proprietors of that journal for the purpose of publication in the 'Entomologist.'

May, 1917.

NOTES ON SOME PARASITES OF SUGAR-CANE INSECTS
IN JAVA, WITH DESCRIPTIONS OF NEW *HYMEN-
OPTERA CHALCIDOIDEA*.*

BY A. A. GIRAULT.

HERR P. VAN DER GOOT, Entomologist of the Experiment Station of the Java Sugar-cane Industry at Pasoeroean, Java; was kind enough to send to me for identification a number of egg-parasites of sugar-cane insects upon part of which I report on in the following pages:

1. *Gonatocerus bifasciatiiventris*, new species.

Female.—Length, 1.20 mm. Black and golden yellow, and belonging to the group of species with graceful fore wings; the abdomen as in *rivalis*, the ovipositor exerted for a length equal to a third that of the abdomen. Funicle and club, the propodeum, cephalic third or less of mesoscutum, cephalic half of parapside (making two triangular spots on each side), a subquadrate spot at base of scutellum at the meson, immediate base of abdomen, the exerted valves of the ovipositor and a broad black band just distad of centre of abdomen, in the dorsal aspect, sometimes narrowly divided into two stripes, velvety black. Pedicel yellow, suffused with dusky, the scape yellow, dusky along dorsal and ventral edges. Mesopleurum black. Fore wings with about twenty-one lines of discal cilia where broadest, marginal vein long for the genus; posterior wings with a paired line of discal cilia along each margin. Funicle of antennæ with no globular joints, all longer than wide; 1 and 2 subequal, smallest; 3 somewhat longer, subequal to the pedicel; 4, 5 and 6 subequal, longest; 7 only slightly shorter than 6, while 8 shortens.

Fore wings fumated slightly along distal margin.

From many specimens, $\frac{2}{3}$ = inch objective, 1 = inch optic, Bausch and Lomb.

Male.—The same, but the abdomen sometimes with three black stripes. Longest funicle joints nearly thrice their own width.

From eight specimens; the same magnification.

Though coloured somewhat like the Australian *cingulatus* and *comptei*, this species resembles in habitus *spinozai* and *bicolor* of Australia and *rivalis* of North America because of the more slender abdomen, the exerted ovipositor, and the absence of globate joints in the antennal funicle. But it is quite slender. Eight males and fifty-four females.

Habitat.—Java.

Host.—Eggs of a leaf-hopper embedded in the leaves of sugar-cane.

* Contribution No. 9, Entomological Laboratory, Bureau of Sugar Experiment Stations, Bundaberg, Queensland.

Types.—In the Queensland Museum, Brisbane, one male, sixteen females, on a slide in xylol balsam.

2. *Trichogramma minutum* (Riley).

Four males, eleven females of this species reared from the eggs of *Chilo infuscatellum*, Sn.

A New Genus of Omphaline Eulophidae.

Omphalini.

Parachrysocharis, new genus.

Female.—Like *Chrysocharis*, Foerster, but the post-marginal vein absent; antennæ slender, three funicle and club joints, third club joint terminating in a spur. Stigmal vein long. Thorax without grooves; the parapsidal furrows complete.

Male.—The same, but the funicle four-jointed, three club joints, ten antennal joints. Antennæ clothed with long, fine hairs.

Type.—*Parachrysocharis javensis*, new species.

3. *Parachrysocharis javensis*, new species.

Female.—Length, 1.25 mm. Black, the base of the abdomen rather broadly, the ventral half of the thorax and the legs golden yellow; venation and antennæ dusky yellow; face also mostly golden yellow. Funicle joints all longer than wide, subequal and each barely longer than the pedicel; scape and pedicel paler.

From nine specimens; the same magnification.

Male.—The same.

From three specimens, the same magnification.

Described from three males, nine females, reared from leaf-hopper eggs on the leaves of sugar-cane, the host probably *Flata affinis*; each egg holds one parasite. The hosts turn black.

Habitat.—Java.

Host.—*Flata affinis* (teste P. van der Goot).

Types.—In the Queensland Museum, Brisbane, one male, two females on a slide in xylol balsam.

4. *Cyrtogaster javensis*, new species.

Female.—Length, 1.90 mm. Dark metallic blue, the scutum reflecting greenish, wings hyaline; legs white and the antennæ yellowish, the latter with three ring-joints, each longer than the one preceding; the funicle joints subquadrate and more or less subequal. Post-marginal vein distinctly longer than the long stigmal. Coxæ concolorous. Parapsidal furrows half complete from cephalad. Punctate, the propodeum reticulated, with a median carina. Abdomen slender. Five funicle, three club joints, the club wider than the cylindrical funicle. Mandibles four-dentate, the outer tooth acute. Scutellum smoother toward apex.

From ten specimens; the same magnification.

Male.—Not known.

Described from ten females reared from the eggs of an unknown moth on the leaves of sugar-cane.

Habitat.—Java.

Host.—Lepidopterous eggs (probably Bombycidæ).

Types.—In the Queensland Museum, Brisbane, three females on tags, three pins and a slide with two others.

Runs to the genus in Ashmead's (1904) table.

BRITISH ORTHOPTERA IN 1916.

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

MOST of the interesting facts connected with our limited orthopterous fauna, which came to hand in 1916, had relation to the earwigs—the abundance of *L. minor* and *F. auricularia* in one district, and the occurrence of the invader, *P. arachidis* in two others. Grasshoppers in the late summer seemed to be about in their usual numbers, and chirped merrily as if enjoying the bright sunshine of early August. Many examples, however, of various species were not mature in the New Forest by August 9th. How skilfully, after one of their flying leaps, grasshoppers land with unerring safety on a slender grass-stem or some similar object, when one walks amongst them on a fine summer's day.

Forficulodea.—Several notes, worthy of record were handed to me during 1916 in connection with the earwigs, although some of them refer to the previous year. Writing on March 11th Mr. O. Whittaker told me that when in camp with his regiment at Exning in Suffolk, not far from Newmarket, *Labia minor*, Linn., occurred very commonly during October and the end of September, 1915, the ground outside his tent often revealing the presence of at least three per square foot. He took two dozen in a couple of minutes one evening as he sat at tea, and still there were more. This was the first occasion on which he had seen the species at all plentifully—in fact, previously he had taken only a couple of single examples. My own captures have been single ones also, and perhaps not a dozen in all. Later Mr. Whittaker sent me nineteen of those he captured—six males and thirteen females.

Writing again on May 19th Mr. Whittaker said that on the 17th inst. he was at Bury St. Edmunds and at 5.30 p.m. there were dozens upon dozens of *Labia minor* on the wing. About halfway back to Newmarket the Red Cross car broke down, and he had to wait for an hour by the road side until another car came. It was a beautiful evening and still more

L. minor were to be seen. If not exactly the commonest insect in those parts, he thought it certainly was one of them. Had he had collecting materials he could have obtained for me a hundred or two without wasting much time. Mr. Whittaker had not then seen any about Newmarket itself.

A female of this same species, taken near Brockenhurst on September 7th, 1916, was given me by Mr. D. Sharp; and in November Mr. J. R. le B. Tomlin sent me six males and six females taken in his garden at Reading in September.

In April, 1916, Mr. H. Moore had brought to him by a friend a male, a female, and half a dozen nymphs of *Prolabia arachidis*, Yers. They had been taken alive in a City warehouse in bales of goods (rush-baskets) from Japan. Later in the year Mr. Tomlin sent me several examples of the same species from bone refuse at some bone works, Action Bridge. These were collected on October 9th, 1916. The number of instances of the occurrence in England of this cosmopolitan species seems to be increasing.

Mr. C. W. Bracken, in working out the "Orthoptera of Devon"* took the opportunity of investigating the mystery, as Burr termed it, of the occurrence of *Anisolabis annulipes*, Luc., at a bakehouse in Tavistock—a small market-town fourteen miles inland from Plymouth. It appears that some years before 1894, when Mr. Swale first found the earwigs, the father-in-law of the occupant of the bakehouse was a Jamaica merchant, who, visiting his daughter, brought the insects in his luggage. They formed a colony in the bakehouse just behind the house.

Writing on March 18th, 1916, Mr. O. Whittaker sent me from the camp at Newmarket another earwig note. It appears that the orderly room in which he was working consisted of a canvas tent supported by a longitudinal ridge-pole resting on three upright posts. Every day *Forficula auricularia*, Linn., sought refuge up by the ridge-pole, where they must have been in thousands. From this elevation they used in the day-time to drop excreta. Out of curiosity he one morning placed a piece of paper on a table directly beneath the ridge-pole. It was left for an hour, and, when counted, the number of spots of excreta was found to be "three score and eleven." This experiment was performed about the end of June or beginning of July; but *F. auricularia* swarmed there all through the summer. In the morning he would find five or six in his rifle-breech and as many in the barrel. He did not take a census of males and females, though the circumstances would have afforded an excellent opportunity for so doing. One morning he killed over 100 in one tent without making an appreciable effect on their numbers. There were about 100

* For a paper on the "Orthoptera of Devon," read on July 20th, 1916, to the Devonshire Association for the Advancement of Sci., Lit., and Art.

tents and thousands of earwigs in each. He did not see any var. *forcipata*, which he had previously taken at Southport in Lancashire.

For the Lancashire and Cheshire Fauna records, *F. auricularia* was reported from a garden in Alexandra Road, Manchester, a rather dark female, April 7th (G. J. Burne); also a male from Burton Marsh, Cheshire, August 25th (T. A. Coward).

Blattodea.—*Ectobius panzeri*, Steph., was taken in the New Forest on August 21st (W. J. L.). *Blattella germanica*, Linn., was reported as swarming behind hot-water pipes at a Church Army shelter in Swansea, 1916 (H. R. Wakefield). Mr. H. Moore had given him about two dozen *Periplaneta americana*, Linn., which were taken in April by Mr. Heath in a warehouse in the City of London, amongst bales of rush baskets from Japan. For the Lancashire and Cheshire Fauna Record a male *Blatta orientalis*, Linn., was reported from a motor garage at Chorton-cum-Hardy, Manchester.

Grylloidea.—*Nemobius sylvestris*, Fabr., was taken in the New Forest on August 8th (W. J. L.), and Mr. G. T. Lyle sent one (a female) out of four specimens which he found about September 10th amongst debris of a decayed *Boletus*.

Locustodea.—*Metrioptera griseo-aptera*, De Geer, was taken in the New Forest on July 28th, and for the next six weeks was found to be common there. Mr. H. J. Burkill tells me that on August 26th he saw six stout-bodied brown grasshoppers of a heavy type near Chepstow, in Monmouthshire. They seemed to keep in pairs and were near the top of a low hedge. They were *P. griseo-aptera*, a pair having been boxed for identification. *Metrioptera brachyptera*, Linn., was taken in the New Forest on August 8th, but I did not find them as readily as by recollection I used to do. On September 13th I went to Esher Common, Surrey, to try to get some specimens, but saw none, though I certainly did not make a lengthy search. This species usually lives amongst rather rank herbage in damp spots and consequently is not easily captured. After a hop or two it often hides at the base of the herbage, clumps of cross-leaved heath being a favourite habitat. Its mode of progression at times partakes somewhat of the nature of a run or walk.

Acridiidea.—On September 12th I went with Dr. T. A. Chapman, from Dorking, along the lower road at Denbies towards Pickett's Hole to search for the grasshoppers *Stauroderus bicolor*, Charp.; *Stenobothrus lineatus*, Panz.; and *Gomphoceris rufus*, Linn., the last two being usually somewhat scarce species. The weather was dull with some rain, but we succeeded in finding the three species. Dr. Chapman has been investigating the habitat of *S. lineatus* and *G. rufus* on the slope of the Downs in this district. He finds them in suitable spots from Reigate to Pickett's Hole, sometimes quite commonly. A Buckland locality,

where he knew them previously, but where they are scarce, is part of the same slope of the North Downs several miles to the east. No doubt further search would reveal a still more extended habitat. Their companion, *S. bicolor*, is of course a very common insect: it was met with on the South London Natural History Society's excursion to Box Hill on July 22nd, and was noted in the New Forest on August 4th. *Gomphocerus maculatus*, Thunb. was also found at Box Hill on July 22nd, and was noted in the New Forest on August 2nd. Mr. T. A. Coward sent me two females from Thurstaston, Cheshire, taken August 20th, 1916, and both sexes from Ainsdale, Lancashire, August 29th, 1916, for the Lancashire and Cheshire Fauna Record. *Omocestus viridulus*, Linn., was taken at Box Hill on July 22nd, and in the New Forest on August 3rd. At Marlborough Deepes, in the New Forest, mature *Omocestus rufipes*, Zett., seemed fairly common, but nymphs were to be found also. Two were brought away, one of which matured, while the other escaped. The only food given them was grass, which I did not often see them eating. *Chorthippus elegans*, Charp., was found in some numbers at a known habitat near Beaulieu River, in the New Forest, on September 8th. *Chorthippus parallelus*, Zett., was noticed at Box Hill on July 22nd, and in the New Forest on August 2nd; while Mr. Coward sent two females from Thurstaston, taken August 20th, 1916, and a male from Ainsdale, August 29th, 1916. *Mecostethus grossus*, Linn., were found mature in the New Forest on August 9th and again on August 26th. On August 11th, in the New Forest, three *Tetrix subulatus*, Linn., only were taken mature: they were readily and plentifully captured on September 7th. The more common *Tetrix bipunctatus*, Linn., was captured on several occasions in 1916—in the New Forest, on April 28th, one of two taken having a broad, pale, mid-dorsal stripe; one on the South London Natural History Society excursion to Netley Heath, etc., Surrey, on June 24th; on the Box Hill excursion on July 22nd; New Forest, August 12th; and one (apparently immature) at Ainsdale, August 29th, sent by Mr. Coward for the Lancashire and Cheshire Fauna Record.

Some notes contributed by Mr. Bracken, of Plymouth, I have not distributed under the various suborders, since they all relate to Devonshire. They are as follows:

“On June 10th many newly-hatched nymphs of *Pholidoptera griseo-aptera* and *Leptophyes punctatissima*, Bosc., were taken by sweeping nettles at Plympton, near Plymouth. These were added to on June 17th in a similar manner while collecting at Bere Alston on the River Tavy. Several of these were fed on rose-leaves almost to maturity, but being in one breeding-cage the majority were eaten by their companions. On August 17th a visit to Cawsand (Cosdon) Beacon produced a good series of *Gomphocerus maculatus*—very dark forms, as they generally are on our moorland

margin. At the same place were taken a number of *Omocestus viridulus*. These are always referred to as 'generally distributed' in Devon, but I do not find them so by any means. One specimen was taken in September on cliffs, Plymouth Sound. At Cawsand Beacon (in sheltered hollows at the foot of the tor) *Tetrix bipunctatus* was also very abundant. *Meconema thalassinum*, De Geer, was found again (August 2nd) in its usual haunts on oak-trees at Cann Quarry on the lower River Plym. *Phasgonura viridissima*, Linn., was taken at Cawsand (a village on Plymouth Sound) on September 7th, demurely seated in the middle of a path, the centre of a wondering group of Sunday pedestrians. On October 10th I took one at Ivybridge. Both were very fine fully-grown females. They are by no means abundant in South Devon.

"Most noteworthy of the season's captures was a bag of *Conocephalus dorsalis*, Latr. The colony found by Mr. G. T. Porritt at Churston in 1900 and 1902 still persists. A visit to the spot on August 23rd proved quite successful in spite of the fact that heavy rain fell during almost the whole day. In the intervals between the showers, assisted by my son, I swept yards and yards of rushes standing in several inches of water. Six specimens in all were taken, and several were missed. Sweeping damages these delicate insects, but it was the only method on the day in question. The taking of what was undoubtedly a nymph of *C. dorsalis* at Bere Alston (River Tavy) amongst rushes on June 10th bids fair to establish another habitat. Unfortunately a visit paid in September to look for the adult insect proved abortive in spite of several hours' search on a hot, sunny day. The nymph, which unfortunately I failed to rear, had the characteristically produced vertex, and a well-marked reddish-brown dorsal stripe. It was of the usual oily-green colour, but the pronotum, elytra, and wings were undeveloped. Its length was 5 mm.

"One other record may be made—the receipt in December of a pale-green cockroach, undoubtedly *Panchlora exoleta*, Klug., from a local banana store."

Kingston-on-Thames,
May, 1917.

NOTE ON *MAIVA SULPHUREA*, S. & K.

BY GEORGE TALBOT, F.E.S.

Maiva sulphurea, Smith & Kirby, Rhopl. Exot. ii, African Lyc., p. 96, pl. 21, fig. 13 (1893) (Lake Nyassa). Type of genus.

Upon examining the type of this insect, described as a Lycænid, we find it to belong to the Pierine genus *Terias* with which it agrees in neuration, palpi, and markings. The arrange-

ment of the scattered blackish scales on the hind wing below is identical with what is seen in most *Terias*. The upperside pattern and the yellow underside of the hind wing points to the specimen being a dwarf ♀ example of *Terias brigitta f. zoe*, Hopff.

The specimen has lost its legs and antennæ, the basal segment of the latter alone remaining, and these agree with the same part in the antennæ of *Terias*.

Type in collection, Joicey.

NOTES AND OBSERVATIONS.

STYRINGOMYIA FOSSIL IN ENGLAND.—The remarkable Tipulid genus *Styringomyia* was first found in Baltic amber, and was for many years supposed to be extinct. It was later determined that rather numerous species were still living in tropical countries, widely scattered over the world. In 'Proc. U.S. National Museum,' vol. 52 (1917), p. 377, I described a supposed new genus *Mesomyites*, considered to be related to *Mythicomyia*, from the Oligocene of Gurnet Bay, Isle of Wight. The specimen consists of a wing, lacking the base. Mr. Chas. P. Alexander now writes, pointing out that this fossil has all the characters of *Styringomyia*, and, after reconsidering the whole subject in the light of his suggestion, I feel convinced that he is right. It is singular that a similar type of venation should be so nearly duplicates in entirely different families, but, in spite of this, I think the fossil shows enough to confirm the new reference, and the species will therefore stand as *Styringomyia concinna*.

In the paper cited, p. 373, *Rhipidia* should of course be *Rhipidia*. This is another Tipulid (*Rhipidia brodiei*) from Gurnet Bay.—T. D. A. COCKERELL.

RHYACIONIA (RETINIA) PURDEYI, DURRANT, AT LEWISHAM.—On August 8th, 1907, I took from a fence in this neighbourhood beneath the overhanging branches of some Austrian pine trees (*Pinus laricio v. nigricans*) a Tortrix that appeared to be unfamiliar to me. On August 6th, 1908, another was captured, and on July 19th and 26th yet another one on each day, and I missed two or three others, for they were very restless. I have more than once shifted these specimens in my cabinet, but they never appeared to agree with any species that I had there, and recently, on pointing them out to a friend, he remarked, I think half in jest, that they might be *Rhyacionia purdeyi*. However, I turned up the original description of that species, and it appeared to fit my specimens so well that I submitted them to Mr. Durrant, who pronounced them to be undoubtedly referable to that species.—ROBERT ADKIN; Lewisham, April, 1917.

CYANIRIS ARGIOLUS, AND PLUSIA MONETA IN MIDDLESEX.—The abundance of *Cyaniris argiolus* in the Metropolitan area this year is remarkable. Until 1901 I do not remember to have seen a single specimen on the wing in the garden here, though occasional observations were made by my friend Mr. C. R. Peers, when living, before that date, at the Rectory, Harrow Weald. But from that time onwards, as elsewhere, and throughout the neighbourhood, it has

steadily increased in numbers, being always most prolific in the spring emergence. At Wandsworth, where my present duties have taken me every day for the past year, it has been everywhere in evidence, reaching Citywards to within a few hundred yards of Vauxhall station. Equally tenacious of locality is *Plusia moneta*. For eighteen successive years this beautiful Noctuid has bred regularly in our garden; and, seeing that for the past five years at least the aconite has been reduced to a couple of somewhat meagre plants, it is astonishing that it should have continued to prosper. True, occasional larvæ have been detected on delphinium, but there is no doubt which is the favourite food plant; and this year again my tiny preserve shows every sign of yielding an abundant emergence at the end of June; the emergence being then most regular, and commencing, whether the season has been late or early, during the last three or four days of the month.—H. ROWLAND-BROWN; Oxhey Grove, Harrow Weald, May 26, 1917.

PREPONDERANCE OF MALES OF GONEPTERYX RHAMNI.—When the weather was sufficiently warm and bright from April 5th to 24th, *G. rhamni* was on the wing in numbers in the New Forest; but only on one occasion, April 19th, were any females seen, and then only very few compared with the large number of males. They may, of course, have been sufficiently plentiful, but for some reason did not take to the wing.—L. C. E. BALCOMB; Kingston-on-Thames.

BREPHOS PARTHENIAS.—From April 5th to 24th this moth was very common in the New Forest, usually, of course, in the neighbourhood of birches. The very backward spring clearly accounts for its late date.—L. C. E. BALCOMB; Kingston-on-Thames.

CYANIRIS ARGIOLUS.—From about May 4th the "Holly Blue" has been very numerous in the streets and gardens of Kingston-on-Thames. A certain "variegated laurel," so-called, attracts it, though the mistake seems to be immediately discovered. I hear that it is common also in the neighbouring town of Richmond.—L. C. E. BALCOMB; Kingston-on-Thames.

CYANIRIS ARGIOLUS IN THE CITY.—Perhaps it may be interesting to record that I saw a specimen of *Cyaniris argiolus* flying in Queen Victoria Street, E.C., at noon to-day.—L. E. DUNSTER; 44, St. John's Wood Terrace, Regent's Park, N.W.; May 4th, 1917.

EUGONIA POLYCHLOROS IN WEST LONDON.—It may be worth recording that I caught a Large Tortoiseshell butterfly on the dining-room window of this house this morning.—G. C. TURNER; 49, Cleveland Square, W., May 2nd, 1917.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 12th, 1917.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Edwards exhibited species of the genera *Nectarina* and *Hestia*, highly protected butterflies, and referred to their nume-

rous mimics.—Mr. B. W. Adkin, numerous aberrations of *Agriades-thetis* and *A. coridon*, taken at Eastbourne in September, 1916.—Mr. Hy. J. Turner, a book bought from a street barrow, 'The Aye-aye,' by Sir Richard Owen, inscribed "To P. B. du Chaillu, from his friend and well-wisher, Richd. Owen"; a post-card illustrating a Fowling Scene from the wall of a tomb at Thebes B.C. 1500, on which were portrayed five figures of butterflies; and a photograph of the cases of the more obtainable British Psychids, and read notes on the characteristics and life-histories of the species.—Mr. H. Moore, a number of species of Nearctic and Neotropical *Sphingidæ*.—Mr. Frohawk, the two sexes of *Eugonia polychloros*, and pointed out that the only secondary sexual character of distinction was the hitherto unnoted fact of the males possessing considerably larger eyes.—Mr. Bunnett, the nymph cases of a species of caddis-fly.—Mr. Adkin read a short paper, "The Weather of 1916 and the Butterflies of Eastbourne."—Mr. Frohawk, a letter from Tipperary dated 1895, describing a butterfly existing there, which apparently was *Limenitis sibylla*.

April 26th, 1917.—Mr. Hy. J. Turner, President, in the chair.—Exhibition of orders other than Lepidoptera.—Mr. H. Main exhibited living specimens of *Scarabæus*, from Malta and Sicily, and specimens of the oil-beetle *Meloë*, with cells containing the bees, *Anthrophora pilipes*, on which it is parasitic.—Mr. K. G. Blair, (1) living gall-flies, *Aphilothrix radialis*, and the "truffle" gall from which they emerged; (2) *Psammocharis cardui*, a new species of Pompilid bee recently described by Dr. Perkins; and (3), on behalf of Dr. C. J. Gahan, a living specimen of the Death-Watch beetle, *Xestobium tessalatum*, which responded to stimulus by tapping.—Mr. W. West (Epsom), an ancient Microscope, date 1780.—Mr. H. Moore, a large number of insects from Demerara, ants, bees, wasps, flies, mantids, locusts, and Hemiptera, including *Menibracidæ*.—Mr. Ashdown, Swiss and North Italian Coleoptera, taken in 1914, including about forty species of Longicorns.—Mr. Lucas, a collection of British earwigs and coloured enlarged drawings of the North Forest cricket (*Nemobius sylvestris*) and of the giant earwig (*Labidura riparia*).—Mr. Lachlan Gibb, a case of the American "bag-worm," *Thyridopteryx ephemeraformis*, a large Psychid.—Mr. West (Greenwich), his collection of British Homoptera and drawers from the Society's reference collections of Coleoptera, Diptera, Neuroptera, Hymenoptera, and Orthoptera.—Mr. Turner, various species of British *Ichneumonidæ*, British Hymenoptera, and European Coleoptera.—Mr. Adkin, a copy of Fuessly's 'Archives de l'Histoire des Insectes,' 1794.—Mr. Edwards, boxes of Exotic Coleoptera, *Cicadidæ*, and Hemiptera.—HY. J. TURNER.

May 10th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—The death of two members was announced, Mr. A. J. Scollick and Mr. F. H. Stallman, the latter from wounds in France.—Mr. R. Adkin exhibited specimens of *Rhyacionia (Retinia) purdeyi* taken in Lewisham, and read notes on the history of the species as British.—Mr. Blair, a stem of aspen burrowed by the larva of the beetle *Saperda populnea* at Longicorn, in which the burrows were slit open no doubt by birds.—Mr. Hugh Main, specimens of the oil-beetle

Meloë from near Woodford, with photographs of phases in its life-history.—Mr. Newman, stems of nut from Otford with large gall masses on them; and living larvæ of *Agriades thetis*, and remarked on its great scarcity this year where last year it was in great abundance. He also made remarks on the lateness of *Celastrina argiolus*, the late flowering of the blackthorn, and the scarcity of the larvæ of *Arctia villica* and *A. caja*.—Mr. Priske noted the fact that *Pieris rapæ* went to rest under the heads of daffodils, thus gaining protection.—Mr. Frohawk said that both *P. rapæ* and *P. brassicæ* selected pale leaves as roosting perches. Mr. Frohawk, a series of aberrations of *Pyrameis atalanta*, a species rarely liable to vary naturally—(1) with divided red band fore-wing, (2) white clouds in red band fore-wings, (3) increase of size of white spots in apex and in bands, (4) reduction of white apical markings, (5) extremely large and small specimens, (6) marginal bands clouded on hind-wings, (7) black spots of hind margin of hind-wings absent, etc.—H. J. TURNER.

OBITUARY.

WITH great regret we have to record the death of Mr. Arthur James Scollick. For the past year or so he had been a sufferer from gastric trouble, and under medical advice had been living at Sidmouth in Devonshire. Late in April last it was decided that an operation was imperative, and he came to London for that purpose. The operation was successfully performed at a private nursing home in Baker Street, the subsequent critical period was weathered, and there seemed to be great hope of his ultimate recovery. Unfortunately his strength failed and he passed away on May 6th in the 60th year of his age.

In his youth Mr. Scollick evinced an interest in British Lepidoptera, and this interest was considerably strengthened by the gift from his aunt of an entomological cabinet. For many years he confined his attention to the so-called "Macros," among which he worked with much enthusiasm and considerable success. He was particularly careful in the matter of setting his specimens, and as regards the more local species he would devote much time and trouble in obtaining them in whatever stage they were to be found.

It is to be regretted that he very rarely contributed anything to the literature of entomology. Possibly a reason for this may have been his belief that in his work he was simply following a beaten track, and that any field observation or discovery that he might make would be perfectly well known to others although new to himself.

In 1881 Mr. Scollick was elected a Fellow of the Entomological Society.

He leaves a widow and two sons, the latter subalterns in the army, to mourn his loss. He will be missed by a large circle of friends including many entomologists.

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THE ENTOMOLOGIST.

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JULY, 1917.

[No. 650

NEW SPECIES OF LEPIDOPTERA FROM JAPAN AND FORMOSA.

BY A. E. WILEMAN AND RICHARD SOUTH.

NOCTUIDÆ.

Eugrapta igniflua, sp. n.

♀. Head and thorax brown, mixed with orange; abdomen grey. Forewing pale brownish-grey, finely dusted with blackish; two dark brown sinuous lines at the base enclosing some orange scales; antemedial line dark grey, sinuous, only distinct on dorsal area; postmedial line greyish, sinuous, inclined inwards under the cell, whitish, and outwardly edged with brown and orange towards costa, preceded by a white crescent and brown cloud; a brownish cloud marked with four orange elongate spots, each spot followed by a black dot; submarginal line dark grey, sinuous. Hind wings pale brownish-grey with darker sinuous submarginal line; two brown marks near tornus. Under side whitish with black discoidal mark and two dark grey transverse lines beyond,

Expanse, 32 mm.

A female specimen from Japan in the British Museum.

Dunira fasciata, sp. n.

♂. Fore wings pale ochreous, costa faintly purplish-brown, a black dot in cell and two at end of cell; antemedial line faint purplish-brown, indistinct about middle; postmedial band faint purplish-brown, bidentate on inner edge, diffuse on outer edge; terminal dots black. Hind wings ochreous, whiter towards base; terminal dots black. Under side ochreous, markings of upper side traceable.

Expanse, 17 mm.

Collection number, 1248A.

A male specimen from Yoshino, province of Yamato, Japan, May 6th, 1906. Also a specimen in the British Museum from Japan (ex Coll. Leech).

Hypenagonia mediifascia, sp. n.

♀. Fore wings whity-brown; basal area, limited by medial band, tinged with ochreous; medial band purplish-brown, darkest on the



edges; area beyond the medial band freckled with dark purplish-brown and faintly powdered with ochreous; sub-basal and antemedial lines purplish-brown, serrate, very slender; subterminal line indicated by purplish-brown dots placed between the veins and inwardly edged with white. Hind wings with colour and markings as on fore wings.

Expanse, 20 mm.

Type in the British Museum.

Kanshirei (1000 ft.) (Wileman), August 19th, 1909.

Hypena taiwana, sp. n.

♂. Fore wings pale brown, suffused and dusted with darker on the disc, the costal area paler inclining to whitish towards apex; a pale longitudinal line from base to just beyond middle of the wing, whence it runs obliquely to and becomes whiter at the apex of the wing; subterminal line dark brown with black margined white dots on it towards dorsum; terminal line crenulate; fringes white dotted with whitish and traversed by a black line. Hind wings fuscous grey; fringes whitish except near costa and about middle.

♀. Similar to the male, but the costal area is whiter and the dark clouding more intense.

Collection numbers, 1454 and 1455.

A male specimen from Tainan (sea level), March 3rd, 1907, and a female from Kanshirei (1000 ft.), March 12th, 1907.

There is a specimen, also from Tainan, in the British Museum.

Comes near *H. labatalis*, Walker.

LYMANTRIADÆ.

Psalis (?) *kanshireiensis*, sp. n.

♂. Head brownish-buff, thorax brown; abdomen buff shaded with brownish on middle segments. Fore wings brownish-buff powdered with brown except on costal area, finely irrorated with black, shaded with dingy purplish-brown on terminal area except near costa; fringes appear to be dark in colour with some metallic scales at their base. Hind wings buff, shaded with dusky towards termen. Under side similar to the upper side.

Expanse, 23 mm.

Collection number, 737.

A male specimen from Kanshirei (1000 ft.), September 27th, 1905.

Euproctis postfusca, sp. n.

♂. Head and thorax yellowish-buff; antennæ brownish-buff; abdomen pale buff inclining to yellow on anal tuft. Fore wings yellowish-buff, immaculate. Hind wings purplish-brown, fringes yellowish. Under side purplish-brown, fringes yellow; costa of fore wings yellow.

Expanse, 18 mm.

Collection number, 39.

A male specimen from Kanshirei (1000 ft.), May 17th, 1907. Two unnamed specimens of *Euproctis*, from India, in the British Museum seem to belong to the species here described.

Allied to *E. varians*, Walker.

DREPANIDÆ.

Leucodrepana serratilinea, sp. n.

♂. Fore wings white with silvery sheen, sprinkled with greyish on the basal area; postmedial line greyish, double, serrate; subterminal line greyish, interrupted, preceded by small greyish clouds between veins; terminal line brown, slender. Hind wings bluntly angled at vein 3; similar to the fore wings in colour and markings, except that the basal area is not powdered, but is traversed by a double greyish line. Under side silvery white, immaculate.

Expanse, 22 mm.

Collection number, 1623.

A male specimen from Horisha (= Polisia in Formosan Chinese), October 3rd, 1907.

PSYCHIDÆ.

Fumea (?) *taiwana*, sp. n.

♂. Fore wings bronzy-brown, powdered with blackish, especially on the median area; a black mark on the costa, and black dots on the termen. Hind wings and under side blackish.

Expanse, 18 mm.

Collection number, 1798.

A male specimen from Rantaizan (7500 ft.), May 6th, 1909.

There are several specimens from Rantaizan, Formosa (Wileman) in the British Museum.

CRAMBINÆ.

Diatraea pulverata, sp. n.

♀. Fore wings whitish powdered with brownish; postmedial line dark brown, irregular, two diffuse dusky streaks from it—one towards apex, the other towards tornus; subterminal line dark brown, almost parallel with termen, but elbowed below the costa and indented above dorsum; terminal and discoidal dots black. Hind wings white.

Expanse, 16 mm.

One example of each sex from Kanshirei (Wileman) (1000 ft.) in the British Museum. The female, being in good condition, has been described; it was taken, May 26th, 1908. The male specimen was captured on July 25th, 1906.

A female from Takow (sea level), August 6th, 1904, in Coll. Wileman (No. 289).

Crambus subterminellus, sp. n.

♀. Fore wings whitish, finely powdered with dark grey except along a streak below costa extending from base to apex and a shorter streak below the median nervure; discoidal dot black; subterminal line brown, elbowed below costa; terminal line brown, elbowed below costa; terminal dots black at ends of the veins; fringes whitish, rather glossy. Hind wings whitish, suffused with dusky; fringes whitish. Under side fuscous; costa and termen of fore wing and dorsal area of hind wing whitish.

Expanse, 28-30 mm.

Collection number, 1112.

Two female specimens from Kanshirei (1000 ft.). The type taken on September 16th, 1908; the other on June 15th, 1906.

Comes near *C. tonsalis*, Walker.

Crambus flaviguttellus, sp. n.

♂. Fore wings white, glossy, veins brownish on terminal area; antemedial line indicated by an outwardly oblique yellow streak from costa to cell; yellow dot on median nervure, and one below it; postmedian line yellowish-brown, outwardly oblique to vein 6, thence turned inwards and indicated by dots on the veins to dorsum; a short yellowish-brown line on costa beyond the postmedial line, and a short one between the postmedial and antemedial lines; discoidal dot black, fringes silvery marked with yellowish-brown. Hind wings white; tornus shaded with blackish on costal half; fringes white. Under side white; veins brown; disc suffused with brown.

Expanse, 21 mm.

Collection number, 1115.

A male specimen from Tainan (sea level), May 5th, 1906.

Culladia bipunctella, sp. n.

♂. Head brown, crown white; thorax brown, mixed with white; abdomen missing. Fore wings brown except on the dorsal area, which is white powdered with brown; postmedial line dark brown, outwardly oblique from costa to cell and edged with white, thence inwardly oblique to dorsum, above which it is indented; subterminal line white, highly sinuous, upper sinus almost reaching the black termen; two black dots above tornus; a white longitudinal streak from base to termen, clear and distinct before postmedial line, diffuse and clouded beyond postmedial line; a white mark at apex of the wing; fringes silvery, tips greyish. Hind wings whitish suffused with fuscous.

Expanse, 25 mm.

Collection number, 1133.

Two male specimens from Kanshirei (1000 ft.), April 14th, 1916.

In the British Museum are three specimens from Kanshirei and one from Bانشorio (= Bankimsing in Formosan Chinese) (Wileman, June, 1906).

Comes near *C. sinuimargo*, Hampson.

ON *CHLOROLESTES UMBRATUS*, HAGEN
(ODONATA).

BY HERBERT CAMPION.

Chlorolestes is a particularly interesting and somewhat isolated genus of Agrionid Dragonflies, peculiar to the South African fauna. Of the five species which have been described so far, *Ch. umbratus* is at once the smallest and the rarest. It was originally described by Hagen in 1862, from a male from the Cape of Good Hope ('Bull. Acad. Belg.' (2), xiv, p. 37), and, so far as I am aware, no further records have been published since that date. Another specimen, likewise a male from the Cape, was presented to the British Museum by R. W. Townsend as long ago as 1842. This example, which has lost one pair of wings and is otherwise in fair condition only, has been examined by Dr. F. Ris, and carries the following note in his handwriting: "*Chlorolestes umbrata*, Sel., det. Dr. F. Ris. This specimen was confronted at Rheinau with the typical ♂ labelled by Hagen and de Selys from the Selys collection, and found to agree sufficiently with that type. 29, iv. 1913." While going through the Odonata belonging to the University Museum of Zoology, Cambridge, I found a third male, as well as a specimen of the female sex, which was hitherto unknown. Mr. Hugh Scott, the Curator in Entomology at that Museum, has kindly informed me that his register shows them to have been obtained in Cape Colony in 1897 by Miss Wilman. These insects have now passed into the keeping of the British Museum (Natural History), and, as they are in a fine state of preservation, it seems advisable to publish fresh descriptions of both sexes of this little-known species.

The two males now in the British Museum resemble one another very closely, but differ in several respects from the one described by Hagen. Indeed, in the absence of the direct comparison with the type of *umbratus* which has been made by Dr. Ris, I should doubtless have felt disposed to treat the material before me as representing an undescribed species. According to what was written by Hagen and De Selys in 1862 (*loc. cit.*) and 1886 ('Mém. Cour.', xxxviii, p. 74), *umbratus* is especially characterised by (1) the small size; (2) the small number of postnodals in the fore wing; (3) the simple venation; (4) the form of the anal appendages; (5) the unicolorous orange pterostigma; (6) the vividness of the bronze-green of the body; and (7) the green coloration of the face and the base of the antenna. Of the characters mentioned, the only ones which really apply to the British Museum specimens are (3) the simplicity of the venation, (4) the anal appendages, and (5) the

colour of the pterostigma. As regards (1) and (2), not only are the Townsend and Wilman males considerably larger than the Hagen male, but the number of postnodal cross-veins is also much greater. The following are the actual figures:

	Hagen's ♂.	Townsend's ♂.	Wilman's ♂.
Length of abdomen	31 mm.	38 mm.	37.5 mm.
Length of hind wing	21 mm.	23 mm.	24.0 mm.
Number of postnodals in } fore wings }	12-13.	18 (one wing only).	18-19.

Finally, the colour-characters (6) and (7) do not agree at all well with Hagen's statements, as will be gathered

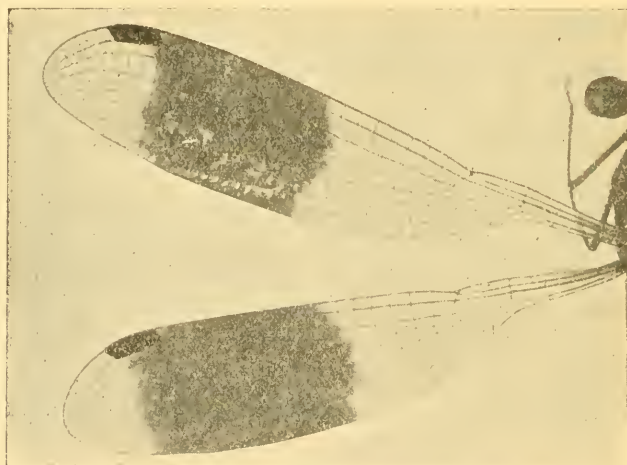


Fig. 1.—Wings of *Chlorolestes umbratus*, Hagen. ♂. Cape Colony, 1897, Miss Wilman.

Photo. A. W. Campion.

from the following descriptions of Miss Wilman's specimens:

♂. Length of abdomen, including anal appendages, 37.5 mm.; length of hind wing, 24 mm.

Labium and genæ yellow. Labrum glossy black. Clypeus dark reddish-brown. Frons metallic green. Upper surface of head black, with green reflections. First joint of antenna brownish-yellow, second joint brownish-yellow to dark brown, filament dark brown.

Prothorax pruinose grey, with a pair of large oval pale spots on the middle lobe; yellowish at sides; hind margin rounded, slightly raised. Dorsum of thorax proper also pruinose grey, with a narrow yellow line on each side, antehumeral anteriorly, and bordering the humeral suture at its posterior end, which does not reach as far as

the base of the thorax. Mesepimeron blackish, with a golden-yellow area lying in the lower (anterior) half; a large, cuneiform, whitish spot reaching forward from the base, and bordering the humeral suture. Metepisternum yellow below (before) the metastigma; above (behind) the metastigma blackish, bordered with yellow on each side. Mesinfraepisternum dark brown above, yellow below. Metepimeron whitish, variegated with yellow; a superior blackish line near the pectus. Pectus whitish, with a pair of lateral elongate blackish spots and an anterior median fusiform black spot.

Legs: Coxæ pale pruinose; femora dark brown to blackish-brown above, pale brown below; tibiæ pale brown; tarsi blackish.

Wings: 18-19 postnodals in fore wings and 15-17 in hind wings. The anal crossing slightly proximal to the level of the first antenodal.

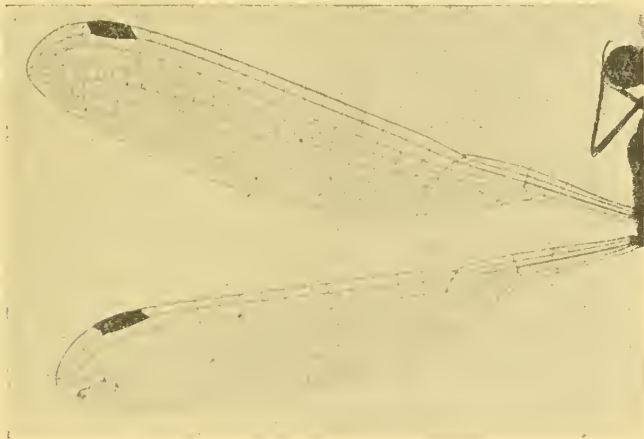


Fig. 2.—Wings of *Chlorolestes umbratus*, Hagen. ♀. Cape Colony, 1897, Miss Wilman.

Photo. A. W. Campion.

Wings ceasing to be petiolated at the level of the middle of the quadrangle. A milky-white band crossing each wing between the level of the nodus and the level of the origin of M_2 ; a broad brown band traversing the fore wings between the level of the origin of M_2 and the level of the proximal end of the pterostigma; in the hind wings the brown band reaches outwards as far as the level of the middle or distal end of the pterostigma. Pterostigma unicolorous dark orange, bounded by black nervures, covering from two to two and a half cells.

Abdomen dark chocolate-brown, glossy; segments 1 and 2 and part of segment 3 overlaid with metallic green; a whitish pubescence on segments 8 to 10.

Upper anal appendages longer than segment 10, glossy black, forcipate, obtusely bent near the base, becoming stouter beyond the bend until an internal prominence is reached a little before the apex,

and ending in a blunt point: viewed in profile, the entire length of the appendages is seen to lie in a single plane. Lower appendages very short, pointed.

♀. (Allotype.) Length of abdomen, including anal appendages, 33.5 mm.; length of hind wing, 25 mm.

Labium and genæ yellow. Labrum glossy black. Clypeus dark reddish-brown. Frons and upper surface of head glossy black, without conspicuous green reflections. Occiput broadly edged with yellowish-brown. First and second joints of antenna brownish; filament lost.

Prothorax brown, with a pair of large oval yellow spots on the middle lobe; hind margin rounded, slightly raised, yellow at sides. Dorsum of thorax proper black, with a narrow yellow line on each side, as in the male. Mesepimeron mainly blackish; light brown inferiorly (anteriorly); a short yellow line bordering the humeral suture basally, with an elongated spot of yellowish-white lying beside and below it. Metepisternum yellow below (before) the metastigma; mainly brown above (behind) the metastigma. Mesinfraepisternum as in male. Metepimeron principally yellow; a superior blackish spot near the pectus. Pectus as in male.

Legs as in male.

Wings: 15-16 postnodals in fore wings and 13 in hind wings. Wings entirely hyaline. Pterostigma as in male.

Abdomen dark chocolate-brown, glossy; the sutures between the more proximal segments yellow; some green reflections on segments 1 and 2. Anal appendages glossy black, short, subconical. Ovipositor, including the palps, not projecting beyond the level of the end of the abdomen; each of the lower valves with a convex ventral surface in the apical third of its length, armed with a longitudinal row of saw-like teeth; palps curving strongly downwards.

A NEW EMBIDOBIA FROM INDIA.

BY A. A. GIRAULT.

REARED from the eggs of *Embia major*, Imms, at Bhowali, Kumaon, Himalaya, India, August 24th, 1912 (A. D. Imms).

Embidobia brittanica, new species.

Female.—Length, 0.70 mm. Differs notably from the genotype in having the abdomen, legs, scape, and funicles 2-5 golden yellow. Fore wing dusky rather broadly at apex and with a faint cross-stripe from the marginal vein (hyaline in the genotype). The abdomen at apical fourth, however, and sometimes a cross-band between base and middle, dorsad, dusky; otherwise black or dusky black. Differs farther as follows: Funicle 1 is somewhat shorter, that is, slightly longer than wide; the other funicle joints also shorter, that is, wider than long, 5 twice wider than long; the propodeum is striate between the spiracles, at first (mesad) longitudinally, then obliquely; segment 2

of the abdomen is shorter than 3 (counting the first body segment as 2) 2 striate at proximal half (in the genotype striate for proximal three fourths), 3 striate at base (for nearly the entire segment in the genotype, though but faintly after middle); segment 4 shorter than 3 (longer in the genotype, sub-equal to 2). The whole of the venation from base to the apex of the elongate postmarginal vein bears conspicuous, long, stiff bristles (in the genotype less conspicuous, the postmarginal vein otherwise indistinct but for them). Marginal vein nearly as long as the stigmal vein, thrice longer than wide (in the genotype hardly twice longer than wide, less than half the length of the longer stigmal); otherwise the same. Mandibles with three small acute teeth at apex.

Three females.

Types.—Catalogue No. 20601, U.S. National Museum, the females on a slide.

The original description of the genus needs emendation as follows:

Antennæ in female 11-jointed, the club 4-jointed; lateral ocelli distant from the eyes; scrobes very deep but short, separated by a thin carina; eyes hairy; propodeum with a curved lateral carina; the postmarginal vein is present, *elongate*, over twice the length of the stigmal; the latter very narrow, its knob small and abrupt. Mandibles *tridentate*, the middle tooth shortest, the others subequal. Abdomen depressed from dorsal aspect, ovate, the base truncate and margined, none of the segments very long, the abdomen a little longer than the rest of the body. Habitus of *Telenomus*. Meson of propodeum declivous and against the abdomen (but when visible striate as in *britannica*, but not out to the spiracles). Male antennæ 12-jointed, moniliform, except the club and funicle 1, the former longer than the latter, longer than the pedicel (which is not so elongate in the male). From types of the genotype.

ON THE COCOON COLOUR OF VARIOUS INSECTS.

BY G. T. LYLE, F.E.S.

UNTIL I read Mrs. Merritt-Hawke's paper, "On the Factors which determine the Cocoon Colour of *Plusia moneta* and other Lepidoptera," published in the 'Trans. Entom. Soc., 1916, p. 404, I was under the impression that for some time past it had been an accepted fact that the variation in colour of the cocoons of *P. moneta* is due entirely to the absence or presence of moisture.

Some years ago I reared a considerable number of the larvæ of this species with the idea of obtaining hymenopterous parasites, and my experience abundantly proved that, given a total absence of moisture, the cocoons were invariably white, while,

on the contrary, cocoons spun in a tin box, in which a considerable amount of moisture was caused by the food-plant placed with the larvæ, were just as invariably of a bright yellow colour. To test the effect of damp, I immersed two of the white cocoons, which had been spun in chip boxes, in water, and was surprised at their rapid change to yellow.*

I have noticed a somewhat similar change in the cocoons constructed by ichneumon of the genus *Phytodietus*. These parasites are frequently met with, preying, as they do, on some of our commonest species of Tortrices; the cocoons they make are thin, papyraceous, and pure white in colour, but if dipped in water at once turn to a deep brown; indeed, a very slight degree of moisture is sufficient to cause the change, so that it is very rarely a cocoon is found in its natural position, between the leaves spun together by the host, which is anything but brown in colour.

That all pale cocoons do not turn colour when subjected to moisture is well known. For instance, the white cocoons often constructed by the silkworm *Bombyx mori* suffer no change when thoroughly soaked in water, and the cocoons of *Simæthis fabriciana* furnish another common example.

The subterranean cocoons made by the Braconids *Meteorus deceptor*, *M. chlorophthalmus*, and *Zele infumator* are pure white, and remain so, no matter how damp is the earth surrounding them. Many of the genus *Apanletes* also spin white silk, which is not affected, though I have noticed the curious ball of silk in which the cocoons of *A. congestus* are enclosed to take a yellowish tint when exposed to the weather.

It seems only reasonable to conclude that the viscous liquid from which silk is spun varies in its chemical constitution, and it is to be hoped that some entomologist with a knowledge of chemistry may take the matter up, and so throw light on a most interesting subject.

Mayfield, Lensfield Road,
Cambridge.

LIST OF BUTTERFLIES TAKEN IN THE NEIGHBOURHOOD OF LOS ANGELES, CALIFORNIA.

BY MARGARET E. FOUNTAINE, F.E.S.

THESE butterflies were all taken from the beginning of February to the middle of April, and include the following:

1. *Papilio zelicaon*, Boisd. First seen end of January. Very common the beginning of March, but only so especially in one

* I can confirm Mr. Lyle's observations of the cocoon colour of *Plusia moneta*. Cocoons found *in situ* on food-plant in garden, yellow; spun up in small dry breeding cage, white.—H. R.-B

locality, on Melrose Avenue (where fennel flourished on all the waste ground), and it was not difficult to catch, as it flew round all the little gardens, which in Los Angeles are never fenced in, frequently settling on the flowers of the scarlet geraniums, which grow so luxuriantly in Southern California.

2. *P. rutulus*, Boisd. This much coveted prize of Los Angeles schoolboys began to fly towards the end of March in the Holly Spring Valley, and was quite common in Verduga Park, near Glendale, in April. The males were much larger and finer than the females.

3. *P. eurymedon*, Boisd. With the exception of one female taken in Laurel Canyon, this butterfly seemed mostly to be met with on the summits of the hills, where the males flew on warm days in March, but they were never at all plentiful. I also took one male near Glendale in April.

4. *Pieris occidentalis*, Reakirt. The western form of *P. protodice* was about the commonest species to be met with, especially on the foot-hills behind Hollywood, all through February, March, and April.

5. *Anthocharis sara*, Lucas. This lovely little butterfly began to fly at the Holly Springs at the very end of January, and was still on the wing, though getting rather *passé*, when I left Los Angeles, middle of April. The females were rare at first, though not unfrequently to be met with a little later. Laurel Canyon was the best locality for *A. sara*, but it flew in every valley round Los Angeles, I might almost say abundantly, especially throughout February and March. I took three females with the ground colour yellow, I suppose, var. *stella*.

6. *Colias eurytheme*, Boisd. Several forms of this variable butterfly were fairly common in most of the localities I visited during February and March. In April it seemed almost to disappear, no doubt to return later on in its summer brood.

7. *Danais plexippus*, Linn. Common everywhere.

8. *Dione vanillæ*, Linn. One male specimen only taken on Melrose Avenue in March. I never saw another.

9. *Melitea whitneyi*, Behr. Common in several places on the hillsides near Hollywood, also in Santa Monica Canyon, in March and April.

10. *Euvanessa antiopa*, Linn. Hybernated specimens were to be seen anywhere; in fact, I once observed one flying in Broadway.

11. *Pyrameis atalanta*, Linn. Frequently seen in various places. Up Holly Springs Valley I saw females laying eggs on stinging nettles in March.

12. *P. huntera*, Fab. The most common of its genus. I saw several flying round a lauristinus hedge in full bloom in the end of January.

13. *P. cardui*, Linn. Freshly emerged specimens in the beginning of February were rather darkly shaded.

14. *Junonia cœnia*, Hüb. Occasionally met with in March and April.

15. *Limenitis (Basilarchia) lorquini*, Boisd. Freshly emerging during the first fortnight in April. The best place for it was the Holly Springs Valley, where, I was told on good authority, that a little later on it occurs in great abundance. I also took it near Glendale and in Santa Monica Canyon.

16. *Lemonias virgulti*, Behr. One male specimen only from "Look-out" Mountain, above Laurel Canyon, in March. I never saw another.

17. *Lycæna sonorensis*, Felder. This exquisite little butterfly was on the wing in Santa Monica Canyon on April 2nd. The females were quite as common, if not more so, than the males, and were in better condition. It was fairly common in one restricted area near a stream right down in the canyon, but I failed to find it farther up the gorge, and never came across it at all in any other locality.

18. *L. acmon*, Dbl.-Hew. Was fairly common in March and April. The best place for it was a very flowery mountain side, intersected with small gullies, on the way to the Universal City.

19. *L. antiacus*, Boisd. Very common everywhere in March and April.

20. *L. pseudargiolus*, Boisd.-Lec. Widely distributed in February, March, and April, but not very common.

21. *Thecla melinus*, Hüb. Occasionally met with on summits of hills and elsewhere.

22. *Thecla affinis*, Edw. Very common everywhere.

23. *Cænonympha californica*, Dbl.-Hew. Most of the specimens I took were of the winter form—var. *galactinus*, Boisd.—but one or two I have are undoubtedly var. *eryngii*, Edw. I came across a small brood of this most interesting little butterfly, all more or less *passé*, at the very beginning of February, at the foot of Hollywood Mountain. Afterwards this insect entirely vanished, till it began to reappear about the middle of March, when it soon became abundant on all the foot-hills around Hollywood and elsewhere. Some of the specimens were so white as to be easily mistaken for a small *Pieris* when on the wing. The females were always scarce.

24. *Hesperia tessellata*, Scud. This was the commonest Skipper round Los Angeles in March and April.

25. *Thanaos clitus*, Edw. Common on "Look-out" Mountain, and occurred in many other localities in March and April.

26. *Atrytone melane*, Edw. Met with here and there, but never very abundant.

SOME REMARKS ON THE DISTRIBUTION, AND DEVELOPMENT OF SPECIES AND SUBSPECIES OF THE SATYRINE GENUS *MELANARGIA*, MEIGEN, IN ITALY, FRANCE, SPAIN, AND ALGERIA.

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

(Concluded from p. 127.)

Mr. Platt Barrett, who had an intimate and personal knowledge of the Sicilian dark form of *Iapygia* (var. *Atropos* ?), and of the Sicilian *Galatea* (var. *Syracusina*), says ('Proc. South Lond. Nat. Hist. Soc.' 1913-14, p. 97): "The females of *Lucasi*" (i. e. in the British Museum Collection) "agree exactly with my dark specimens of *Galatea* taken at Messina, except that the Sicilian examples are a little larger"—further evidence of the specific identity of the two "species" and of the road by which the eventual *Lucasi* arrived in North Africa.

I may add that when I made my first (and last) acquaintance with the living female *Iapygia* var. *cleante* in the Cevennes, on the Causse Mejean above Florac in 1901,* I had great difficulty in separating them from the local form of *Galatea*, even after capture. In the cabinet, too, I find the sexes of both *Lucasi* from Algeria and *Galatea* from the south of Europe inseparable in many instances.

M. lucasi is first described by H. Lucas ("Exploration Scientifique de l'Algerie, Hist. Nat. des Animaux Articules, Sciences Physiques," 'Zoologie,' vol. iii, p. 355, published in Paris in 1849), from a male example captured in 1840-1, or 2, and he refers it with a ? to *Arge clotho* thus :

No. 24. ARGE CLOTHO ? (pl. ii, fig. 4).

(Hübner, "Samml. Europ. Schmett.," pl. xlii, fig. 190a, 191; Dup., "Hist. nat. des Lépid. de France," suppl. tom. 1, p. 167, pl. xxv, fig. 1a 4.)

"I only possess two examples of this species, which I consider, with a doubt however, as being only a regional form of *A. clotho*, in which the black coloration dominates. I only met with one single individual male, which I took in April in the environs of Bougie about half-way to Gouralia; as regards the female, which was sent me by Dr. Boisduval, it was taken in Sicily.

"Pl. ii, fig. 4, *A. clotho* ? natural size, upper side; 4a the same, a female, viewed in profile, under side," etc.

The above mentioned figure of the male has been copied in colour, and is placed at the foot of the male series in the British

* 'Entomologist's Record,' vol. xiii, p. 310.

Museum Collection. 4a is a fine figure in which the outward branch of the vein (Oberthür's line) is clearly shown. Otherwise it is not to be distinguished, or the male figure either, from the Sicilian form of *Galatea*, and as Lucas did not differentiate this Algerian butterfly as other than a form or geographical race of *Galatea*, Rambur's later name stands by right of priority.

I have compared the respective series of *Galatea* and *Lucasi* in the South Kensington, and find it extremely difficult to separate the two by M. Oberthür's direction of the fork on the nervure nearest the inner margin which I call Oberthür's line; *i. e.* the fork of the Y in *Galatea* turning inwards, in *Lucasi* outwards.

It is somewhat remarkable that M. Oberthür omits to mention M. Daniel Lucas's description of the egg, larva, and pupa of *M. lucasi*, which appeared in the 'Ann. Ent. Soc. France' (vol. lxxv, p. 29 *et seq.*), accompanied by an excellent figure (pl. iii, figs. 8, 8a, 8b) of the larva when full-fed, and of the pupa. He says that he had no difficulty in rearing them on various kinds of grasses; the ova laid by a living female in June, 1904, hatching out in July, and the young larvæ, which stopped feeding in November, resuming the following March. By the end of April they were full-fed, and pupation took place.

His description of the larva might serve for that of *Galatea*, the green form: "Robe vert, ligne dorsale d'un vert foncé; sous-dorsale d'un vert un peu plus foncé que la robe. Au dessus des stigmates on remarque deux lignes de même couleur que les sous-dorsales. La région abdominale et les fausses pattes membraneuses d'un vert-bleu plus foncé que celui de la robe. Stigmates indiqués par des points noirs très apparents sur les premiers, quatrième, cinq., sept., huit., neuve., dix., et onzième anneaux."

Attention is also drawn to the rose-coloured appendices or anal spikes, and we shall all agree with M. Lucas in his conclusion that the resemblance in form and characters of the larva, the colour, the disposition of the anal spikes tend to confirm *M. lucasi* as a late Darwinian form of *M. galatea*, a conclusion generally supported by the very slight differences which separate the insects in the perfect state.

Seitz, who has otherwise been singularly unfortunate in his diagnosis of so many of the paleartic Satyrine butterflies, ranks *Lucasi* no higher than a form of *Galatea*; and the author of the descriptions of other members of this group blindly follows the classification of Staudinger. Indeed, in this, as in many other respects, I wonder why so many British entomologists also desert the safer and sounder index compiled by the late W. F. Kirby, whose nomenclature is nearly always based on patient study of the authorities, and should satisfy the most avid of priority hunters.

Lang figures the larva of *Galatea*, apparently an indifferent copy from some other author, as copies are apt to be ('Butterflies of Europe,' pl. lxxvi, fig. 1). A more convincing and minute study, bearing the stamp of familiarity with the living model, is that of the larva in its several moults, and of the pupa on pl. iii, fig. 4, of Buckler and Hellins's 'Larvæ of the British Butterflies and Moths,' vol. i. Frionnet ('Premiers États des Lépid. Français,' pp. 209-10) remarks that the green form of the larva seems to produce principally females, and Lelièvre, writing in the 'Feuille des Jeunes Naturalistes' (1895, p. 61), comments on the wonderful vitality of the larva, which under his observation remained four months without food. Frionnet also states that favourite grasses of the species are in France: *Phleum pratense*, *Holcus mollis* and *H. lanatus*, *Brachypodium pinnatum*, and *Triticum repens*.

As regards, then, the specific value of *M. lucasi*, after reading Mr. Harold Powell's and M. Lucas's notes on the subject, it is difficult to decide whereon the claim to separate identity rests. Ova extracted from the body of the female closely resembled those deposited by *Galatea procida* in the South of France. The larva also is practically indistinguishable, save for size, from that of *Procida*. The pupa differs only from that of *Procida* in the same respect. The habits of the larva and the methods of pupation are identical, while *Lucasi*, following upon the lines of variation common to all the three in the group, as a perfect insect resembles *Procida* in every way except that it is a finer insect; haunting, after the fashion of its congeners, grassy plots on the hills and meadows, and not the drier hills and plains sometimes affected by *Lachesis*, and but seldom or never in my experience by *Galatea*.

The resemblance also of *M. lachesis* in its earlier stages to *M. cleante galatea procida* is emphasised by Mr. Harold Powell in his "Notes on the Ovum and Young Larva" ('Entomologist's Record,' vol. xviii, 1906, pp. 302-305): "The ova received from Miss Fontaine from Albarracin, South-East Spain, August, 1905," he says, "in general appearance resembled those of *M. var. procida*." He then proceeds to describe the young larva with great minuteness; but the observations were not carried beyond the first instar; at all events, no further publication appears to have been made on this occasion.

Millière ('Icon.,' vol. ii, p. 92) figures *Lachesis* (*loc. cit.*, pl. lxii, larva, fig. 4, imago, fig. 5), a very beautiful and characteristic drawing. Of the larva he writes *inter alia*: "Sa couleur generale est carnée avec les lignes ordinaires d'un carminé pâle"; and to a somewhat detailed description of the larva he adds that it is a night-feeder and affects by preference the grass *Lamarckia aurea*.

I have no present information whether there is a green form of this larva, but enough has been said to demonstrate how

nearly the larva of *M. lachesis* approaches that of *M. galatea*, the brownish-white form. The late Th. Goossens, who made a large collection of larvæ, and whose "Iconographie des Chenilles" is published in the Bulletin of the Association des Naturalistes de Lavallois-Perret, reported (*loc. cit.*, 1902, p. 8) that he had possessed this larva, and observes that the caudal spikes are shorter than those of *Galatea*.

In conclusion, I take the liberty to quote a passage from M. René Oberthür's letter on the subject to which I have alluded :

"While crossing the Department of Aude I accidentally came on a spot where *Lachesis* and *Galatea* were flying together. The form of *Galatea* was very dark (= *Procida*), but was already on the wane—it was the 16th of July. On the other hand, *Lachesis* was, or seemed to be, at the zenith of its emergence. The first example taken by me I thought to be an aberration, so completely did it differ from the form of the Pyrénées-Orientales; but from several taken afterwards I recognised that I had secured a quite special form."

M. Oberthür then goes on to indicate the exact locality, and adds that, continuing his journey to Vernet-les-Bains, he did not again on the way encounter *Lachesis*.

This valuable observation, therefore, seems to me to suggest that *Galatea* and *Lachesis* approach one another gradually and by approximating forms, and may not even yet be divided by a hard-and-fast line: "Ces deux espèces peuvent donc bien s'entendre à l'occasion."

Enough has been said, also, to demonstrate how closely the immediate developments of *Galatea* approach the generic type form, and to warrant the assumption that while *Galatea* and *Lucasi* have hardly yet separated sub-species from species, *Galatea*, *Lachesis*, and *Iapygia* have arrived at a more pronounced stage in the evolution of species, even though there may still be points where they meet and may even intermingle, producing intermediate forms.

I may add, finally, that this review was compiled by me nearly three years since—before the war—and that if there are errors, more especially as regards authorities, I must plead the preoccupations of the moment as an excuse for leaving my references unverified. The only amendments I have made in the original script follow naturally upon our enlarged knowledge of the distribution of the several western species, due to the investigations of M. René Oberthür (*in litt.*) and M. Rondou, already acknowledged.

ERRATUM ET ADDENDUM.

Page 122, line 12 (*antea*), for "Basses-Alpes," read "Basses-Pyrénées."

Id. line 21. Dr. J. N. Keynes also reports *Lachesis* on the Spanish side of the Port de Gavarnie, in the lower part of the Val d'Arras on July 10th, 1909 ('Entomologist's Record,' xii, 1910, p. 110).

NEW BUTTERFLIES OF THE FAMILY NYMPHALIDÆ.

BY ARTHUR HALL, F.E.S.

Colœnis julia var. *dominicana*, subsp. nov.

Male.—Upper side bright fulvous. Fore wings with the transverse subapical band shaped as in the female of *C. delila* of Jamaica, but deep black and sharply defined throughout, also a similar tooth-like black projection on the outer margin. Hind wings with the black marginal band as in *delila* ♀, but even more distinctly divided by the fulvous spots.

Underside as in *C. delila*.

Habitat.—Dominica (Kaye). Two ♂♂. Several co-types in the collection of W. J. Kaye, Esq.

This form is interesting on account of the resemblance of its *male* to the *female* of *C. delila*, the male of the latter being almost immaculate above. The only mainland form with equally heavy bands is typical *C. julia*, but this is of a much redder tint and the shape of the wings is different.

Phyciodes zamora, sp. nov.

Male.—Upper side blackish-brown. Fore wings with a small cream-coloured spot at the end of the cell, and beyond the cell two large, trifid, creamy-yellow spots, the upper one placed between the subcostal vein and the upper median branch, the lower one, which is nearly circular, between the upper median branch and the submedian vein; two small, orange-yellow, submarginal spots between the lower radial and the middle median branch. Hind wings with a very broad, central, transverse band of pale creamy-yellow and a fine, waved, submarginal line of the same colour. Cilia fuscous.

Underside: Fore wings yellow-brown from the base to beyond the middle, blackish in the disc, brown on the outer area; pale-yellow spots as above; the apex is tipped with white, and there is a fine, dark-brown, submarginal line. Hind wings ashy grey, with fine, brown, transverse lines; a diffused, brownish, discal band bearing four or five small, dark-brown spots. Expanse, 1.5 in.

Female.—Similar to the male, but larger, the fore wings above with four orange, submarginal spots and a small, pale-yellow spot on the costa near the apex. Hind wings paler beneath. Expanse, 1.75 in.

Habitat.—Venezuela. ♂ ♀.

Agrees in the shape of the wings with *P. ianthe*, F., but in markings not much like any other species.

Phyciodes cortes, sp. nov.

Male and female.—Closely allied to *P. texana*, Edw., from which it scarcely differs above, except that the hind wings have on the basal area only a few pale-yellow scales in place of rufous spots; on the underside, however, the base of the fore wings is pale ochreous,

this colour not extending beyond the two white spots in the cell, and the hind wings are of a more yellowish tone, and have the white band distinctly broken into spots, and the black discal dots smaller, but distinct.

Habitat.—Cuatla, S. Mexico. June and July. Eleven ♂. One ♀. This species has perhaps been overlooked owing to its resemblance to *P. texana*, but it is quite distinct both from *texana* and from the white-spotted aberrations of *P. ardyi* frequently met with. It would seem to be very local, as during three visits to Mexico I have met with it only at Cuatla.

Phyciodes carrera, sp. nov.

Male.—Closely allied to *P. ptolyca*, Bates, and *P. alethes*, Bates, but much smaller, the fore wings more produced at the apex. Upper side marked almost exactly as in *P. ptolyca*, but the central band of the hind wings is more curved, the submarginal line is distinctly thickened anteriorly, and there is no trace of the second submarginal line.

Underside as in *ptolyca*, but the fore wings are pale ochreous from the base to the end of the cell, and the spots in and below the cell are defined with fulvous, not black. The hind wings are of a paler and more ashy-grey tint, without any ferruginous tinge; there is a distinct whitish median band, and three prominent, deep black discal spots. Expanse, 1 in.

Habitat.—Amatitlan, Guatemala. 4000 ft. (July and August, 1904.) Ten ♂♂.

P. carrera is the smallest known species of the genus, and belongs to so difficult a group that I have long hesitated over describing it, but as all ten specimens are exactly alike, and differ from the types of all the species enumerated by Godman and Salvin, it is hoped that its description may be justified. Although the *ptolyca* group of *Phyciodes* contains many extremely similar forms, I believe the majority of them will prove to be as distinct as the *Melitæas* of the group of *M. athalia*.

Phyciodes aquila, sp. nov.

Male.—Size and general pattern of the large, typical form of *P. liriopæ*, Cram., from the Lower Amazon, but on the upper side the base of the fore wings is solidly black to beyond the end of the cell, with only a single, small, fulvous, discoidal spot; the marginal border is also more broadly and deeply black, enclosing a small fulvous spot at the hinder angle, and the fulvous subapical band is distinctly divided into four spots. Hind wings with the basal third black; marginal band broader and blacker than in *liriopæ*, containing only two or three fulvous lunules towards the anal angle, the anterior ones being absent. Expanse, 1.25 in.

Habitat.—El Baldio, Colombia. 5400 ft. Seven ♂♂.

This species has precisely the same relationship to *P. liriopæ* as *P. cluvia*, G. and S., has to *P. anieta*, Hew.; it is, in fact,

very similar to *P. cluvia*, but is more than twice its size and has much broader wings. An allied form seems to be *P. selene*, Rüb., figured by Seitz, but this is a much redder species, with less black on the primaries.

Phyciodes notus, sp. nov.

Male.—Wings shaped as in *P. morena*, Rüb. Upper side of both wings dark brown. Fore wings with two very small, yellow, post-discal spots, one near the apex, the other below the lower radial. Hind wings with three fine, yellowish lines, the median one indistinct, the discal one nearly straight, the submarginal one strongly waved.

Underside: Fore wings with the basal half yellow-brown, discal area black, apex and outer margin paler yellow-brown; a transverse spot outlined in dark brown at the end of the cell, and in the black discal area two transverse yellow-brown spots, one, which is bifid, in the median interspaces, the other subcostal and trifid; a very fine, waved, tawny submarginal line. Hind wings light yellow-brown crossed by three fine transverse tawny lines, the first near the base, the second at the middle, the third submarginal, and surmounted by some indistinct pale lunules; a discal series of five black dots. Expanse, 1.35 in.

Habitat.—Pozuzo, Peru. One ♂.

A very dark species, allied to *P. morena*, Rüb., from Cuzco, and *P. gaujoni*, Dognin, from Ecuador, but differs from both in the fore wings above having two small yellow post-discal spots and no submarginal line. As compared with a series of *P. gaujoni*, which it most resembles, the under side is of a deeper yellowish colour, with much more black in the disc of fore wings, and the hind wings are much more clearly and simply marked, with smaller black discal dots and no darkening of the outer margin.

Chlosyne hyperia var. *irrubescens*, subsp. nov.

Male and female.—Similar to *C. hyperia* var. *marianna*, Rüb., but the hind wings above with a large round spot of deep mahogany-red in the middle of the wing.

Habitat.—Cuautla, S. Mexico (June and July). Six ♂♂, one ♀.

This form seems to indicate an approach towards *C. janais*, Drury, but the spot on the hind wings is much smaller and much deeper red; its occurrence is interesting, because *C. hyperia* and *C. janais* are not connected by intergrades like the very similar *C. adelina* and *C. lacinia*, but exist as perfectly distinct and independent species. *C. adelina*, Stgr., and *C. misera*, Feld., which are referred to by Röber in Seitz to *C. hyperia* are both forms of *C. lacinia*. The account of *Chlosyne* in Seitz's work is full of errors, and the whole genus will need revision.

(To be continued.)

NOTES AND OBSERVATIONS.

DIANTHIDIUM IN THE PHILIPPINE ISLANDS.—No Anthidiine bee has hitherto been recorded from the Philippines, but I have just received from Prof. C. F. Baker a specimen collected at P. Princesa, Palawan. It agrees with *Anthidium minutissimum*, Bingham, from Jalar, and with *A. javanicum*, Friese, from Java. It is, however, a *Dianthidium*, and since Bingham's name has priority, it will stand as *Dianthidium minutissimum*.—T. D. A. COCKERELL; University of Colorado, Boulder, Colorado.

SPHINX LIGUSTRI TWO WINTERS IN PUPA.—On June 18th, 1915, a female of *S. ligustri* was brought to me which had laid eleven ova in the box it was brought in. Ten larvæ emerged on July 2nd, resulting in eight pupæ which passed over the winter of 1915-16. Seven imagines emerged during June, 1916—two on the 7th, three on 9th, one on 15th, one on 17th. One pupæ laid over the winter of 1916-17, and a fine female emerged on June 6th last. I thought perhaps it might be interesting to record this retarded emergence.—H. L. DOLTON; 36, Chester Street, Oxford Road, Reading.

PREPONDERANCE OF THE FEMALE SEX IN BUPALUS PINIARIA.—On September 20th, 1916, I beat out several larvæ of this species, which duly pupated. During the latter end of May last seventeen specimens emerged in all. Fourteen were females and three male; twelve of the females are like the one figured in 'Moths of the British Isles,' Pl. cxli; one female is the same colour as the male (Fig. 9) on the same plate, and the other female is just a shade lighter than the last in colour. Is not this preponderance of females rather extraordinary, because I have often noticed when netting this species one usually gets about ten males to one female?—H. L. DOLTON; 36, Chester Street, Oxford Road, Reading.

LARVA OF DILINA TILIÆ ON CORK TREE.—Last September my son took a full-fed larva of this moth at Torquay upon the cork tree, which is common in that district. It duly pupated in a few days, and the perfect insect emerged at the end of May; a fine female. I was under the impression that *D. tiliæ* was rather conservative in its diet, and that lime and elm were its only foods. Perhaps a note upon the novel diet of this moth may be of interest.—H. D. FORD; Thursby Vicarage, Carlisle.

SATURNIA CARPINI IN THE ORKNEY ISLES.—On May 15th in the Orkney Islands I took, at an altitude of 600 ft., a male and female of the above species resting in the heather.—Sub-Lieut. F. SCHUNCK, R.N.

PLUSIA MONETA IN SURREY.—It has been suggested by some collectors that possibly the extremely severe winter we have just had has seriously affected the appearance of this lovely insect. I see it is recorded from Middlesex in your issue of June, 1917. Collecting at Horsley on June 3rd this year, Mr. Alf. J. Lawrance and myself found

a fair number of cocoons containing pupæ and larvæ—the larvæ varied in size from quite small to full fed—on both aconitum and delphinium.—A. K. ING; 57, Dunstan Road, Kingston-on-Thames.

BREPHOS PARTHENIAS.—This moth appeared in this district as late as April 24th. I notice that in last month's 'Entomologist' its appearance on April 5th was commented upon, but we evidently beat that record here. Our weather accounts for this; on April 11th we had a blizzard followed by hard frost. Heavy snow upon the 14th; snow and frost again upon the 16th, a few days later warm weather came, and upon the 24th *B. parthenias* were flying in numbers.—H. D. FORD; Thursby Vicarage, Carlisle.

ABUNDANCE OF THANAOS TAGES, LINN.—In the Headley and Box Hill District, the Dinky Skipper was particularly common on May 26th. In fact, it was flying about everywhere, one being friendly enough to settle on my luncheon tin as I was eating lunch in Ermyon Street.—L. C. E. BALCOMB; 26, Hardman Road, Kingston-on-Thames.

INFLUX OF LIBELLULA DEPRESSA, L.—This large and handsome Dragonfly has been very scarce in Suffolk during the last twenty-five years. Paget considered it common about Yarmouth in 1834, whence probably comes Stephens' record from that county; I saw a few along with *L. fulva* (as recorded by me at E.M.M., 1897, p. 106), at Beccles in 1892; and only one at Ipswich—on July 30th, 1897—in the course of twelve years' collecting thereabouts. Recently Colonel Nurse has noted the species at West Stow and Timworth, near Bury St. Edmunds. I have collected at Monks Soham for thirteen years and had never seen the species until May 31st last, when a ♀ appeared, with a second on June 4th. Dr. C. H. S. Vinter also saw one at Apsey Green on June 2nd; subsequently both sexes occurred on his garden moat at Framlingham; and he found the species on June 11th in Parham Wood, where we both found several on the 14th inst. Where else has it occurred this year?—CLAUDE MORLRY.

[In the New Forest, during the first half of June this year, two or three specimens of *Libellula depressa* were noted flying over and about water in many parts of the district.—R. S.]

SOME CATERPILLAR!—"The caterpillar plague in the Peak district has extended to Yorkshire and Westmorland, the pests evidently having travelled from the mountain-tops in search of food." The above gem is extracted from "Day by Day" in the 'Daily Telegraph,' June 16th. Perhaps our Yorkshire and Westmorland correspondents will determine the species of this devastating horde!—H. R.-B.

CELASTRINA ARGIOLUS: A COMPARISON.—On April 2nd, 1916, the first specimen of *Celastrina argiolus* of the year was seen on the wing in the garden here. This year (1917) it was not until May 2nd that one was noted. A pretty close watch is kept in the garden for the first appearance of this species in the spring; moreover, on each occasion a single specimen was seen on the dates mentioned, on the

following days two, and in both years thenceforward in increasing numbers for some weeks. It would therefore appear that the species in this neighbourhood was just one month later this year than last in making its appearance.—ROBERT ADKIN; Hodeslea, Eastbourne, June, 1917.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, February 7th, 1917.*—Dr. C. J. Gahan, M.A., D.Sc., President, in the chair.—The President announced that he had nominated Dr. T. A. Chapman, Dr. G. B. Longstaff, and the Hon. N. Charles Rothschild as Vice-Presidents for the ensuing year. The President also announced the death of Mr. C. O. Waterhouse, a former President of the Society, and a vote of condolence with his daughter was passed on the motion of Mr. Champion, seconded by Mr. Bethune-Baker.—Mr. A. W. Rymer Roberts, M.A., Rothamsted Agricultural Experiment Station, Harpenden, and The Common, Windermere, was elected a Fellow of the Society.—Mr. A. H. Jones exhibited, on behalf of Capt. E. F. Studd, R.F.A., a Fellow of the Society, at present serving with the British Expeditionary Force at Salonica, various Lepidoptera taken by him in 1916 in the neighbourhood of Salonica.—Commander Walker said that he had taken almost all the species exhibited many years ago in the neighbourhood of Port Baklar, near the Bouclair lines.—The President and Mr. W. G. Sheldon commented on the abundance of butterflies in Macedonia, the latter observing also that North Macedonia and Albania were among the least known of European localities for Lepidoptera.—Mr. G. Talbot exhibited, on behalf of Mr. J. J. Joicey, a series of *Agrias claudia*, Schulz, showing its distribution and local forms.—Dr. E. A. Cockayne exhibited: (1) A series of *Pararge egeria*, bred November and December, 1916, and January, 1917, from ova laid by several females taken in August at Limber, N. Lincolnshire. They showed considerable variation. (2) An aberration of *Polygonia c-album*, the hind wings being nearly black and the fore wings with costal spots united into a crescent. (3) Two partial Gynandromorphs of *Polygonatus icarus*. (4) A female *Agriades coridon* with one hind wing marked with blue like *ab. semisyngrapha*, the other hind wing having only a thin sprinkling of blue scales over the same area.—Mr. Bacot read a further note dealing with the question of the specific identity of *Pediculus capitis* and *Pediculus humanus (vestimenti)*.—Special Meeting.—The special meeting summoned to consider the new bye-law proposed by the Council was then held.—The Secretary read the proposed bye-law, which runs as follows: "Chap. xxiii. Prohibition in respect of funds. The Society shall not and may not make any dividend, gift, division or bonus in money unto or between any of its members." This bye-law was needed to comply with the Act of Parliament regulating the registration of Scientific Societies so that they may be free from local rates.—On the motion of Mr. Bethune-Baker, seconded by Mr. Stanley Edwards, it was passed without discussion.

Wednesday, March 7th, 1917.—Dr. C. J. Gahan, M.A., D.Sc.

President, in the chair.—The death of Mr. A. E. Gibbs, a member of the Council, and for five years a most valued member of the Business Committee was announced.—Mr. E. A. Butler exhibited two species of S. Indian Hemiptera received from Mr. T. V. Campbell, M.B., who captured them at Chikkaballapura in the Mysore State; viz. *Urentius echinus*, Dist., and *Apollo-dotus præfectus*, Dist.; also several recently described species of S. Indian *Fulgoridæ*, together with the ♂ of *Eurybrachys tomentosa*, Fabr., which has only recently been recognised.—Prof. Poulton said that he had recently received interesting notes on mimicry in Oriental butterflies from Colonel Jermyn, who had forwarded with his manuscript the illustrative specimens exhibited to the meeting. Prof. Poulton also exhibited a male of *Ammophila sabulosa*, L., with only two submarginal cells to both fore wings.—The President stated that, at Prof. Poulton's request, he had recently examined the specimen from the Burchell collection (No. 1330), which was shown that evening, and he had no hesitation in saying that it was either a larva or female of the group Phengodini. The females of this group are completely larvi-form. Both larvæ and females may be distinguished from Elaterid larvæ by the fact that the tenth abdominal segment is somewhat conical or tubular in form, and projects beyond the ninth segment so as to be visible from above.—Mr. O. E. Janson exhibited the four new species of *Cetoniidæ* of the genera *Clerota*, *Pseudocalcothea*, and *Anatona*, described in the paper subsequently read, and made some remarks on their characters.—Mr. A. Bacot desired to call attention to a very valuable paper in the Memoirs of the Department of Agriculture in India (November, 1916, vol. iv, No. 6) dealing with the insects attacking stored wheat in the Punjab, and the methods of combating them, by Barnes and Grove.—Gift of a microscope: The Secretary said that Mr. E. E. Green had offered to the Society a valuable binocular microscope, for which objectives of 2" to $\frac{1}{8}$ " were required, and asked whether any Fellow had spare objectives which he would present.—The following papers were read; "On the new and little-known *Lagriidæ* from S. America," by G. C. Champion, A.L.S., F.Z.S., F.E.S.; "Additions to the Knowledge of the Cetoniidæ of British India," by O. E. Janson, F.E.S.; "The Condition of the Scales in leaden Males of *Agriades thetis* and other Lycanids," by E. A. Cockayne, M.A., M.D., F.E.S.; "Some Notes on Butterfly Migrations in British Guiana," by C. B. Williams, M.A., F.E.S.

Wednesday, March 21st, 1917.—Dr. C. J. Gahan, M.A., D.Sc., President, in the chair.—Messrs. David Hunter, M.A., M.B., The Coppice, Nottingham; Nicholas J. Kusnezov, The Imperial Academy of Sciences, Petrograd; and Percy A. H. Muschamp, Charterhouse School, Godalming, Surrey, were elected Fellows of the Society.—Dr. T. A. Chapman exhibited a supposed hybrid between *Callophrys avis* and *C. rubi*.—Mr. Donisthorpe exhibited two specimens of an *Elater*, from Ireland, not in the British list, taken in Co. Kerry, in June, 1902.—Mr. Collin said that he had observed that certain Diptera usually to be seen about sunset were also on the wing about dawn, and inquired whether the same fact had been observed in other Orders.—The President asked whether any Fellow could state

from his personal knowledge that *Anobium domesticum* taps in the manner known as the "death-watch." *Xestobium tessellatum* and *Atropos divinatoria* both tap with the mandibles, and this was shown by Derham to be a sexual call.

Wednesday, April 4th, 1917.—Dr. C. J. Gahan, M.A., D.Sc., President, in the chair.—Mr. Thos. W. Kirkpatrick, The Deanery, Ely, and Sir Charles Langham, Bart., were elected Fellows of the Society.—Mr. G. Talbot exhibited on behalf of Mr. J. J. Joicey specimens of *Papilio* (*Troides*) *priamus* *r. caelestis*, Roths., from Rossel Island and St. Aignan, and the allied race *urvilleana*, Guer., from New Ireland and the Solomons.—Mr. A. Bacot exhibited egg-masses of *Stegomyia fasciata*, the "yellow-fever mosquito."—The President exhibited a live specimen of *Xestobium tessellatum*, and demonstrated its marked power of "ticking" in response to tapping on the table on which the box stood in which it was contained.—The following paper was read, illustrated by the epidiascope: "Revision of the Genus *Tarucus*," by G. T. Bethune-Baker, F.L.S., F.Z.S.

OBITUARY.

WILLIAM H. BAKER.

IN the death, during the middle of May, 1917, of Mr. W. H. Baker a veritable link with the past has been severed. He succeeded to the paternal farm at Battisford, near Stowmarket, and died in his ninety-third year. His father was as keen a working Lepidopterist as himself, and had lived to be eighty-four; in fact, the 13,000 British moths, of which their united collection consisted, are said to represent the labours of no less than 150 years. As was to be expected in a country village, Mr. Baker knew his insects, their habits, habitats, and familiar names very thoroughly, though nothing of their nomenclature. Among the few insects of other Orders in his collection were the locally very rare *Ranatra linearis*, L. (first recorded from Suffolk by Donovan) and *Mesosa nubila*, Ol. (which Harwood rediscovered in Assington Thicks here during May, 1915). When last I visited Mr. Baker, shortly before his retirement to the adjacent village of Combs, he delighted me with tales of the Rev. Joseph Greene, of Playford—though that concerning the silver trowel was new to him; Dr. C. R. Bree, of Stowmarket; of the Rev. Harpur Crewe, who often visited the latter; Prof. Henslow, of Hitcham; and even of the last years of the Ven. William Kirby, F.R.S., of Barham, who died in 1850. Many of Mr. Greene's notes on the "Lepidoptera occurring in the County of Suffolk," printed in the 'Naturalist,' 1858, *e.g.* p. 230, were made upon Baker's material, though he himself, I believe, wrote nothing, and his father only the note on a social wasp at p. 189 of the same periodical.

C. M.

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A. FORD, 36, IRVING ROAD, BOURNEMOUTH.

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NEW AND RARE HOMOPTERA IN THE NORTHERN COUNTIES.

By J. W. H. HARRISON, D.Sc.

THE following notes include captures made during the past two or three years, some of which have been put on record casually in our local natural history magazines, whilst others have never been referred to. The latter, in many cases, are important either as extending the known range of our British forms or for other reasons, and therefore deserve recording without further delay.

Psyllidæ.

Livia juncorum, Latr. Thinly distributed throughout Northumberland, Durham, and the Cleveland district of Yorkshire; also in East Cumberland.

Livia crefeldensis, Mink. Newham Bog, Northumberland, very plentiful, feeding on sedges. Rare in the Middlesbrough area of North Yorks.

Rhinocola aceris, L. Rare Birtley, North Durham; also rare Gunnergate, Cleveland. New to my Yorkshire list.

Rhinocola ericæ, Curt. Plentiful everywhere in Durham, Northumberland, and Cleveland.

Aphalara nervosa, Först. Very common on the Wear banks, Wolsingham, Durham. Does not occur elsewhere, as far as I have examined.

Psylla viburni, F. Löw. Very rare indeed. Birtley, Durham, only.

Psylla hippophæes, Först. Extremely plentiful near North Sunderland, in Northumberland.

Psylla brunneipennis, Edwards. Sparingly in Durham; commoner at Wolsingham.

Trioza galii, Först. Everywhere, but not common.

Trioza velutina, Först. Rare Birtley and Gibside (R.S.B.), Durham.

Trioza atriplicis, Licht. An addition to the British list. found in Greatham Saltmarsh, in Durham, at the Teesmouth.

where it is far from rare. Known previously from South France only, and deemed a "lost" species.

This list must not be considered to exhaust even the rare species of our counties, not to mention our only too common ones. A joint paper by my friend Mr. Bagnall and myself will deal with other forms later.

Aleyrodidæ.

Tetralicia ericæ, Harrison (new genus and species, *Vasculum*, June, 1917, p. 60). This new form turned up on *Erica tetralix*, on Waldrige Fell, in North Durham, July, 1916. It is a very distinct species in every stage, and the following is a copy of the original description :

Genus TETRALICIA.

Fore wings provided with radial sector only, with a slight flexure in the middle; whole vein subparallel to the inner margin of the wing. Cubitus, especially in certain females, sometimes suggested by a fold or by a cessation of the wing granulations.

Male slightly less than the female. Both sexes with 7-jointed antennæ. Male antennæ rugged and fairly long; those of female less rugged and relatively shorter. In the male the third joint is the longest, and is subequal to the total length of the fourth, fifth, sixth, and seventh; the same joint is likewise the longest in the female, but is longer than the total of the fourth, fifth, sixth, and seventh. In the male the fourth joint is the shortest and in the female the sixth. Male claspers fairly long and broad; penis slight.

Pupa case with practically no waxy secretion.

Both larva and pupa are extremely elongated.

Type—*ericæ*, Harrison.

Tetralicia ericæ, sp. nov.

Characters of the genus with the following additional features :

Adult male.—Length, .9 mm.

General coloration bright yellow. Head, legs, and genital claspers smoky black, that of the claspers often very intense. Thorax, a mixture of yellow and black merging imperceptibly into each other. Below and laterally the abdomen is bright yellow; above slightly smoky. Fore wings rather long, rounded terminally; in colour grey-white—not the pure white of *Aleyrododes prolella*—unspotted, granulated. Lower wings more triangular, termen rounded. Radial sector central. Margin of all wings thickened, toothed, and slightly bristly. Antennæ ochreous. Eyes dark reddish-purple, very slightly reniform.

Adult female.—Length, 1.2 mm.

Like the male but wings broader. Genitalia, except basally, yellow. Antennæ sligher.

Larva.—Necessarily elongated to enable it to feed between the inrolled margin and midrib of a leaf of a member of the genus *Erica*. Colour, transparent but whitish.

Pupa.—Likewise elongated and for similar reasons. The insect is continuously brooded.

NEW BUTTERFLIES OF THE FAMILY NYMPHALIDÆ.

BY ARTHUR HALL, F.E.S.

(Concluded from p. 163.)

Pyrameis myrinna ab. *eunice*, ab. nov.

Male.—Differs from *P. myrinna*, Doubl., in exactly the same way as ab. *elymi*, Ramb., differs from *P. cardui*. Fore wings above with the red basal area unbroken, the black spots within it being absent except the one in the cell; all the white subapical and submarginal spots diffused and run together so as to form long, greyish streaks; hind wings with the black discal band narrowed and diffused, connected with the margin by streaks along the veins; blue spot at anal angle absent. Underside of fore wings differing as above, but the greyish streaks in the apical area are whiter and form an almost solid patch, and the greater part of the outer margin is yellowish-grey; the whole outer half of the hind wings bluish-white, shading to yellowish at the margin, the two ocelli represented by round, yellowish-white spots defined with black on the inside only; the blackish basal area is without the white transverse lines, but the whole of the inner margin is white.

Habitat.—Colombia. One ♂.

Dynamine hænschi, sp. nov.

Male.—Upper side of both wings brown, faintly glossed with olive-green on hind wings and at base of fore wings. Fore wings with five large whitish spots arranged in two oblique series, the inner series consisting of two, the outer of three spots, the middle spot of the outer series divided by the upper median branch; beyond the outer series a small trifid subapical spot. Hind wings with dark brown marginal and submarginal line and an indistinct fuscous median line. Cilia whitish.

Underside: Fore wings brown, shading to blackish in the disc; base of costa ochreous; subcostal vein faintly scaled with blue; cell filled in with brownish-ochreous, this colour extending to the bases of the upper and middle median interspaces; a transverse blue mark on the discocellulars; all the spots of the upper side reproduced in clear yellowish-white; marginal area paler with a dark brown submarginal line becoming obsolete before the hinder angle. Hind wings light brown, inclining to whitish, crossed at the middle by two parallel rufous-brown lines, beyond which there is a discal series of four very small ocelli, black, pupilled with metallic blue

and ringed with pale yellow; a brown submarginal and marginal line. Expanse, 1.5 in.

Habitat.—Huigra, W. Ecuador, 4000 ft. (February, 1913). Three ♂♂.

One ♂ from Balzapamba taken by R. Haensch.

A very distinct species, perhaps most like *D. tithia*, Hübn., in the pattern of the upper side, but the ground-colour only faintly tinged with green, the hind wings more oval, and the underside of the secondaries totally different.

Catagramma maimuna var. *kayei*, subsp. nov.

Male.—Smaller than typical *maimuna*, the hind wings above with a few scattered red scales, but no trace of the dark blue spot.

Female.—The large interno-basal patch of the fore wings is light orange-yellow, not red, and the trifold subapical band is clear pale yellow, much broader than in the male, and sharply defined; the hind wings are slightly dusted with yellow at the base, and have faint traces of some pale blue scales near the anal angle. Underside as in *maimuna* except for the different colour of the basal area of fore wings.

Habitat.—Trinidad. One ♀ received from a local collector; one ♂ in the collection of J. J. Joicey, Esq.

Typical *C. maimuna*, Hew., with red fore wings, occurs on the Upper Amazon, and M. Oberthür has recently described a form from French Guiana in which the fore wings are yellow in the male. The Trinidad race, therefore, occupies an intermediate position in having the fore wings red in the male and yellow in the female, but the absence of any trace of the blue spot on the hind wings is characteristic. The female of *Kayei* very closely resembles the same sex of *C. astarte* var. *antillena*, Kaye, from the same island.

Catagramma quirina, sp. nov.

Male.—Allied to *C. maimuna*, Hew., and *C. texa*, Hew., but smaller, the fore wings shorter; the carmine basal blotch of the fore wings smaller than in *C. maimuna*, and with its lower edge excised, the middle of the inner margin being black to slightly above the submedian vein, so that the red blotch assumes a very characteristic crescent-shaped form unlike that of any allied species. The short subapical band is orange-red. Hind wings with a broad, carmine, central streak as in *C. texa*, but only very faint traces of a blue gloss. A small pale blue spot at anal angle.

Underside: Fore wings as above, except that the subapical band is clear pale yellow, and that there are three small blue spots beyond it in the apex. Hind wings as in *C. maimuna*. Expanse, 1.75 in.

Habitat.—Espiritu Santo, Brazil. One ♂.

On the upper surface this species has a curious resemblance to the pattern of *Agrias claudina*, Goit. It is quite distinct

from the Bolivian form of *C. maimuna*, which also has a red streak on the hind wings.

Panacea procilla var. *mamorensis*, subsp. nov.

Male.—Upper side of a more bluish tint than in *procilla*; the black transverse line across the middle of fore wings thicker, and the blue-green band beyond it broader and not interrupted by blackish spots; subapical spots whiter, but more broadly bordered with blue-green; on the hind wings the black median line is thicker, the discal ocelli are largely or (in the type) completely obsolete, and the black submarginal line is more than twice as broad as in *procilla*.

Underside: Fore wings as in *procilla*, except that the white subapical band is broader. Hind wings of a much deeper purplish-brown tint, with black lines as in *procilla*, but the discal ocelli extremely small.

Habitat.—Upper Rio, Madeira. One ♂ collected by Dr. Moffatt; two co-types in the collection of C. J. Grist, Esq.

This local race almost seems to represent a transition between *P. procilla*, Hew., and *P. divalis*, Bates, the upper side much resembling that of the latter. The nearest ally of *P. mamorensis* is *P. lysimache*, G. and S., from Chiriqui, but the latter is a much greener form, and on the underside the hind wings are much more rufous, and the ocelli, although smaller than in *procilla*, are at least twice as large as in *mamorensis*.

Euryphædra thauma, Stgr.

Only the female of this remarkable species has hitherto been known. The male has the fore wings considerably narrower, and the hind wings more produced at the anal angle. The markings are as in the female, except that the black spotting is somewhat heavier, and that only the last three spots of the inner series on the hind wings are present.

One ♂ from S. Cameroons.

Cymothœ aramis form *excelsior*, f. nov.

Female.—Similar to *C. aramis*, ♀, f. *excelsa*, Neust., but the ground-colour above darker, and the median band of the hind wings bright canary-yellow, narrowly edged with red on both sides.

Habitat.—Bitye Ja River, Cameroons. One ♀.

Typical *aramis* ♀ has a yellow blotch on the fore wings and a white band on the hind wings, whilst in the form *excelsa*, Neust., the blotch on the fore wings is red and the band of hind wings white. *Excelsior*, with red blotch on the primaries and yellow band on secondaries, has a strikingly distinct aspect.

Hypna mexicana, sp. nov.

Female.—Allied to *H. iphigenia*, H. S., from Cuba, and *H. rufescens*, Butl., from Venezuela. Upper side as in *rufescens*, but the

cream-coloured band of the fore wings is more macular, and has more irregular edges; the subapical spots are larger, and four in number; the rufous-brown patch on the hind wings is of a darker tint than in either of the allied forms, and not so well defined; the white submarginal spots are five in number and sharply defined; and the tails are differently shaped, being of almost uniform width, not spatulate. The underside resembles that of *iphigenia*, but the hind wings are darker, having no rufous tinge. Expanse, 2.75 in.

Habitat.—Salina Cruz, S. Mexico. One ♀ (August).

I observed several other specimens of this form at Salina Cruz, but it was difficult to catch, flying among thorny bushes. It must be regarded as a race of *H. iphigenia*, if the latter be considered distinct from *H. clytemnestra*, Cram.

Anæa tehuana, sp. nov.

Female.—Upper side: Fore wings red, with broadly black apex and outer margin and broad black subapical band, the black areas glossed with brilliant purple except at the margin. Hind wings red, shading to broadly blackish-brown at the outer margin, and brilliantly glossed with purple around the junction of the red and black areas, but the gloss does not extend to the margin. A submarginal series of four small black spots surmounted by white dots.

Underside pale grey-brown, sharply and uniformly striated with black throughout. Hind wings with four small, black, submarginal spots. Expanse, 2 in.

Habitat.—Salina Cruz, S. Mexico. Two ♀♀ taken in August.

On the upper surface this species much resembles the male of *C. chrysophana*, Bates, but is quite different to the female of that species. It can hardly be a dimorphic ♀ of *chrysophana*, as the latter species is not known from Mexico and the under side of *tehuana* has an aspect of its own, the very marked striation recalling that of the otherwise very different *A. dominicana*, Druce.

Siderone mars var. *angustifascia*, subsp. nov.

Male.—Nearest to *S. vulcanus*, Feld., from Colombia, but the red band of the fore wings considerably narrower, more sharply bent, and at the end of the cell partly interrupted by a number of diffused black scales. The blue gloss on the fore wings is darker and fainter and the hind wings show no trace whatever of the red costal spot.

Habitat.—Huigra, W. Ecuador. 3000 ft. One ♂ (February, 1913).

Although I only obtained a single example of this subspecies, there is no doubt that it represents a good local race, no *Siderone* having hitherto been recorded from the Pacific slope of S. America.

NEW SPECIES OF PYRALIDÆ FROM FORMOSA.

BY A. E. WILEMAN AND RICHARD SOUTH.

Endotricha ruficosta, sp. n.

♂. Fore wings brown, finely sprinkled with blackish, costa, except at apex, reddish and dotted with white; terminal line black, interrupted; fringes brown traversed by a black line, white at base. Hind wings brown with dusky discoidal dot and faint curved and indented line beyond; fringes as on fore wings. Under side similar to above.

Expanse, 16 mm.

Collection number, 380.

A male specimen from Tainan (sea-level), July 22nd, 1904.

Pyralis (?) costimacula, sp. n.

♀. Fore wings ochreous brown, marked with black on basal half of costa, and shaded with smoky brown on terminal area; discoidal spot, a dot in the cell, and the postmedial line black, the latter elbowed above middle; a black mark on the costa towards apex; terminal line black, interrupted at ends of veins; fringes ochreous mixed with blackish grey, paler at the base. Hind wings fuscous, darker towards termen, discoidal dot and mark above tornus black; terminal line black, diffuse; fringes grey mixed with darker, ochreous at base. Under side fuscous; fore wings marked with ochreous on costa; hind wings with black discoidal dot and traces of a blackish postmedial line, the latter bluntly angled below middle.

Expanse, 24 mm.

Collection number, 1730.

A female specimen from Rantaizan (7500 ft.), May 14th, 1909.

Ambia interruptalis, sp. n.

♂. Fore wings brown powdered with ochreous and with some white marks on basal area; antemedial line black, curved, inwardly edged with white; postmedial line black, turned in just under black discoidal mark thence direct to dorsum; two longitudinal white bars—one in the cell and one larger under the cell, the latter divided by the postmedial line; the upper part of postmedial outwardly edged with white and beyond this a dark brown broad line runs from costa to dorsum; subterminal line black, inwardly edged with white; fringes ochreous, tips marked with dark brown. Hind wings brown, basal area white marked with brown; three white spots edged with black on median third—two towards costa and one above tornus; subterminal line and fringes as on fore wings.

Expanse, 16 mm.

Collection number, 1305.

Near *A. inters strigalis*, Hampson.

Two male specimens, Tainan. The type taken March 22nd, 1904; the other April 26th, 1907.

Aulacodes conjunctalis, sp. n.

♂. Head whitish, thorax and abdomen buff, posterior edges of segments of the latter whitish. Fore wings orange-buff with silvery markings; a black point about middle of costal area and a patch of greyish hairs below forming the sex mark; a silvery band from middle of base curves to tornus where it unites with a silvery subterminal band; a postmedial silvery triangle, broad on costa, concave on outer edge, apex produced almost to junction of the subterminal with curved band; termen silvery towards base; terminal lunules black, slender; fringes whitish, silky. Hind wings silvery whitish: medial band orange-buff, inwardly limited by a blackish line, outer edge diffuse; four black spots, each with silver centre, enclosed in an orange-buff patch on termen; no distinct terminal line, fringes whitish, silky.

♀. Larger and without sex mark, otherwise similar to the male. Expanse, 22 mm. ♂. 30 mm. ♀.

Collection number, 505.

A male specimen and two females from Kanshirei (1000 ft.). The male taken August 16th, 1905, and the females April 17th, 1906, and April 21st, 1908.

Several specimens from Formosa (Wileman), in the British Museum.

Near *A. sejunctalis*, Snellen, with which species it agrees in marking but is much larger, and the ground colour is brighter.

Parthenodes taiwanalis, sp. n.

♂. Head blackish-brown; thorax blackish-brown, mixed with whitish; abdomen blackish-brown, posterior edges of segments whitish. Fore wings blackish-brown, marked with white on basal area; antemedial and postmedial lines white, the latter projected inwards about middle, both lines indistinct; two white spots in the cell, the outer one surmounted by a white dot, the inner one almost united with a larger white spot below the cell; subterminal line white, only clear towards apex and tornus, followed by a fulvous band on termen; fringes white marked with fulvous about middle. Hind wings blackish-brown, some white marks on the basal area; medial area white, enclosing a dark discoidal lunule; postmedial line white, strongly angled about middle; subterminal line, band beyond and fringes as on the fore wings. The whole markings on all wings have a silvery sheen.

Expanse, 24 mm.

Collection number, 1061.

Two male specimens from Arizan (7300 ft.), September 15th, 1906; two females, also from Arizan, August 8th and 15th, 1905.

Comes near *P. distinctalis*, Leech.

Agrotera ornata, sp. n.

♂. Head orange-brown, thorax and abdomen white marked with orange, the anal segment of abdomen inclining to brownish. Fore

wings white marked with orange on the basal third, limited by an almost straight orange antemedial line; outer two thirds whitish grey suffused, clouded with dark grey beyond the antemedial line, and with brown grey on the terminal area; discoidal mark orange, part outlined in dark brown and enclosing a dark brown lunule; postmedial line, indicated by dark grey dots on the veins, elbowed inwards below the cell; subterminal line black interrupted; fringes dark grey, marked with paler just below apex. Hind wings similar to fore wings, but without discoidal mark. Under side whitish, silky, suffused with fuscous on fore wings; a black discal dot and traces of a dusky postmedial line on all wings.

Expanse, 24 mm.

Collection number, 1396.

A male specimen from Kanshirei (1000 ft.), April 29th, 1908. Comes between *A. scissalis*, Walker, and *A. effertalis*, Walker.

Pagyda nebulosa, sp. n.

♂. Head, thorax, and abdomen whitish ochreous, the abdomen faintly tinged with brown on hinder segments. Fore wings whitish ochreous, inclining to yellowish towards costa; sub-basal line pinkish-brown, outwardly oblique; antemedial line pinkish-brown, nearer to sub-basal on dorsum than on costa; postmedial line pinkish-brown, inclining to black on costa, turned in under cell towards the pinkish-brown discoidal spot, thence wavy to the dorsum; area beyond postmedial line suffused with brown and traversed by a diffuse pale brown band which projects inwards along the bend of the postmedial line; terminal line dark brown, fringes pale brown. Hind wings rather whiter than the fore wings; discoidal mark pinkish-brown, from which an elbowed line runs to dorsum; postmedial line pinkish-brown, oblique, uniting with the brownish band above tornus; terminal line dark brown; fringes whitish, ochreous at base.

Expanse, 24 mm. ♂. 27 mm. ♀.

Collection number, 1055.

One example of each sex from Arizan (7300 ft.), the male taken September 13th, 1908, and the female September 16th, 1906. One male from Tappansha, Arizan district (3500 ft.), September 6th, 1906.

There are four specimens in the British Museum (three Arizan (Wileman) and one Arizan (Moltrecht)).

Sylepta sericcalis, sp. n.

♂. Fore wings glossy, pale ochreous brown; antemedial line fuscous, outwardly oblique, indistinct; postmedial line fuscous, wavy, curved under end of cell, thence direct to dorsum, one third from tornus, a brownish dot in the cell and a brown elongate spot at end of cell; fringes paler and rather more glossy. Hind wings pale fuscous with a curved dusky transverse line one third from termen; fringes paler, glossy. Under side pale fuscous, margins

and fringes ochreous. Head and thorax ochreous brown, front legs whitish, marked with ochreous brown.

Expanse, 34 mm.

Collection number, 324.

Two female specimens from Tainan, June 30th, 1905.

Pyrausta terminalis, sp. n.

Fore wings pale straw colour, clouded with purplish-brown on the costa; antemedial line purplish-brown, incurved; an outwardly oblique linear spot at outer end of cell; below this a thin irregular line runs to termen; postmedial line brown, forming a deep sinus into the purplish-brown terminal area about middle; fringes pale purplish-brown, marked with straw colour at tornus. Hind wings pale straw colour, with purplish-brown discoidal spot and line of same colour from it to dorsum near tornus; postmedial line and terminal border as on fore wings, fringes pale straw colour. Under side similar to above.

Expanse, 18 mm.

Collection number, 354A.

One male specimen from Tainan, November 22nd, 1906.

Near *P. signatalis*, Walker.

THE NOCTUIDÆ OF GREAT BRITAIN AS ARRANGED
IN THE GENERAL COLLECTION AT THE NATURAL
HISTORY MUSEUM.

By RICHARD SOUTH.

In the following list of British Noctuidæ the nomenclature is that used by Sir George F. Hampson in his 'Catalogue of the Lepidoptera Phalænæ in the British Museum,' vols. iv-xiii (1903-1913), and also in the General Collection of Lepidoptera at the Natural History Museum, South Kensington. The number before the name of each species is that of the catalogue. References to the 'Entomologists' Synonymic List' (E.S.L.), Meyrick's 'Handbook of British Lepidoptera' (M.), Tutt's 'British Noctuae and their Varieties' (T.), and 'Moths of the British Isles' (M.B.I.) have been added as aids to those British entomologists who may have their collections arranged in accordance with either of these publications.

Fam. NOCTUIDÆ.

Subfam. AGROTINÆ. [Vol. IV (1903).]

50. CHLORIDEA DIPSACEA, L.

Heliothis dipsacea, E.S.L., p. 10; M., p. 109; T., iii, p. 123;
M.B.I., ii, p. 48.

53. CHLORIDEA PELTIGERA, Schiff.
Heliothis peltigera, E.S.L., p. 10; M., p. 108; T., iii, p. 127;
M.B.I., ii, p. 50.
56. CHLORIDEA ARMIGERA, Hb.
Heliothis armigera, E.S.L., p. 10; M., p. 108; T., iii, p. 128;
M.B.I., ii, p. 53.
65. CHARICLEA DELPHINI, L.
Chariclea delphini, T., iii, p. 121; M.B.I., ii, p. 47.
167. MELICLEPTRIA SCUTOSA, Schiff.
Heliothis scutosa, E.S.L., p. 10; M., p. 109; T., iii, p. 125;
M.B.I., ii, p. 49.
290. EUXOA SEGETIS, Hb.
Agrotis segetum, Schiff., E.S.L., p. 7; M., p. 91; T., ii, p. 9;
iv, p. 113; M.B.I., i, p. 201.
294. EUXOA VESTIGIALIS, Rott.
Agrotis vestigialis, Hufn., E.S.L., p. 7; M., p. 90; T., ii,
p. 16; M.B.I., i, p. 202.
297. EUXOA CORTICEA, Schiff.
Agrotis corticea, Hb., E.S.L., p. 7; M., p. 91; T., ii, p. 60;
M.B.I., i, p. 203.
302. EUXOA CINEREA, Schiff.
Agrotis cinerea, Hb., E.S.L., p. 7; M., p. 94; T., ii, p. 75;
M.B.I., p. 203.
312. EUXOA OBELISCA, Schiff.
Agrotis obelisca, Hb., E.S.L., p. 7; M., p. 92; T., ii, p. 28;
iv, p. 113; M.B.I., i, p. 208.
213. EUXOA RADIUS, Haw.
Agrotis puta, Hb., E.S.L., p. 7; M., p. 94; T., ii, p. 72;
M.B.I., i, p. 204.
431. EUXOA TRUX, Hb.
Agrotis lunigera, Steph., E.S.L., p. 7; M., p. 91; T., ii, p. 14;
M.B.I., i, p. 205.
436. EUXOA CURSORIA, Hufn.
Agrotis cursoria, Bork., E.S.L., p. 7; M., p. 94; T., ii, p. 39;
M.B.I., i, p. 206.
438. EUXOA NIGRICANS, L.
Agrotis nigricans, E.S.L., p. 7; M., p. 92; T., ii, p. 32; iv,
p. 113; M.B.I., i, p. 107.
523. EUXOA TRITICI, L.
Agrotis tritici, E.S.L., p. 7; M., p. 96; T., ii, p. 43; iv,
p. 114; M.B.I., i, p. 207.
625. FELTIA EXCLAMATIONIS, L.
Agrotis exclamationis, E.S.L., p. 7; M., p. 92; T., ii, p. 64;
M.B.I., i, p. 208.
641. AGROTIS SUBROSEA, Steph.
Noctua subrosea, E.S.L., p. 8; M.B.I., i, p. 217.
Agrotis subrosea, M., p. 97; T., ii, p. 59.

646. AGROTIS YPSILON, Rott.
Agrotis suffusa, Hb., E.S.L., p. 7.
Agrotis ypsilon, M., p. 91; T., ii, p. 7; M.B.I., i, p. 209.
658. AGROTIS GLAREOSA, Esp.
Noctua glareosa, E.S.L., p. 7; T., ii, p. 107; iv, p. 118;
M.B.I., i, p. 218.
Agrotis glareosa, M., p. 104.
660. AGROTIS CASTANEA, Esp.
Noctua castanea, E.S.L., p. 7; T., ii, p. 104; M.B.I., i, p. 219.
Agrotis castanea, M., p. 102.
665. AGROTIS ORBONA, Hufn.
Triphaena orbona, E.S.L., p. 8; M.B.I., i, p. 231.
Agrotis orbona, M., p. 101.
Triphaena subsequa, S.V., T., ii, p. 93.
666. AGROTIS COMES, Fabr.
Triphaena comes, Hb., E.S.L., p. 8; M.B.I., i, p. 230.
Agrotis comes, M., p. 100.
Triphaena orbona, Hufn., T., ii, p. 93.
667. AGROTIS PRONUBA, L.
Triphaena pronuba, E.S.L., p. 8; T., ii, p. 99; M.B.I., i,
p. 232.
Agrotis pronuba, M., p. 100.
670. AGROTIS C-NIGRUM, L.
Noctua c-nigrum, E.S.L., p. 7; T., ii, p. 110; M.B.I., i, p. 221.
Agrotis c-nigrum, M., p. 99.
676. AGROTIS FLAMMATRA, Schiff.
Noctua flammatra, Fabr., E.S.L., p. 7; T., ii, p. 127; M.B.I.
i, p. 221.
Agrotis flammatra, M., p. 99.
687. AGROTIS TRIANGULUM, Hufn.
Noctua triangulum, E.S.L., p. 8; T., ii, p. 109; M.B.I., i,
p. 223.
Agrotis triangulum, M., p. 100.
688. AGROTIS DITRAPEZIUM, Schiff.
Noctua ditrapezium, Bork., E.S.L., p. 8; T., ii, p. 111;
M.B.I., p. 223.
Agrotis ditrapezium, M., p. 99.
692. AGROTIS DEPUNCTA, L.
Noctua depuncta, E.S.L., p. 7; T. ii, p. 109; M.B.I., i, p. 220.
Agrotis depuncta, M., p. 104.
693. AGROTIS BAJA, Fabr.
Noctua baja, E.S.L., p. 8; T., ii, p. 105; iv, p. 117; M.B.I.,
i, p. 220.
Triphaena baja, M., p. 106.
695. AGROTIS PLECTA, L.
Noctua plecta, E.S.L., p. 7; T., ii, p. 126; iv, p. 118; M.B.I.,
i, p. 128.
Agrotis plecta, M., p. 95.

704. AGROTIS RHOMBOIDEA, Esp.
Noctua stigmatica, Hb., E.S.L., p. 8; T., ii, p. 112; M.B.I.,
 i, p. 223.
Agrotis stigmatica, M., p. 103.
707. AGROTIS BRUNNEA, Schiff.
Noctua brunnea, Fabr., E.S.L., p. 8; T., ii, p. 112; M.B.I.,
 i, p. 224.
Agrotis brunnea, M., p. 101.
710. AGROTIS SEXSTRIGATA, Haw.
Noctua umbrosa, Hb., E.S.L., p. 8; T., ii, p. 124; M.B.I.,
 i, p. 227.
Agrotis umbrosa, M., p., 102.
718. AGROTIS RUBI, View.
Noctua rubi, E.S.L., p. 8; T., ii, p. 123; M.B.I., i, p. 226.
Agrotis rubi, M., p. 102.
719. AGROTIS XANTHOGRAPHA, Schiff.
Noctua xanthographa, Fabr., E.S.L., p. 8; T., ii, p. 124;
 iv, p. 118; M.B.I., i, p. 128.
Agrotis xanthographa, M., p. 101.
725. AGROTIS DAHLII, Hb.
Noctua dahlii, E.S.L., p. 8; T., ii, p. 113; M.B.I., i, p. 225.
Agrotis dahlii, M., p. 103.
775. AGROTIS PUTRIS, L.
Axytia putris, E.S.L., p. 6; T., i, 68; M.B.I., i, p. 229.
Agrotis putris, M., p. 98.
781. AGROTIS RAVIDA, Schiff.
Agrotis obscura, Brahm., E.S.L., p. 7; M., p. 98; T., ii,
 p. 81; V, p. 116; M.B.I., i, p. 215.
787. AGROTIS AUGUR, Fabr.
Noctua augur, E.S.L., p. 7; M.B.I., i, p. 218.
Agrotis augur, M., p. 96.
Graphiphora augur, T., ii, p. 102.
801. EPISILIA HYPERBOREA, Zett.
Pachnobia hyperborea, E.S.L., p. 8.
Triphæna hyperborea, M., p. 107.
Agrotis hyperborea, T., ii, p. 85; iv, p. 117; M.B.I., i, p. 215.
848. EPISILIA FESTIVA, Schiff.
Noctua festiva, Hb., E.S.L., p. 8; T., ii, pp. 114, 118.
Agrotis festiva, M., p. 103.
Noctua primulæ, Esp., M.B.I., i, p. 224.
876. EPISILIA LUCERNEA, L.
Agrotis lucernea, E.S.L., p. 7; M., p. 97; T., ii, p. 79;
 iv, p. 116; M.B.I., i, p. 213.
886. EPISILIA SIMULANS, Hufn.
Agrotis simulans, E.S.L., p. 7; M., p. 98; T., ii, p. 80;
 M.B.I., p. 214.

888. EPISILIA ASHWORTHI, Doubl.
Agrotis ashworthii, E.S.L., p. 7; M., p. 97; M.B.I., i, p. 216.
Agrotis candelarum, Staud., Tutt., ii, p. 76.
912. LYCOPHOTIA PORPHYREA, Schiff.
Agrotis strigula, Thnb., E.S.L., p. 7; M., p. 95; M.B.I.,
 p. 210.
Lycophotia strigula, T., ii, p. 89.
918. LYCOPHOTIA RIPÆ, Hb.
Agrotis ripæ, E.S.L., p. 7; M., p. 94; T., ii, p. 67; iv, p. 116;
 M.B.I., p. 210.
928. LYCOPHOTIA OCCULTA, L.
Aplecta occulta, E.S.L., p. 9; M., p. 96; T., iii, p. 66.
Eurois occulta, M.B.I., i, p. 236.
933. LYCOPHOTIA MARGARITOSA, Haw.
Agrotis saucia, Hb., E.S.L., p. 7; M., p. 93; T. ii, p. 4;
 iv, p. 113; M.B.I., i, p. 212.
1011. LYCOPHOTIA PRÆCOX, L.
Agrotis præcox, E.S.L., p. 7; M., p. 93; M.B.I., i, p. 211.
Actebia præcox, T., ii, p. 90.
1050. MYTHIMNA LEUCOGRAPHA, Schiff.
Pachnobia leucographa, Hb., E.S.L., p. 8; T., ii, p. 129;
 M.B.I., i, p. 325.
Triphæna leucographa, M., p. 107.
1051. MYTHIMNA RUBRICOSA, Schiff.
Pachnobia rubricosa, Fabr., E.S.L., p. 8; T., ii, p. 130;
 M.B.I., i, p. 326.
Triphæna rubricosa, M., p. 107.
1054. MYTHIMNA SOBRINA, Boied.
Noctua sobrina, Gn., E.S.L., p. 8; T., ii, p. 106; M.B.I.,
 i, p. 227.
Triphæna sobrina, M., p. 107.
1057. MYTHIMNA ACETOSELLÆ, Schiff.
Mesogona acetosellæ, Fabr., M.B.I., ii, p. 9.
1069. EUROIS PRASINA, Schiff.
Aplecta prasina, Fabr., E.S.L., p. 9; T., iii, p. 65.
Triphæna prasina, M., p. 108.
Eurois prasina, M.B.I., i, p. 235.
1071. NÆNIA TYPICA, L.
Mania typica, E.S.L., p. 8.
Agrotis typica, M., p. 104.
Nænia typica, T., iv, p. 40.
1078. TRIPHÆNA FIMBRIA, L.
Triphæna fimbria, E.S.L., p. 8; M., p. 105; T., ii, p. 92;
 M.B.I., i, p. 233.
1079. TRIPHÆNA JANTHINA, Schiff.
Triphæna ianthina, Esp., E.S.L., p. 8; M., p. 105; T., ii,
 p. 91; M.B.I., i, p. 234.

1080. *TRIPHÆNA INTERJECTA*, Hb.
Triphæna interjecta, E.S.L., p. 8; M., p. 106; T., ii, p. 91;
 M.B.I., i, p. 234.
1109. *EUERETAGROTIS AGATHINA*, Dup.
Agrotis agathina, E.S.L., p. 7; M., p. 95; T., ii, p. 58;
 M.B.I., p. 214.

Subfam. HADENINÆ. [Vol. V (1905).]

1134. *BARATHRA BRASSICÆ*, L.
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Melanchra brassicæ, M., p. 86.
Barathra brassicæ, M.B.I., i, p. 239.
1158. *SCOTOGRAMMA TRIFOLII*, Rott.
Hadena trifolii, E.S.L., p. 9; T., iii, p. 82; iv, p. 126.
Melanchra trifolii, M., p. 82; M.B.I., i, p. 245.
1179. *ANARTA MYRTILLI*, L.
Anarta myrtilla, E.S.L., p. 10; T., iii, p. 128; M.B.I., ii,
 p. 44.
Melanchra myrtilla, M., p. 87.
1180. *ANARTA CORDIGERA*, Thunb.
Anarta cordigera, E.S.L., p. 10; T., iii, p. 128; M.B.I., ii,
 p. 44.
Melanchra cordigera, M., p. 87.
1184. *ANARTA MELANOPA*, Thunb.
Anarta melanopa, E.S.L., p. 10; T., iii, p. 130; M.B.I., p. 45.
Melanchra melanopa, M., p. 87.
1233. *POLIA LUTEAGO*, Schiff.
Dianthæcia luteago, Hb., E.S.L., p. 9; M.B.I., i, p. 247.
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1253. *POLIA PEREGRINA*, Treit.
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Mamestra peregrina, M.B.I., p. 246.
1254. *POLIA CONTIGUA*, Schiff.
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Melanchra contigua, M., p. 83.
Mamestra contigua, M.B.I., i, p. 243.
1256. *POLIA W-LATINUM*, Hufn.
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Melanchra genistæ, M., p. 83.
Mamestra genistæ, M.B.I., i, p. 241.
1258. *POLIA THALASSINA*, Rott.
Hadena thalassina, E.S.L., p. 9; T., iii, p. 92.
Melanchra thalassina, M., p. 84.
Mamestra thalassina, M.B.I., i, p. 243.

1262. POLIA SUASA, Schiff.
Hadena dissimilis, Knoch., E.S.L., p. 9; T., iii, p. 86; iv, p. 126.
Melanchra dissimilis, M., p. 84.
Mamestra dissimilis, M.B.I., i, p. 242.
1271. POLIA PERSICARIÆ, L.
Mamestra persicariæ, E.S.L., p. 6; T., i, p. 117; iv, p. 108.
Melanchra persicariæ, M., p. 86.
Mamestra persicariæ, M.B.I., i, p. 239.
1280. POLIA ADVENA, Schiff.
Aplecta advena, Fb., E.S.L., p. 9; T., iii, p. 70; iv, p. 125; M.B.I., i, p. 237.
Melanchra advena, M., p. 85.
1281. POLIA TINCTA, Brahm.
Aplecta tincta, E.S.L., p. 9; T., iii, p. 69; M.B.I., i, p. 237.
Melanchra tincta, M., p. 85.
1284. POLIA NEBULOSA, Hufn.
Aplecta nebulosa, E.S.L., p. 9; T., iii, p. 68; iv, 125; M.B.I., i, p. 238.
Melanchra nebulosa, M., p. 86.
1308. POLIA OLERACEA, L.
Hadena oleracea, E.S.L., p. 9; T., iii, p. 28.
Melanchra oleracea, M., p. 84.
Mamestra oleracea, M.B.I., i, p. 241.
1309. POLIA PISI, L.
Hadena pisi, E.S.L., p. 9; T., iii, p. 89; iv, p. 126.
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1315. POLIA DENTINA, Schiff.
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1316. POLIA GLAUCA, Kleem.
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1368. POLIA SERENA, Schiff.
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1406. *POLIA CUCUBALI*, Schiff.
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M.B.I., i, p. 251.
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Dianthæcia capsincola, Hb., E.S.L., p. 9; T., iii, p. 32;
M.B.I., i, p. 250.
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1408. *POLIA CARPOPHAGA*, Bork.
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1414. *POLIA ALBIMACULA*, Borkh.
Dianthæcia albimacula, E.S.L., p. 9; T., iii, p. 33; M.B.I.,
i, p. 249.
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1417. *POLIA COMPTA*, Schiff.
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p. 108; M.B.I., i, p. 257.
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Neuria reticulata, E.S.L., p. 6; T., i, p. 125; M.B.I., i, p. 254.
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i, p. 252.
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Mamestra albicolon, Hb., E.S.L., p. 6; T., i, p. 114; M.B.I.,
i, p. 240.
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(To be continued.)

NOTES AND OBSERVATIONS.

THE HIBERNATION AND SPRING EMERGENCE OF PYRAEUS ATALANTA.—I think it has been demonstrated beyond doubt that a part of the autumn larvæ of this butterfly pupate and successfully withstand the rigours, or rather humours, of the English winter. If further evidence of the occasional survival be required, I think the following recent observations may be of interest. On Sunday, July 1st, in the grounds of Grims Dyke, Harrow Weald, I watched an extremely battered example of *atalanta* sunning herself on a hop vine. On the 8th, in a field near Pinner and Hatch End Station, I saw another example in excellent condition as to wing-structure, but with colours dimmed. The first may have been a migrant; the second, in my opinion, was in altogether too good a condition to have crossed the Channel after the continental spring emergence and migration; and it certainly was not one of a precocious summer emergence on this side. Whether it is to be an *atalanta* year remains to be seen. But, as far as *Vanessa io* is concerned, I noticed on a visit to the Chilterns that the nettle-beds swarming with larvæ at this season during the past two years were bare entirely of larvæ. For all the other habitual butterflies, both of Middlesex and the Bucks. Chilterns, the spring emergences have been unusually abundant, in the latter locality especially, with *Cupido minimus*, which generally appears by "single spies," but this year "in battalions." *Nisoniades tages* even took a fancy to some purple cranesbill in the garden here—a *rara avis* indeed.—H. ROWLAND-BROWN; Harrow Weald, July 11th, 1917.

AGRIADES THERSITES, CANTENER, IN NORMANDY.—Towards the end of June I received from my friend, Prof. L. Dupont, half a dozen examples of *Agriades thersites*, captured by him June 9th–16th, in the neighbourhood of Evreux, Eure. This capture is of great interest, as it adds considerably to the known northern area of distribution of a species in France not hitherto reported, I think, north of Paris in this direction, though it is enumerated among the Lycænids of Belgium by Mr. F. I. Ball, an Anglo-Belgian lepidopterist. M. Dupont pronounces it as occurring not uncommonly on the sainfoin meadows of his immediate locality, which has produced not a few butterflies usually associated with far more southern areas, such as *Hipparchia briseis* and *H. arethusa*; for Evreux is about seventy miles north-west of Paris and forty-three due south of Rouen. I need hardly remind our readers that this is the butterfly of which Dr. T. A. Chapman has made an exhaustive study ["An unrecognised European Lycæna, identified as *Agriades thersites* (Bois. MSS.), Cantener," 'Trans. Ent. Soc.', 1912, pp. 662–676; and "A Contribution to the Life-history of *Agriades thersites*, Cantener," *loc. cit.*, 1914, pp. 288–308]. Dr. Chapman tells us how he identified his subject with Cantener's figure, published in 1834 with the remark ('Hist. Nat. des Lépid. . . . des Départemens des Haut et Bas-Rhin,' etc., p. 55, note [1]): "The individual figured is the veritable *thersites*, Boisd. (collection) . . . occurring as commonly in the south of France as *Alexis*." Thus, eighty-three years since,

Cantener called the attention of local collectors to this distinct species, and requested them to communicate captures if made within the limits of "nos contreés," to which, he presumes, it is not foreign, though he cites no instance of observation. We shall be interested to hear later from M. Dupont whether *A. thersites* in his northerly locality is single-brooded, as Mr. Ball reported the species to be in Belgium. In the south there are two, and possibly three, emergences. In the Mediterranean Departments *Polyommatus icarus* has three; I suspect even four, as I have taken it in perfect condition in the first days of April at Hyères; in June, in August, and in October, as late as the 18th, quite fresh at Digne; and Beaulieu, Alpes-Maritimes. Incidentally I may remark that despite war conditions there appears to be no difficulty in the way of transmitting insect specimens by post. M. Dupont's package was but three days in transit, and arrived without damage to contents, and preceded the accompanying postcard by twenty-four hours.—H. ROWLAND-BROWN; Harrow Weald, July 11th, 1917.

PLUSIA MONETA IN CAMBS.—The larvæ of *Plusia moneta* were unusually abundant on delphinium at Great Shelford and this district (Cambridge) generally in the spring, and I have bred a beautiful series of the moth. Possibly the severe winter we had was actually beneficial to this pretty species, as on the Continent, where frost and snow are the rule during the winter months, lepidoptera are much more abundant than they are with us. It is, no doubt, the continual cold rains of our average winters and early springs that do the damage, as hibernating ova, larvæ, and pupæ seem to be able to stand any amount of frost. This season, by the way, should prove to be the best we have had for a long time. Although I have only been able to put in three days' serious collecting (June 22nd–25th), I have seldom seen so many moths at sugar and valerian, whilst every bush had its ova and larvæ.—HUGH P. JONES; 19, Tenison Avenue, Cambridge.

FOOD PLANTS OF DILINA TILIÆ.—In the 'Entomologist' for July the cork-tree (*Quercus suber*) is quoted as an unusual food-plant of *D. tiliæ*. Strange to say (in view of the moth's name), I have never found this species on lime. I have several times taken the pupæ at the roots of alder, and once from the common oak (*Quercus robur*), but these are the only trees, apart from the two elms, from which I have bred it, although I have collected some hundreds. If it ever *did* feed on lime in this district, I am not surprised at it turning to the elm, as the leaves of the former tree are always absolutely filthy with "honey dew." It is not unusual, by the way, to find "Hawk moth" larvæ reverting to strange food-plants. *S. ligustri*, for instance, is far commoner on holly (the young shoots) at Shelford than on privet.—HUGH P. JONES; 19, Tenison Avenue, Cambridge.

SESIA FORMICEFORMIS LARVA FEEDING IN THE PITH OF OSIER STEMS.—I have been in the habit of rearing *Sphæcia crabroniformis* from osier sticks cut in the spring. The sticks are placed in an inverted position in wet sand with the hole uppermost, and the larvæ almost invariably pupate at the upper end and emerge through

the hole. In a few cases I have found that the larva has pupated head downwards in the cut stick, refusing to avail itself of the aperture and eating its way through the solid wood to the side, leaving a thin covering of bark, as in Nature, but such cases are rare. This year amongst a number of larvæ of *Crabroniformis* was one of *S. formicæformis*, which behaved in an exactly similar manner, feeding on the pith, pupating at the top of its barrow, and emerging through the hole where the stick had been cut. I have never before known this species to feed in the pith of an osier stem, but always in the solid wood just under the bark of an osier stump, pupating between the wood and the bark, more after the fashion of *Cynipiformis* in oak stumps. The specimen is a large one, over 1 in. in expanse, and almost double the size of specimens that I have taken here at large and bred from the egg.—H. C. HAYWARD; Repton.

THE OCCURRENCE OF SPANISH FLY (*LYTTA* (*CANTHARIS*) *VESICATORIA*) AT CHICHESTER AND NEIGHBOURHOOD.—The record of the occurrence here of this handsome little beetle, *Lytta* (*Cantharis*) *vesicatoria*, will doubtless be of interest to coleopterists. The first was taken in our garden by my brother, Mr. Frederick Anderson, on June 3rd of last year. As it flitted from flower to flower in the sunshine it was almost dazzling in beauty. This year two more were taken in the neighbouring garden by Mr. Humphry on July 3rd and July 9th respectively, and two more in the adjoining garden by Mrs. Mainwaring on July 16th (one of these was dead and had changed colour). There are other records in the district of captures, including one at Feltham, near Bognor, taken by Mr. Stenson Cooke, junr., on June 25th. Probably the beetles are migrants, but it is somewhat remarkable that the prevailing wind was, and had been, from the east for some time when they made their appearance.—JOSEPH ANDERSON; Chichester.

SIREX GIGAS AT CHICHESTER.—The Giant Sawfly (*Sirex gigas*) occurred here in the early part of July. The first was taken on the 12th of this month.—JOSEPH ANDERSON; Chichester.

LOCAL APPEARANCE OF *ERIOGASTER LANESTRIS*.—This moth is not, I believe, accounted uncommon, though, as Barrett says, "irregular in appearance; abundant in some seasons, then scarce again." So I suppose I am simply unfortunate in having collected for thirty odd years without seeing it. As long ago as 1858 ('The Naturalist,' viii, p. 57) Greene calls it "very abundant in the neighbourhood of Brandeston (three miles from Monks Soham), the hedges being quite full of the large, tough, glutinous webs spun by the larvæ"; and Stainton had recorded it from the adjacent town of Stowmarket the previous year. In fact, Bloomfield in 1890 left it with an abrupt "common" in Suffolk, whence 1273 species of Lepidoptera were known at the end of 1903; but I never saw nor heard of *E. lanestris* in the county till June 15th of the present year, when the above conspicuous webs suddenly appeared in Monks Soham and its conterminous villages of Worlingworth, Bedingfield, Kenton and Debenham, within a total two-mile radius of Kenton Hall. In all I have counted

some twenty-five webs, commonest at Kenton station, and more or less careful observation of hedges from Eye to Ipswich (23 miles N. and S.) and Bury St. Edmunds to Parham (33 miles E. and W.) since the above date has revealed none outside this restricted area. I cannot suppose the species' history ill-known—though I do not possess Tutt's 1900 account of *Lachneis lanestrus* here—and will say no more than that the web is always deserted after the second moult, and consequently the larva is not, as stated by Stainton so definitely, "gregarious throughout its life." Ratzburg ('Die Forst-Insecten,' ii, p. 133) gives the larva a total length of 1.9 in.; here they attained fully 2 in. He does not, like Dr. Arnold Spuler ('Die Schmett. Europ.,' i, p. 117) give whitethorn, upon which all these, except a single batch on sloe, were feeding, as a food-plant. They also eat elm, but reluctantly.—CLAUDE MORLEY; July 18th, 1917.

BUTTERFLIES IN THE CHAMPAGNE.—The following list of butterflies taken in the Champagne during the month of June and the first week of July, may be of interest to some of your readers: *Papilio machaon*—very common, especially on hot days, settling on mud near streams. *I. podalirius*, one specimen only observed. *Aporia crataegi*, very common. *Pieris brassicæ*, *P. napi*, *P. rapæ*, *Pontia daplidice*, all abundant. *Leucophasia sinapis*, abundant in the pine woods. There appear to be two early broods of this species—one at the end of May and the other in early June. *Euchlœ cardamines*, common. *Colias hyale*, abundant in fields of lucerne and sainfoin. *C. edusa*, scarce. *Gonepteryx rhamni*, scarce. *Limenitis sibylla*, fairly plentiful in woods. *Polygonia c-album*, common; all the specimens I have taken of this species are of the *hutchinsoni* type. *Eugonia polychloros*, not uncommon in orchards. *A. urticæ*, and *V. io*, very common. *Pyrameis atalanta* and *P. cardui*, abundant. *Dryas paphia*, plentiful; *A. adippe* and *A. aglaia*, plentiful. *I. lathonia*, frequently met with on grassy roads or tracks, where its habits are very reminiscent of *P. megæra*, *B. euphrosyne*, *B. selene*, common on hill sides. *Melitæa aurinia*, locally common. There remain a number of species of *Argynnis* that I have not yet identified. *Melanargia galatea*, one of the commonest butterflies, exceeding even the *Pieridæ* in abundance. *Hipparchia semele*, scarce. *Pararge egeria*, *P. megæra*, common in clearings in woods and in rough places respectively. *Epinephele ianira*, common in meadows; *E. tithonus*, scarce; *A. hyperanthus*, abundant. *Cænonympha pamphilus*, common. *T. w-album*, *C. rubi*, common on the edges of woods. *Chrysophanus phleas*, scarce. *Plebeius argus* (*ægon*), very common; *A. medon*, scarce; *A. corydon*, scarce; *P. icarus*, abundant; *A. bellargus*, fairly common; *C. minimus*, abundant everywhere; *L. arion*, plentiful. *Hesperia malvæ*, common; *T. tages*, plentiful; *T. thaumas*, abundant. This list would seem to indicate that the Champagne is indeed a happy hunting ground for the lepidopterist. Unfortunately the Censorship prevents me from giving any exact localities for these species, but after the war I shall be happy to do so.—JAMES W. BROWN; S.S. Anglaise, Convois Autos, Par B.C.M., Paris, July 9th, 1917.

COLIAS EDUSA IN JUNE.—On June 26th I caught a female *Colias*

edusa in Abbot's Wood, near Eastbourne.—H. O. WELLS; Inchiquin, Lynwood Avenue, Epsom.

PREPONDERANCE OF THE FEMALE SEX IN LEPIDOPTERA.—The experience of Mr. Dolton in breeding *Bupalus piniaria* is by no means unusual. In fact, judging by my own, I should say that in the great majority of cases more females are bred than males in most species. In many instances I have found the proportion of females to be very greatly in excess of the males. But when taking them flying the reverse is the case, the males largely predominating. Of a few species I have never yet taken a female, e.g. *Aspilates gilvaria*, the reason being that, though there are more females in existence they are less active and so less in evidence. I don't think this applies to the butterflies, but I feel sure it does to the great majority of moths.—(Rev.) J. E. TARBAT; Fareham, Hants.

LIBELLULA DEPRESSA, L.—In reference to Mr. C. Morley's request for localities in which this species has occurred this year, I should like to say that I have two specimens taken in my garden here—one, a female, on June 3rd, and the other, a male, in dying condition on July 14th. I may add that I had not previously seen this dragon-fly during my twenty years' residence in this neighbourhood.—W. S. GILLES; The Cottage, Bocking, Braintree, Essex.

ACENTROPUS NIVEUS AT WANSTEAD.—I was very pleased to see this curious little species here last month. Although I have worked the district closely for many years, I never saw the least trace of it before. The males were common on the margins of four ponds and could be readily boxed during the daytime; in fact, they cling so closely to the wet herbage that it is often a difficult matter to force them to walk into the box! The flight over the surface of the water at dusk is very interesting, they seem almost to skate along, describing innumerable semicircles, and seldom rising an inch above the water. I have searched most assiduously, but not a single female winged or wingless has rewarded my search.—A. THURNALL; Wanstead, July 16th, 1917.

EUCOSMA BRANDERIANA, ETC., AT WANSTEAD.—I was also pleased to meet with two very old friends in the shape of a single specimen of the above and one of *Gelechia nigra* in a spot amongst aspens, where thirty years ago they were not uncommon, but seem to have got very scarce there of late years. I also saw, but failed to box, one specimen of the curious little *Stathmopoda pedella* on an alder trunk. Another species that has become very scarce the past few years. Of other species taken or seen I may mention *Pyrausta aurata* larvæ, common on *Nepeta cataria* (a local plant here). *Myelois cribrella*, on *C. lanceolatus*; *Cryptoblades bistriga* and *Salebria betula*, a few bred; a single *S. fusca*, not seen in the Forest district before; *Euzophera pinguis*, on ash trunks at dusk; *Schenobius forficellus*, local amongst *Poa aquatica* at dusk; *Platyptilia bertrami*, amongst milfoil; *Gelechia malvella*, over hollyhock at dusk; *Symmoca quadripuncta*, on fences at dusk, etc.—A. THURNALL.

PARASCOTIA FULIGINARIA IN SURREY.—On July 10th last I took a fine specimen of this uncommon species from a black fence in this locality. It seemed to be in splendid condition, and might have only just emerged.—A. E. HOLT (2nd Lieut., R.G.A.); Deepcut, Surrey.

COLLIX SPARSATA AND BOARMIA ROBORARIA IN SURREY.—I obtained both these species at Deepcut, Surrey, the *Collix* on July 5th and the *Boarmia* on June 7th.—A. E. HOLT.

STAUROPUS FAGI IN EASTBOURNE.—I took a male specimen of this insect on July 11th at rest on a door-post in the business part of Eastbourne. It was in bred condition, except for a small chip in the left hind-wing.—A. F. BOBBY; "St. Margarets," Summerdown Road, Eastbourne.

SOMATOCHLORA METALLICA IN HAMPSHIRE.—In early June my daughter, Mrs. T. D. Arter, was staying in North-east Hants, and with her husband made some considerable captures of British insects for my collection. Among these were three specimens of this rare dragonfly, and the present record is, I believe, the most southern one yet for the species. Mr. Campion, who saw two of the specimens, advised me to publish a note on same.—W. L. DISTANT; Birchanger Road, South Norwood.

COLIAS EDUSA, AND VANESSIDS IN SPRING.—On the morning of June 24th whilst strolling on the Downs adjacent to this town, I fell in with a specimen of *Colias edusa*. I was able to watch it for some minutes as it flew from flower to flower, but at no time could I get it in such a position as to be sure of the sex, but from its behaviour I took it to be a male, and it appeared to be in quite fresh condition. I have also had it reported to me that some few others had been seen in this neighbourhood and that a couple were seen near Coulsdon, Surrey, about the same date. In the garden here odd specimens of *Aglais urticae* have been seen from time to time since April 22nd and in June an occasional *Pyrameis atalanta* and *P. cardui* have visited us. These spring visitants suggest that we may look for increased numbers in the coming autumn. Fresh specimens of *A. urticae* are already beginning to be met with fairly commonly.—ROBERT ADKIN; Hodeslea, Eastbourne, July 21st, 1917.

THE RESTING HABITS OF WHITE BUTTERFLIES.—I had been from home for some days, and this circumstance probably caused me to notice, as I entered the garden, that the foliage of *Weigela* shrub had lost all its fresh greenness and had assumed a sickly yellow colour, and that the end of one branch towards the middle of the shrub had an unwonted tuftiness at its end. Closer investigation showed this appearance to be caused by four specimens of *Pieris rapae* having settled down for the night on the terminal leaves, where, needless to say, they were particularly well concealed from casual observation.—ROBERT ADKIN; Eastbourne, July, 1917.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 24th.*—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Sperring exhibited a short series of *Pieris napi*, from Sligo, strongly tinged with yellow.—Mr. Edwards, specimens of the British Cicada, *Cicadetta montana*, from the New Forest.—Mr. H. Moore, *Manduca atropos*, from Durban.—Mr. Main reported that his Scarabs were very busy trundling their balls of horse-dung, and actively engaged in excavating their cells and other domestic matters.

June 14th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. H. Moore, a field-cricket, *Brachytrypes membranaceus*, and a stag-beetle, *Lucanus*, sp., from Durban.—Mr. Hy. J. Turner, specimens of *Euchloë cardamines*, showing minor aberration. (1) Large ♂, from Cannes, intense orange patch, edged with yellow shade, and reaching the anal angle. (2) A ♂, from Wisley, with apical blotch extending nearly to anal angle, and about double in width by a cloud of black scales. (3) A ♀, from Boxhill, with very dark apical blotch on fore wings and distinct discoidal dot on hind wings. (4) A ♀, from Amersham, with very light apical blotch, which was intersected throughout by parallel bars of white. (5) A ♂ under side, from Oxshott, with basal half clear light yellow. Mr. Turner also showed a copy of Jacob Christian Schäffer's work, date 1763, and called attention to the coloured plates illustrating the life-history of *Parnassius apollo*, including the eversible fork on neck of larva, flimsy cocoon for pupation, structure of prolegs, and details of the curious copulatory pouch, mostly magnified.—Mr. Frohawk, the *Anosia plexippus*, captured last year in Ireland.—Mr. Dennis, a stereoscopic slide of the bog-bean *Menyanthes trifoliata*, from Chelsea.—Reports on the season showed that things were up to date and generally common.

June 28th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. H. Moore exhibited the nest of a wasp, *Icaria*, sp., from Demarara.—Dr. Chapman, a pair of living *Chrysophanus dispar* v. *rutilus*, naturalised in Britain for three generations, and also specimens of the egg-laying of the sawflies, *Cladius viminalis*, in the petioles of poplar and of *Lophyrus pini* in a groove in needles of *Pinus sylviatrix*.—Mr. Main, living beetles from Sicily.—Mr. West (Greenwich), the rare Heteropteron, *Calocoris alpestris*, from Cumberland, and a living larva of *Stauropus fagi*, from the New Forest.—Mr. Bunnett, larval cases and living imagines of *Coleophora palliatella*, from Crohamhurst, and cases with an imago of the Psychid known as *Fumea casta*.—Mr. Turner, varied series of *Cænonympha iphis*, *C. arcania*, and *C. satyrion*, including several of the named forms, and summarised the current opinion as to the specific value of the three.—Remarks were made by several members on the season. Members had seen *Colias edusa*, *Vanessa io*, *Pyrameis atalanta*, larvæ of *Celastrina argiolus*, and second broods of *Pieris rapæ* and *P. napi*.—HY. J. TURNER (Hon. Ed. of Proceed.).

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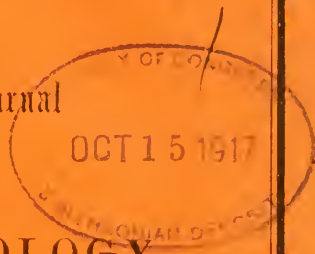
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THE ENTOMOLOGIST.

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SEPTEMBER, 1917.

[No. 652

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

By G. T. LYLE, F.E.S.

(Continued from vol. 1, p. 53.)

APANTELES. SECTION 3.

Apanteles jraternus,* Reinh.

A SMALL black species which expands but $3\frac{1}{2}$ –4 mm. Is particularly interesting on account of the manner in which the cocoons are arranged in a compact alveariform mass (Pl. II, fig. 2). Reinhard tells us that "the yellow-white cocoons to the number of 100 or upwards are spun together in the form of a honeycomb in a very neat manner, with the base attached to a thin twig or stem." In all the cases I have noticed, the masses of cocoons have been in an almost semi-circular form caused by the parasite larvæ filling up the space between the body of the host and the twig upon which it rested. In one instance I was fortunate enough to witness the spinning of the cocoons, and it certainly seemed as if the host, a geometrical larva, encouraged the formation of the semicircular shape by accommodately arching its body; previous to the emergence of the parasites it had been stretched almost straight along the twig.

As mentioned above, Reinhard states that the broods consist of 100 or more individuals, but I have never seen any approaching this figure, the largest I have come across containing 53 and the smallest 29.

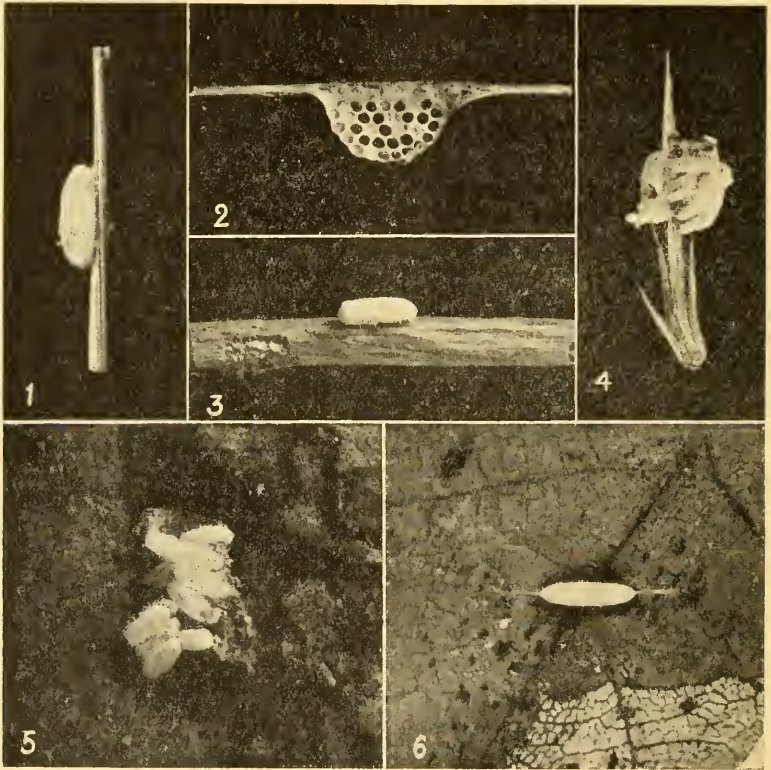
In June, 1916, I found two batches of cocoons attached to marram grass growing on the sand dunes near the entrance to Poole Harbour; in each case the host, still alive, was brooding over the "comb." Not being sure of the species of the host I searched the neighbourhood thoroughly for other caterpillars but discovered one only. This larva lived in confinement for a fortnight or so without, so far as I could judge, attempting to eat the food with which it was supplied, when it also produced a brood of the parasite. The imagines emerged from these three bundles of cocoons on July 2nd, 7th, and 17th respectively.

* Berl. Ent. Zeit., xxv. p. 47.

I believe the host to have been *Aspilates ochrearia*, from which insect Bignell reared the species in some numbers.

In Harwood's collection I have seen a brood obtained by him from a larva of *Euclidia mi*, taken at St. Osyth (October 10th,

PLATE II.



1. Cocoon of *Apanteles pinicola*. $\times 2\frac{1}{2}$.
2. Empty cocoons of *A. fraternus*. $\times 2\frac{1}{2}$.
3. Cocoon of *A. jugosus*. $\times 3$.
4. Empty cocoons of *A. triangulator*. $\times 2\frac{1}{2}$.
5. Empty cocoons of *A. lucifugus*. $\times 2$.
6. Cocoon of *A. lautellus*. $\times 2\frac{1}{2}$.

1914), and also two other broods from either *E. mi* or *A. ochrearia* (October 14th), taken near Colchester.

A. triangulator, Wesm.*

Very similar to the last but considerably larger, and also differing in the shape of the first abdominal segment, which

* 'Nouv. Mém. Ac. Brux.,' 1837, p. 62.

in this insect is more triangular, hence the specific name. The stigma is pale fuscous with the nervures paler, indeed, the latter are sometimes quite colourless. All the specimens I have seen expand from $5\frac{1}{2}$ to 6 mm. The cocoons are well described by Wesmæl as pale-yellow, and "*réunies en un petit paquet*" (Pl. II, fig. 4).

In the New Forest these compact parcels of cocoons may often be found in June attached to *Genista anglica* and to furze, the species being commonly parasitic on larvæ of *Pseudoptera pruinata*. Major Robertson has reared it from the same host taken at Chandler's Ford, and I imagine that it will be found to be as common and generally distributed as is its host. The broods usually consist of from ten to twenty individuals.

A nearly related and, I believe, undescribed insect which forms a pure white cocoon, and which I have obtained as a solitary parasite from a larva of *Nola cuculatella*, appears to have been confused with this species (see Marshall, 'Trans. Entom. Soc.,' 1885, p. 215). Bignell gives the cocoons as "white, thick, gregarious," which also points to confusion.

A. formosus, Wesm.*

Is rendered specially interesting by its unique cocoon, first discovered by Bignell, who figured and described it in 'Trans. Devon Assoc. Sci., Lit., and Art,' 1901, xxxii, p. 661. Judging from Bignell's remarks the insect should be a fairly common parasite of the larvæ of *Ourapteryx sambucaria*. In the New Forest the Swallow-tail Moth is by no means plentiful though every spring a few of the larvæ may be beaten from honeysuckle or ivy. For quite ten seasons past I have reared all I could obtain with the idea of breeding this parasite but without success. I have also persuaded friends to send me considerable numbers of the caterpillars from at least six different localities in the country with no better result; indeed, I have never obtained a hymenopterous parasite of any sort from *O. sambucaria*.

As Marshall remarks, the cocoon somewhat resembles the pedicellate egg of a *Chrysopa*. It also bears a likeness to the pensile cocoon of a Meteorid, and one would naturally suppose that it was constructed in a similar manner, namely, by the maker first suspending itself by strands of silk from a leaf or twig and then weaving its cocoon. Bignell, however, assures us that it is not so, and states that the larva, after constructing a base, erects a peduncle, at the top of which the cocoon is fixed.

A. parallelus, sp. nov.

Black; palpi pale; belly at base testaceous; fore and middle femora, tibiæ and tarsi entirely testaceous; hind femora and tibiæ

* 'Nouv. Mém. Ac. Brux.,' 1837, p. 60.

testaceous, fuscous at apex; hind tarsi fuscous, basally paler (occasionally the hind tibiæ are also narrowly fuscous at the base), hind coxæ smooth and shining above. Wings hyaline, stigma and nervures fuscous; antennæ as long as the body. Mesothorax punctulate; scutellum smoother, with sparse punctulation; metathorax subrugulose. First segment of the abdomen more than twice as long as its median breadth, with scattered punctures, *sides parallel nearly as far as the rounded apex*; second almost as long as third with the usual impressed converging lines enclosing a fairly smooth triangular space; other segments smooth and shining; first three segments sometimes broadly edged with testaceous. Terebra subexserted (very slightly surpassing apex of abdomen). Length, $2\frac{1}{2}$ –3 mm.; expands $5\frac{1}{2}$ –7 mm.

Described from three males and one female.

The rounded and not pointed apex of the first abdominal segment will distinguish this species from all others in the section excepting *formosus*; in some specimens this segment appears almost truncate, and were it not for the exserted terebra of *A. exilis*, Hal., the insect might easily be confused with that species.

A solitary parasite, cocoon brownish-white, smooth, and very similar to that of *A. pinicola*, though not so rosy in colour. The cocoon is constructed beneath the body of the host, and is usually attached to a twig. After having voided its parasite, the host appears to be incapable of locomotion, and remains seemingly brooding over the cocoon, which position its dried body retains long after death.

Seems to be a fairly common parasite of *Hemithea strigata* (*thymiaria*), from which host I bred it on May 25th, 1911; May 14th, 1912; May 16th, 1912; and June 8th, 1914.

A. pallidipes, Rein.*

Has many times been bred as a gregarious parasite from larvæ of the genus *Plusia*. In the New Forest it appears to be uncommon; at any rate, I have obtained no specimens from the numerous larvæ of *P. gamma* and *P. chrysitis* I have reared. The rugulose metathorax easily distinguishes it from its near relatives.

A. bicolor, Nees.†

The only specimen I have seen is a female without data, formerly in Fitch's collection and now in the possession of Mr. B. Harwood. The terebra is from a quarter to one third as long as the abdomen, and there is scarcely a trace of an elbow at the point where the first abscissa of the radius joins the first intercubital nervure.

* 'Berl. Ent. Zeit.,' 1881, p. 48.

† 'Mon.,' i, 181.

A. lucifugus, sp. nov.

Black; palpi pale; belly at base and legs testaceous: fore and middle coxæ chocolate-brown; hind coxæ black; hind femora sometimes very slightly infuscate at apex and sides; apical half of hind tibiæ dark; hind tarsi infuscate, with the base paler; hind coxæ above smooth and shining, wings hyaline, stigma pale fuscous, nervures mostly pale; first abscissa of radius and first intercubital nervure united in one curve without any sign of an elbow at the point of junction. Antennæ rather longer than the body. Mesothorax very finely punctulate; scutellum smooth; metathorax smooth, apically feebly acciliated in centre, laterally and apically margined by a fine raised ridge. First abdominal segment more than twice as long as its medial breadth, sides parallel for two thirds of its length, then converging to a blunt point; second as long as third, with two deeply impressed converging lines enclosing a smooth space, the centre of which is raised; other segments smooth and shining; segments 1 and 2 laterally bordered with testaceous or fusco testaceous. Terebra short, not surpassing the apex of the abdomen; spurs of middle tibiæ curved at apex. Length, 2 mm.; expands, 5 mm.

Described from nine males and three females out of a brood of thirteen, bred from a larva of either *Laspeyria flexula* or *Lithosia deplana*, probably the former, June 20th, 1911.

The neuriation of the upper wing will easily distinguish this species from all others in the section with the exception of *bicolor*, which it somewhat resembles; in *bicolor*, however, the terebra is at least one fourth as long as the abdomen.

Cocoons almost smooth, pure white, and, in the only case I have observed, attached in an irregular cluster to the bark of a pine-tree, $3\frac{1}{2}$ mm. in length (Pl. II, fig. 5).

A. lautellus, Marsh.*

I have seven females which I believe I am right in referring to the dark form of this species as described by Marshall. Typical specimens, with which I have never met, are said to have the first four abdominal segments testaceous. In some of mine the first three are edged with testaceous, but no more; the apex of the hind tibiæ infuscate, and in the darker specimens the hind and even middle femora edged with fuscous above and below, the hind and middle coxæ being dark also. My largest, bred from *Paramesia ferrugana*, expands 7 mm.; the smallest, from *Lithocolletis coryli*, less than 5 mm.

The cocoon is very curious, being cylindrical, smooth, white, papyraceous, and transparent; it is slung, hammock-like, by threads of silk attached to either extremity, across the larval chamber of the host. When found in the well-known chamber

* 'Trans. Entom. Soc.,' 1885, p. 219.

of *Gracillaria swederella* this is particularly noticeable (Pl. II, fig. 6).

Bred from *Paramesia ferrugana*, October 23rd, 1914; *G. swederella*, November 1st, 1915; and many times from *Lithocolletis coryli*, October 10th to November 1st; also from a species of *Lithocolletis* mining the under side of oak leaves. As a hyper-parasite, I have obtained a chalcid named by Morley, after comparison with the type in the British Museum, as *Eulophus encugamus*, Walker.

A. callidus, Hal.*

Distinguished from *lateralis* and *vitripennis* by its dull granulate coxæ and narrow wings.

I have never captured or bred this insect, the only specimens I have seen being an ancient pair, without data, in Harwood's collection; probably they were at one time in the possession of Fitch. Is recorded by Bignell as a gregarious parasite of *Abraxas grossulariata*, but, although I have at various times reared some hundreds of the larvæ of this moth, and have obtained numerous parasites of other species, *A. callidus* has never occurred to me.

A. lateralis, Hal.†

Very similar to *vitripennis*, but differing in the rougher metathorax and also the exerted terebra, which in this species is almost half as long as the abdomen. Marshall tells us the first abdominal segment is "almost smooth," although Haliday says it is "*punctulatum*."

I have found it to be a very common parasite of *Sericoris fabricana*, preying on both spring and summer broods of that insect. Harwood has a single specimen formerly in Fitch's collection, and labelled by the latter, "Ex. *S. fabriciana*?, 20/9/83, W.H.B.F."

The cocoon is white and similar to that of *vitripennis*; sometimes it is constructed within the well-known web made by the host; at others on the under side of a leaf of the food-plant.

A. vitripennis, Hal.‡

A rather prettily marked species, the first three segments of the abdomen being very noticeably edged with flavo testaceous; indeed, in some specimens these segments are entirely flavo testaceous above, with the exception of a central isolated black patch. Bignell tells us that this is often a gregarious parasite, which does not agree with my experience. Marshall also, in

* 'Ent. Mag.,' ii, 248.

† 'Ent. Mag.,' ii, 248.

‡ *Ibid.*

“Braconidæ d’Europe,” says it is gregarious, though all the records he gives seem to point to its being solitary. In the New Forest I have found it to be a fairly common parasite of *Cleora lichenaria*, having often bred it from the larvæ of that species in April and early May. I have also a specimen obtained by Colthrup from the same host taken at Abbots Wood. In addition, I have bred it from small larvæ of *Miselia oxyacanthæ*, May 14th, 1912; *Crocallis elinguaris*, May 22nd, 1914; and *Pachys betularia*, August 2nd, 1913; also from *Eupithecia irri-guata*, July 24th, 1916, and *Ephyra punctaria*, September 13th and 15th, 1911.

The cocoon is smooth and pure white in colour.

A. pinicola, sp. nov.

Black; palpi pale; tips of mandibles, belly at base, and legs rufo testaceous; hind coxæ dark; hind femora and tibiæ tipped with fuscous (in dark specimens the fore and middle tibiæ are also fuscous towards the apices); middle and hind tarsi more or less fuscous. First three segments of the abdomen laterally bordered with dull rufo testaceous. Hind coxæ above slightly granulated, otherwise smooth and shining. Wings sub-infumated, iridescent, stigma and nervures dark fuscous, all the nervures visible; antennæ as long as the body. Mesothorax and scutellum finely punctulate, shining; metathorax almost smooth, feebly acciliated at apex. Abdomen shining; first segment three times as long as medial breadth, gradually tapering from base to apex, with a smooth raised medial ridge, laterally rather coarsely punctate; second centrally raised and smooth, laterally sub-rugulose, almost as long as third; terebra short; spurs of middle tibiæ somewhat curved at apex. Length, $3\frac{1}{2}$ –4 mm.; expands, 8–9 mm.

Described from eleven males and twenty-three females.

Very near *vitripennis*, though I believe it to be quite distinct. It is a larger and more robust insect, the wings are sub-infumated (in *vitripennis* they are pure hyaline), while all the outer nervures of the upper wing are plainly visible. There is much less testaceous colouring on the upper side of the abdomen; also the legs are rufo testaceous, and not flavo testaceous. In this species the transverse median vein forms with the third abscissa of the median vein an angle of 45 degrees or so; in *vitripennis* we have almost a right angle at the junction of the two veins. Also the cocoons are different.

In the New Forest a very common solitary parasite of the larvæ of *Thera variata* and *T. obeliscata* from which hosts I have bred it in numbers from May 14th to June 9th, and again from September 18th to October 16th. Major Robertson also obtains it frequently at Chandler’s Ford from the same hosts. I have beaten it from Douglas fir on November 26th and 27th, and once took a specimen at ivy bloom so late as December 1st.

On September 7th, 1913, I was fortunate enough to observe the emergence of a larva of this species from its host. When first noticed the latter was resting extended on a pine needle of which it had taken a very firm grip with its anal claspers, and from its swollen and unhealthy appearance evidently contained a parasite. At 5.8 p.m. the parasite had forced its head through the dorsal surface of one of the central segments, its body then occupying practically the whole of the host between this segment and the anus. By 5.19 the parasite larva had completed its emergence, though it still retained a firm hold of its host with its anal segments and had also loosely attached itself to the caterpillar by a few threads of silk. By this time the host was hanging inert from the pine needle by its anal claspers, though still showing faint signs of life. The parasite larva now worked its way up the body of the host by a crawling motion until the pine needle was reached, to which it lightly attached the caterpillar and then commenced busily spinning its cocoon. The construction of the cocoon progressed rapidly, and at 6 p.m. the Braconid larva released its grip of the host which it apparently pushed away and caused to fall to the ground.

The larva of this species is of the usual cream colour with the parts of the mouth outlined in brown, and raised obese spiracular ridges.

Cocoon smooth, pale, with a distinct rosy tint which is often more pronounced towards one extremity (Pl. II, fig. 1). Writing of *A. vitripennis* ('Trans. Entom. Soc.,' 1885, p. 223) Marshall mentions that Raynor bred a female at Brandon from *Thera variata*, the cocoon being *accidentally* stained at one end orange red. It seems probable that he had a specimen of *A. pinicola* before him, and that the coloration of the cocoon was natural and not accidental as he supposed.

I have twice bred a species of *Astiphrommus*, Thoms, as a hyper-parasite and once, September 28th, 1913, *Mesochorus fusicornis*.

A. fulvipes, Hal.*

Without doubt the commonest species of the genus; indeed, every breeder of Lepidoptera must be well acquainted with the bunches of pure white and rather woolly cocoons which he only too frequently finds in his breeding cages. It is usually the larvæ of Noctuæ that fall victims to this parasite, and the cocoons are, as a rule, found beneath the surface of the ground.

There is a succession of generations from March to October, the winter being passed within the body of a host, probably in the egg state.

An excellent account of the larva and pupa (both very

* 'Ent. Mag.' ii. 242.

typical) is given by Ratzeburg ('Ich. de Forst.,' i, 62), and quoted by Marshall ('Trans. Entom. Soc.,' 1885, p. 224).

It is already known to prey on nearly thirty different species of lepidoptera in this country alone, and no doubt many additional hosts will in time be recorded. I have obtained great numbers in March and April from larvæ of *Noctua xanthographa* and *Triphæna fimbria*, and in June and July I have bred it very commonly from larvæ of *Miselia oxyacanthæ*, while in the autumn I have found that the caterpillars of *Triphæna pronuba* suffer greatly from its attacks. In addition, I have reared it from the following hosts: *Triphæna orbona*, May 30th, 1909, and many other dates; *Brachionycha sphinx*, June 8th, 1912; *Stilbia anomala*, April 28th, 1909; *Agrotis strigula*, April 2nd, 1914; *Camptogramma bilineata*, April 17th, 1912, and April 24th, 1914; and *Xanthorrhoe montanata*, April 21st, 1914. I have also a brood obtained by Cockayne from *Mamestra pisi*, taken at Linber, North Lines., and in Harwood's collection is a specimen bred from *Toxocampa craccæ*.

My largest brood (thirty-nine) was obtained from *M. oxyacanthæ*, the smallest (seven) from *X. montanata*. Both sexes are represented in each brood, the females being usually in a proportion of two to one.

BRITISH ODONATA IN 1916.

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

ALTHOUGH the latter part of April was warm and bright, it was not till the first day of May that I saw a dragonfly, on which date a *Pyrrosoma nymphula*, Sulz., was sighted near Beaulieu River in the New Forest. No further member of the Odonata came within my ken till the South London Natural History Society's excursion to Wisley, in Surrey, on May 20th, when two further species were met with—*Agrion puella*, Linn. (W. J. L.), and *Libellula depressa*, Linn. (H. J. Turner). On June 3rd *A. puella*, ♀, was captured on Effingham Common and *Enallagma cyathigerum*, Charp., ♀, near East Horsley—both in Surrey (W. J. L.). *Calopteryx virgo*, Linn. (L. C. E. Balcomb) and *P. nymphula* (W. J. L.) were taken, and *L. depressa* (W. J. L.) was seen in the New Forest on June 11th; while *L. depressa* was also seen (W. J. L.) near Netley Heath, in Surrey, on the occasion of the South London Society's excursion to Clandon on June 24th; but it eluded capture.

E. cyathigerum was common a few miles from King's Lynn, Norfolk, in May and June (E. A. Atmore); while *Agrion mercuriale*, Charp., was not uncommon, but extremely local, in two

places a few miles from King's Lynn at the end of June and in July (Atmore).

A visit to the canals and streams near Byfleet, Surrey, on July 1st yielded few dragonflies, as the day was usually dull; *E. cyathigerum*; *Erythromma najas*, Hans; *Calopteryx splendens*, Harris; and *P. nymphula* were met with at the canals; while *Lestes sponsa*, Hans., and *A. puella* were found at Boldermere, the large lake facing the Hut Hotel (Balcomb and W. J. L.). On July 8th an *A. puella*, ♀, was taken in Clandon Park, Surrey, and the next day there were seen or taken at the Black Pond, Surrey, *E. cyathigerum*, *Libellula quadrimaculata*, Linn.; *P. nymphula*; *Pyrrhosoma tenellum*, Vill. (one teneral specimen captured); and *Cordulia ænea*, Linn. (Balcomb and W. J. L.). A female *C. ænea* captured was dropping her eggs by striking the water with the tip of her abdomen, apparently in quite an aimless manner.

In the New Forest, from the end of July till the beginning of September, seventeen species were met with: *P. nymphula*; *Orthetrum cærulescens*, Fabr.; *Cordulegaster annulatus*, Latr.; *C. virgo*; *A. mercuriale*; *Platycnemis pennipes*, Pall.; *P. tenellum* (and its var. *melanotum*); *Sympetrum striolatum*, Charp.; *A. puella*; *L. depressa*; *Ischnura elegans*, Lind.; *E. cyathigerum*; *Anax imperator*, Leach; *Sympetrum scoticum*, Don.; *L. sponsa*; *Æschna cyanea*, Müll.; and *Æschna juncea*, Linn. Early in August it was an interesting sight to see the large number of dragonflies of various species, hawking over and near the bogs, streams, and ponds in the New Forest during the hot, bright weather. The most common appeared to be *P. tenellum* and *O. cærulescens*, but *A. mercuriale*, *C. virgo*, and *C. annulatus* were also numerous. *Ischnura pumilio*, Charp., was not seen; presumably it was over before the end of July, although early August should not be too late for it. On August 18th, after the rain and when the sunshine was not so constant, there was a marked difference in the number of dragonflies.

On August 3rd, at Duck-hole Bog, where it enters Oberwater, and in the neighbourhood, dragonflies were very numerous, especially *P. tenellum* and *O. cærulescens*. At the shallow "shade" pond at Apsley Passage were some three *L. depressa*, which I tried for a long time to capture, but without success. They obviously avoided me most carefully, although *O. cærulescens* did not seem to mind my presence.

At Avonwater, on August 5th, I twice watched for some time an unattended female, *C. annulatus*—perhaps the same insect each time—as she was ovipositing. This she did by striking aimlessly, as it appeared, and with considerable force, the extremity of her abdomen below the surface of the water. The operation was always performed near the bank, and usually, I fancy, if not always, the tip of the abdomen reached the bottom of the

stream, which in most cases consisted of bare gravel-stones. The ovipositor must be strong and tough to stand the repeated blows. The strokes took place pretty regularly, about two a second, and on the first occasion the insect struck some hundreds of times before being disturbed. The second time she was soon discovered and taken away by a male. If but one egg was laid at each stroke of the abdomen, the total number laid must have been considerable. Females of *C. annulatus* thus employed, make a considerable amount of noise with their wings, and in this way can usually be detected.

On August 7th I paid a visit to Crockford Pond to see if *Sympetrum fonscolombii* by chance was present, but could see no *Sympetra* except *S. scoticum*. *O. cærulescens* was very common, and I watched for a long time a male *A. imperator* hawking over and around the pond. It settled at last, and though I was near enough to see its brilliant colours, I could not make a capture. It once tried to catch a butterfly (apparently a white), but without success. *E. cyathigerum* and *P. tenellum* were also present at the pond. At Marlborough Deeps, on August 11th, although most of the pools were nearly or quite dry, there were many dragonflies—*A. puella*, *P. nymphula*, *P. tenellum*, *L. sponsa*, *Æ. cyanea*, *Æ. juncea*, *S. striolatum*, and *O. cærulescens*. Although *A. mercuriale* had been common at the beginning of the month, from August 16th onwards it could not be found. By September many species of dragonflies were becoming scarce, though *C. annulatus* and *S. striolatum*, and one female, *C. virgo*, were noted on September 1st and *O. cærulescens* on September 9th; but *S. striolatum*, the *Æschnas*, and a few other species still had some weeks of life before them.

On October 1st *S. striolatum* was seen at the Long Water in the Home Park at Hampton Court, while the same species and its congener, *S. scoticum*, were in evidence at the Black Pond, Surrey, on October 15th. This was my last experience with the Odonata in 1916.

On August 14th Mr. R. South took a female, *Æschna juncea*, at Stanhope, co. Durham; and Mr. K. J. Morton had given to him an *Æschna mixta*, Latr., taken during the summer near the Test, in Hampshire.

Mr. H. J. Burkill reports that on August 16th *S. striolatum* settled on a bush of *Prunus spinosa* about 5.45 p.m., on the edge of the low cliffs at Beachley Point, Gloucestershire. It was sluggish, and allowed him almost to bottle it without employing the net, only flying off a few yards after he attempted a capture; but eventually it got so near the cliff that he was forced to use the net to secure it. On August 21st about eight *Æ. cyanea* were seen at a pond in "The Park," Tiddenham Chase, South-west Gloucestershire. They were *in cop.* or ovipositing. Mr. Burkill tells me further that on October 1st, a

sunny day, he saw *Sympetrum sanguineum*, Müll., on the cricket-ground at Chiswick. It took short flights along the grass as he approached it. Mr. Burkill captured the insect, but set it free as he was playing golf. Mr. Atmore found *S. sanguineum* fairly common in August at one spot one and a half miles from King's Lynn.

Mr. H. R. Wakefield, writing from Swansea, reports *S. striolatum*, ♂, from Oxwich, in Gower Peninsula, and *P. pennipes* ♀, from the same locality.

To Mr. E. A. C. Stowell I am indebted for the Rugby School list of Odonata for 1916. It is: *L. depressa*, Dunchurch, May 29th (E. A. C. S.), and Rainsbrook, June 6th (M. Bateson); *Brachytron pratense*, Müll., ♂ and ♀, Hillmorton, May 28th (J. H. Gaddum); *P. pennipes*, Hillmorton (E. A. C. S.); *C. splendens*, ♂ and ♀, River Swift, June 3rd (J. H. G.), and Cosford, July 24th (E. A. C. S.); *P. nymphula*, Hillmorton, May 30th (J. H. G.), and Rainsbrook, June 6th (M. B.); *I. elegans*, Hillmorton, May 30th (J. H. G.); *A. puella*, Hillmorton, May 30th (J. H. G.); *Agrion pulchellum*, Lind., Clifton, June 3rd (J. H. G.).

For the Lancashire and Cheshire Fauna record the following species were noted: *Leucorrhinia dubia*, Lind., May 31st, somewhat teneral, Cuddington, Cheshire (C. H. Brown); *S. striolatum*, August 20th, Arrowse, Cheshire (T. A. Coward); *S. scoticum*, August or September, Vale Royal, Cheshire (C. R. Brown); *Æ. juncea*, August, Petty Pool, Vale Royal (C. R. B.); *Æschna grandis*, Linn., August 22nd, Irby, Cheshire (T. A. C.), also August or September, Vale Royal (C. R. B.); *P. nymphula*, rather teneral, May 31st, Cuddington (C. H. B.); *A. puella*, a female, May 31st, Cuddington (C. H. B.); *E. cyathigerum*, males very teneral, females perhaps a little less so, May 31st, Cuddington (C. H. B.).

Mr. W. M. Tattersall received (August 15th) a living *Æ. juncea*, ♂, caught in Monton, a suburb of Manchester. This he sent to me, and with it the remains of a teneral male, caught in the heart of Rochdale, which he had received the previous week. He thought that there had been a slight invasion of dragonflies into the towns of South Lancashire just at that time.

Kingston-on-Thames,
July, 1917.

THE NOCTUIDÆ OF GREAT BRITAIN AS ARRANGED
IN THE GENERAL COLLECTION AT THE NATURAL
HISTORY MUSEUM.

BY RICHARD SOUTH.

(Continued from p. 185.)

1504. CHABUATA CONIGERA, Fabr.
Leucania conigera, E.S.L., p. 5; M., p. 69; T., i, p. 30;
M.B.I., i, p. 313.
1575. ERIOPYGA TURCA, L.
Leucania turca, E.S.L., p. 5; M., p. 68; T., i, p. 33;
iv, p. 94; M.B.I., i, p. 314.
1716. XYLOMANIA CONSPICILLARIS, L.
Xylomiges conspicillaris, E.S.L., p. 10; T., i, p. 69; M.B.I.,
i, p. 258.
Melanchra conspicillaris, M., p. 83.
1739. MONIMA GOTHICA, L.
Teniocampa gothica, E.S.L., p. 8; T., ii, p. 148; iv, p. 119;
M.B.I., i, p. 326.
Monima gothica, M., p. 75.
1744. MONIMA POPULETI, Fabr.
Teniocampa populeti, E.S.L., p. 8; T., ii, p. 146; M.B.I., i,
p. 329.
Monima populeti, M., p. 73.
1745. MONIMA MINIOSA, Schiff.
Teniocampa miniosa, Fb., E.S.L., p. 8; T., ii, p. 155;
M.B.I., i, p. 327.
Monima miniosa, M., p. 74.
1747. MONIMA STABILIS, Schiff.
Teniocampa stabilis, View., E.S.L., p. 8; T., ii, p. 152;
M.B.I., i, p. 328.
Monima stabilis, M., p. 73.
1749. MONIMA MUNDA, Schiff.
Teniocampa munda, Esp., E.S.L., p. 8; T., ii, p. 134;
M.B.I., i, p. 330.
Monima munda, M., p. 74.
1750. MONIMA CRUDA, Schiff.
Teniocampa pulverulenta, Esp., E.S.L., p. 8; T., ii, p. 154;
M.B.I., i, p. 328.
Monima pulverulenta, M., p. 73.
1762. MONIMA INCERTA, Hufn.
Teniocampa incerta, E.S.L. p. 8; M.B.I. i p. 330.
Monima incerta, M., p. 72.
Teniocampa instabilis, Fab., T., ii, p. 136.

1763. MONIMA OPIMA, Hb.
Tæniocampa opima, E.S.L., p. 8; T., ii, p. 142; M.B.I., i,
 p. 331.
Monima opima, M., p. 73.
1768. MONIMA GRACILIS, Schiff.
Tæniocampa gracilis, Fb., E.S.L., p. 8; T., ii, p. 144;
 M.B.I., i, p. 331.
Monima gracilis, M., p. 73.
1776. SIDERIDIS LITHARGYRIA, Esq.
Leucania lithargyria, E.S.L., p. 5; M., p. 68; T., i, p. 31;
 M.B.I., i, p. 312.
1777. SIDERIDIS ALBIPUNCTA, Schiff.
Leucania albipuncta, Fb., E.S.L., p. 5; M., p. 68; T., i,
 p. 30; M.B.I., p. 312.
1778. SIDERIDIS VITELLINA, Hb.
Leucania vitellina, E.S.L., p. 5; M., p. 69; T., i, p. 39;
 M.B.I., i, p. 311.
1784. SIDERIDIS CÆSIA, Schiff.
Dianthœcia cæsia, Bork., E.S.L., p. 9; T., iii, p. 39; iv,
 p. 123; M.B.I., i, p. 248.
Harmodia cæsia, M., p. 78.
1807. PANOLIS FLAMMEA, Schiff.
Panolis piniperda, Panz., E.S.L., p. 8; M., p. 76; T., ii,
 p. 128.
Panolis griseo-variegata, M.B.I., i, p. 324.
1808. CERAPTERYX GRAMINIS, L.
Charœas graminis, E.S.L., p. 6; M., p. 75; T., i, p. 128;
 iv, p. 109; M.B.I., i, p. 256.
1850. CIRPHIS LOREYI, Dup.
Leucania loreyi, E.S.L., p. 40; M., p. 68; T., i, p. 35;
 iv, p. 94; M.B.I., i, p. 311.
1869. CIRPHIS L-ALBUM, L.
Leucania l-album, E.S.L., p. 40; M., p. 69.
1890. CIRPHIS COMMA, L.
Leucania comma, E.S.L., p. 5; M., p. 69; T., i, p. 37;
 M.B.I., i, p. 309.
1934. CIRPHIS PUTRESCENS, Geyer.
Leucania putrescens, Hb., E.S.L., p. 5; M., p. 70; T., i,
 p. 36; M.B.I., i, p. 310.
1950. CIRPHIS UNIPUNCTA, Haw.
Leucania extranea, Gn., E.S.L., p. 5; T., i, p. 33; iv, p. 94;
 M.B.I., i, p. 310.
Leucania unipuncta, M., p. 70.
2012. MELIANA FLAMMEA, Curt.
Meliana flammea, E.S.L., p. 5; M., p. 66; T., i, p. 43;
 M.B.I., i, p. 300.

(To be continued.)

NOTES AND OBSERVATIONS.

ARGYNNIS AGLAIA, AB.—In July last I was fortunate enough to catch the most remarkable ab. of *A. aglaia* which I have ever seen. All the wings of the insect, which is a ♀, are yellow, not brown, while the usual black markings of the upper side are replaced by similar silver markings, which are very bright in certain lights. It is in splendid condition, save for a slight congenital mark towards the centre of the right hind wing.—F. B. NEWNHAM; Church Stretton.

COLLATERAL COLOUR VARIATION OF ARGYNNIDS.—Mr. Newnham was good enough to communicate to me the capture of the *A. aglaia*, which he has named ab. *molybdena* described above. A bluish-leadен hue of the nervures and part of the intraneural spaces and the wing bases is sometimes displayed more or less pronouncedly in members of the genus. For example, when collecting at Gavarnie, Hautes-Pyrénées in July, 1906, I caught a beautiful female *A. niobe*, var. *eris* suffused or glazed with the same leaden-blue colour. I exhibited this at a meeting of the Entomological Society (*cp.* 'Proc. Ent. Soc.,' 1906, p. 18). Five years later I missed a female showing the same characteristics at almost the identical spot where I made my capture; and this leads me to suppose that under certain (unascertained) conditions of climate or soil, a strong tendency to bluishness prevails; for I have seen in other collections than my own examples of the kind.—H. ROWLAND-BROWN; Harrow Weald, August 9th, 1917.

RESTING HABIT OF PIERIDS.—*À propos* to Mr. Adkin's interesting note on the protective precautions of *Pieris rapæ* (*antea*, p. 191), the famous Leaf Butterfly of the East does not better assimilate its surroundings than *Gonepteryx rhamni*. On a recent walk through some Chiltern beech woods, I watched a fresh male settle down among the pale green leaves of a stump upon which the sun was shining obliquely. The light transparency of the folded wings and the pattern thereof accorded exactly with the surrounding foliage, and, a momentary distraction causing me to look away, I was quite unable at the little distance I stood to distinguish leaf from insect until the butterfly again rose from its sanctuary.—H. ROWLAND-BROWN; Harrow Weald, August 9th, 1917.

CUPIDO MINIMUS, SECOND EMERGENCE.—It may be of interest to record a second emergence of *C. minimus* in the Chilterns during the first week of August.—H. ROWLAND-BROWN.

VARIETY OF FEMALE EUCHLOË CARDAMINES.—On May 18th last I had the good luck to breed from a local larva a most remarkable variety of *E. cardamines*. In this specimen the area of the fore wings, which in the male is orange, is thinly dusted with red-orange on both fore wings. There are dashes of the abnormal colour on the discal spot itself and also on the white wedge-shaped marks which occur in the typical female of the species, but not in the male. The specimen seems interesting to me as a probable instance of atavism, for may we not suppose that in this species both sexes had originally

an orange apical blotch, but that it gradually became obsolete in the female, thus rendering her less conspicuous?—(Rev.) GILBERT H. RAYNOR; Hazeleigh Rectory, Maldon, Essex, August 17th, 1917.

VANESSA IO AND AGLAIS URTICÆ IN GLOUCESTERSHIRE.—During a holiday in the Stroud district at the end of July last I noticed hundreds of larva of *A. urticæ* on almost every patch of nettles, and a good few of the butterflies in perfect condition were flying. In view of the idea that *V. io* is getting scarcer in the country I was glad to see it common in many parts of the district, the butterflies in all cases being in perfect condition, but no larvæ were seen, so presumably all had turned in—and out.—C. NICHOLSON; Hale End, Chingford, August 15th, 1917.

PLUSIA MONETA IN CHESHIRE.—The accidental finding of a freshly-emerged specimen of *P. festucae* in my garden caused me to watch the flowers of sweet williams, of which I have a fair number. I found the Plusias well represented, and in the course of a week took quite a nice series of *festucae*, *iota*, and *pulchrina*; *chrysitis* was very common, and a few *gamma* were taken, but I was delighted to find *moneta* had found its way into the garden, and I secured six specimens in all. An odd specimen had, I believe, been taken in the district before, but it has evidently, in common with the other Plusias, been much more plentiful than usual this season.—ROBERT TAIT; Rose-neth, Ashton-on-Mersey, Cheshire.

APATURA IRIS IN WEST SUSSEX.—On August 7th Master E. G. Thorpe, a schoolboy staying here, brought me a butterfly he had just caught in my garden to identify. It was a Purple Emperor; I have lived here thirty years, and this is the first time I have seen it.—ALFRED LLOYD, F.E.S.; The Dome, Bognor, August 16th, 1917.

CHÆROCAMPA ELPENOR LARVÆ ON BALSAM.—Last week two larvæ of *C. elpenor* were brought to me feeding on wild balsam (*Impatiens fulva*). They were found by Lieut. Gapp when fishing. This plant, which grows in profusion along the banks of the Tillingbourne, does not appear to have been noticed as a food of this insect, so I think some of your readers may be interested. I may say that since the larvæ have been in my possession they have eaten voraciously of this diet. One went down yesterday and the other is full fed.—ALFRED G. SCORER; Hillcrest, Chilworth, Surrey, August 3rd, 1917.

LARVÆ OF MACROGLOSSA STELLATARUM, ETC., AT CAMBRIDGE.—As the yellow bedstraw (*Galium verum*) is much in evidence this summer, it would be as well if lepidopterists (especially those living near the coast where *Deilephila galii* may turn up) were to search this plant thoroughly for larvæ, as on a few sprays picked at random as food for *C. porcellus* larvæ I found two eggs of *Macroglossa stellatarum* and a minute "looper," which I have since determined to be *Anticlea sinuata*. The *M. stellatarum* ova have just hatched, and as August advances I hope to find a lot more on the chalk near by, where *porcellus* always, and *galii* sometimes, occur.

A visit to the old Roman road less than three miles south of Cambridge on July 28th in search of *Heliothis dipsacea* resulted in two specimens of this moth, both var. *maritima*, which seems to be

the usual form here, and a short series of *Aricia medon*, several with distinct white discal spots. *Agrion corydon* was out in numbers, not only on the Roman road, but the golf links adjoining, together with *P. icarus*, which rivalled the harebells in abundance and strict adherence to type. Other species noted were *Satyrus semele* (which, like *A. corydon*, is much commoner further out and on the Feam dyke) in twos and threes, *Epinephle ianira*, *E. tithonus*, *Aphantopus hyperanthus*, *Cænonympha pamphilus*, *Vanessa io*, and an early specimen of *Orgyia antiqua* ♂. *Vanessa io* was all over the place, though nettles were conspicuous by their absence. Other common species, such as *Gonepteryx rhamni*, *Cupido minimus*, second brood of which generally occurs here, and *Chrysophanus phlœas* were absent, but they might have occurred further up the road (which extends for miles across the chalk), or else I was too early for them; probably the latter. I kept a sharp look out for *Colias edusa* and *Pyrameis cardui*, as it seems to have been a migrant year, but was unrewarded. However, it was pleasant to be amongst the butterflies again even for an hour (which was all the time I could spare), and possibly a later visit may have better results in the last, and others, named.—HUGH P. JONES; 19, Tenison Avenue, Cambridge, August 2nd, 1917.

SCOLIOPTERYX LIBATRIX IN JULY.—I notice that, in Mr. South's handbook, 'Moths of the British Isles,' the date of the appearance, of *S. libatrix* is given as from August onwards. Perhaps it may be of interest to note that I took a freshly emerged imago on the wing at twilight on July 19th last; the insect is perfectly clean and fresh, and apparently only emerged a few hours previously.—(Rev.) H. D. FORD; Thursby Vicarage, Carlisle.

CÆNONYMPHA PAMPHILUS.—I know of two localities within a mile of each other, in the Lake District, where a very distinctly dwarf *C. pamphilus* flies, and I have heard of a third. In those cases which have come under my own observation I have found them flying on the mountain sides at an elevation of some 500 ft. At the low levels they are flying plentifully and are of the usual size, and, strangely enough, when you get to a height of say 1000 or 1200 ft., they are again flying in large quantities and of the normal size once more. But between these two altitudes you get a very well marked dwarf race. I was on the mountains at the beginning of July—on the 2nd and 4th—when they were all much worn, but I took a few specimens.—(Rev.) H. D. FORD.

PAPILIO MACHAON IN THE EASTBOURNE DISTRICT.—Several specimens of *P. machaon* have been observed here on the downs during the first week in August. During July I was told that allotment holders had noted beautiful caterpillars feeding on the foliage of the garden carrot. These no doubt were larvæ of *P. machaon* which had been turned down by some collector.—J. T. DEWEY; 79, Hurst Road, Eastbourne.

In connection with the above record the following letter, published in the 'Brighton Herald,' August 11th last, may be of interest. We are obliged to Mr. Louis Meaden for the "cutting:"

On Sunday last I and my boy Armand were returning from an entomological ramble *viâ* Hollingbury Camp, where he spotted a large and strange butterfly flitting about on the sunny side of the

southern rampart. Unfortunately we had no net, but I followed the butterfly for some time, getting quite close each time it settled and at last near enough to verify my boy's remark that it was the swallow-tail butterfly, an exceedingly attractive insect having yellow wings ornamented with black, blue, and red, and whose habitat in the British Isles is confined to the low-lying fens of Norfolk and Cambridgeshire.

The swallow-tail's appearance in this district is extremely rare, and I do not think such an event has ever been chronicled in the 'Herald.' Mr. A. F. Brazenor, the taxidermist of Lewes Road, has two specimens captured some years ago, one on Bear Hill, and the other at Withdean. Another entomologist, Mr. F. G. S. Bramwell, also informs me that a Mr. Harry White knocked down a swallow-tail on the Madeira Drive one Sunday morning some twenty years ago. There are one or two records for the county, but the above are the only purely local appearances I have been able to trace so far. During the last quarter of a century the butterfly has been seen on the wing, from time to time, in various parts of the southern counties. Caterpillars have also been found at large in Kent. It is thought attempts may have been made to establish the species in certain parts of England, or that such butterflies may have escaped from some one who had reared them. But it is quite possible that our local specimens may have been blown over from the continent, where they are common in woods as well as in meadows, and even on mountains up to an elevation of 5000 ft. It occurs also, but less commonly, at much higher altitudes. The geographical range of the swallow-tail extends eastwards as far as Japan, so it seems strange that Brighton does not get favoured more frequently by their presence. I should be glad if any of your readers could supply me with full data of other local occurrences of the swallow-tail, so that a proper record may be made. The one seen on Sunday was undoubtedly a full-size female, with a span of wing measuring about $3\frac{1}{4}$ in.

Yours, etc.,

HERBERT S. TOMS.

53, Beaconsfield Villas, Brighton, August 8th, 1917.

COLIAS EDUSA IN CORNWALL.—On July 17th a friend of mine took a specimen of this species in a field near Falmouth. On examination I found it to be a male, apparently freshly emerged. Another specimen was seen two days later.—E. O. ARMYTAGE; Homelands Feoch, Devoran, Cornwall.

COLIAS EDUSA IN JUNE AND JULY.—A specimen of var. *helice* of this species was taken at Porchester, Hants, on June 26th. Normal specimens of *edusa* were seen on July 14th (two), July 16th (two), and July 27th. One of those seen on July 16th was a large but very worn female and was watched for some time as it deposited eggs in a lucerne and clover field on the southern slope of Portsdown Hill.—G. M. RUSSELL; 6, Shaftesbury Road, Earlsdon, Coventry.

SUPPLEMENTARY NOTE ON OCCURRENCE OF *LYTTA VESICATORIA*, AT CHICHESTER AND NEIGHBOURHOOD.—Since my note (*antea*, p. 188) on the occurrence here of *Lytta (Cantharis) vesicatoria* was written, Mr. H. L. J. Guernonprez, of Bognor—distant eight miles—records

that at Westergate as many as forty (probably) were seen on plants in a hedge of a garden there by Mr. W. W. Pertwee. "Curiously enough," Mr. Guermontprez writes, "although there are hedges of the broad-leaved privet all around, the insects seemed confined to two or three plants at the end of one row. Although the beetles are very active, crawling rapidly about the plants and flying from twig to twig, yet they do not stay, but return to their station. They eat the leaves voraciously; the bitten leaves and grass are most conspicuous, and the odour remarkably pungent. So, when present these brilliant metallic beetles would not easily escape observation." He adds, "As collateral evidence in favour of their being immigrants, those known immigrant butterflies *Colias edusa* and *Pyrameis cardui* have been observed in the same places, and at the same times."—JOSEPH ANDERSON; Chichester.

LYTTA VESICATORIA, L.—In connection with Mr. Anderson's note on *Lytta vesicatoria*, L., I may say that this beetle was quite abundant about the middle of June, in the woods between Wool and East Lutworth, flying in companies round the tender tops of coppiced ash about 12 ft. and more from the ground. I took some on the wing, but most by "spotting" individuals that had settled. I would then, gradually, bend the branch over my net, until low enough for a sharp downward tap, with my hand, to cause the insect to drop into it. I also saw the species, a few days later, further west, in Yellowham Wood, near Dorchester. The only previous occurrence to me here was one near Wool, July 3rd, 1912. This season I could have easily taken many examples. Of those examined three-quarters were ♂'s. Both sexes varied much in size; both my largest and smallest specimens are ♀.—F. H. HAINES; Brookside, Winfrith, Dorset.

ACENTROPUS NIVEUS.—Since my note appeared (*antea*, p. 190), I have devoted much spare time in searching for the females. From the date (June 27th) of the capture of the first male more than a month passed before I was successful in my search. Since then I have taken a fair number but not in anything like such numbers as the males. It is very conspicuous, owing to its size when at rest at the edge of or often *on* the water. From the fact that it appears to be a sheer waste of time to look for them in the earlier part of the day I feel certain that they must, unlike the males, pass the greater portion of the daylight hours under the water. Since it is well known that the semi-apterous specimens do so, I see no reason why the fully-winged ones should not do the same. Again, I think, that the earlier females must be semi-apterous for, if it is not so, I *must* have found them sooner. The time to look for them is from the near approach of sunset onwards. Suddenly they appear on the extreme edge of the water or on the grasses with their leaves floating on the water. They soon begin to get lively, and as the evening advances become fully as active as the males, if not more so. They have a curious habit when disturbed, as the evening advances, of running or swimming (without apparently using their wings at all) along on the surface at a really respectable pace, describing all sorts of semi-circles and

zig-zags just as they do when flying. I searched in vain for the cocoons, pulling up and carefully searching such water plants as *Potamogeton lucens*, *crispus*, *pectinatus*, *natans*, etc., also a lot of *Anacharis alsinastrum*. I hope for better luck in this matter next season. The males are now getting much less abundant and the females a little more common. It may be interesting to note that in the past month I have taken in this parish all our "china marks," counting *niveus* as one, *stratitotata* being by far the least common of the five, followed by the beautiful *stagnalis*, with *niveus* in the rear, the latter the most common of the five. The females with their long, very flimsy, nearly transparent wings and wholly dark bodies remind me very much of large winged ants, and I suppose wings are given to both insects for very similar purposes. I have just received a letter from Mr. Burrows in which he informs me that he used to meet with this curious moth when at school here as far back as 1871 so that my meeting with it forty-six years after that date can hardly be claimed as a discovery!—A. THURNALL; Wanstead, August 15th, 1917.

REMARKS ON EVIDENCES OF INTELLIGENCE IN CERTAIN BUTTERFLIES.—*Euvanessa antiopa* greatly dislikes a high wind and will take shelter almost anywhere in order to avoid it. On one occasion when a high wind was blowing down the upper valley of the Tech an *antiopa* flew into a slight anfractuosity of rock, the uneven surface of which rendered the employment of the net impossible. I therefore tried to take it with my hand, but although I caught it by one wing it dexterously extricated itself and dived into the heart of a box bush whence it would have been difficult to dislodge it. We are accustomed to consider butterflies—if we consider the matter at all—as indifferent to one another's sufferings—as indeed almost all animals appear to be—but I will relate an incident which indicates that such is not really the case. Rain had fallen in torrents on July 17th at La Preste and on the following morning the grass was completely saturated with moisture. On it lay an unfortunate *Parnassius apollo* utterly helpless, unable to move and to all appearance dead. A more fortunate individual, which had somehow escaped a drenching, was flying about, perceived the luckless one and immediately went to its assistance, and, nestling close to the damp body of its almost defunct companion, apparently attempted thus to restore animation and was so intent upon this work that it permitted me to lift it in my hand together with the benumbed insect without attempting to escape nor did it cease to nestle close to the other until the latter showed signs of returning animation, it then flew away. I placed the feeble *apollo* on a sunny wall and it was soon able to fly a little. This is the most signal instance of assistance to a distressed companion that has come under my notice amongst insects. I do not think that the action can be interpreted in another manner. Had doubters seen the incident their doubts would, I think, have been dissipated. Ants assist one another to drag burdens; scarabs assist as well as hinder each other; why, then, should not butterflies also assist one another? This is a kind of assistance which must not be

confounded with co-operation such as the co-operation of bees in the construction of honeycomb. The preference which certain butterflies show for streams of water is undeniable and appears to me inexplicable. In the narrowest part of the Gorge of the Mondony which is only accessible by wading in the stream or by following a gallery of slabs on iron supports, a *Limenitis*, which was doubtless *Limenitis camilla*, was observed very frequently disporting itself alone or in company with another butterfly of the same species, and near La Preste the same species sought the stream of the Tech as its chief resort. In other localities, however, I have not observed this preference for running waters on the part of *camilla*. Everyone knows that dragonflies frequent localities watered by streams, and perhaps they do so because small winged insects can be captured in these localities, but butterflies cannot affect streams for that reason. Let me suggest, in conclusion, that experiments might be made to determine the rate of flight of some of the larger species and the distance to which they may fly from the place of emergence from the chrysalis.—JAMES R. McClymont; La Preste, Pyrénées-Orientales, France.

(The movements of *P. apollo* described suggest sexual attraction. Did Mr. McClymont determine the sex of the disabled individual? —H. R.-B.)

ANTS IN AMBER.—Those entomologists who are interested in ants or fossil insects should read Mr. H. Donisthorpe's notice of Mr. W. M. Wheeler's 'The Ants of the Baltic Amber.' As this work may not for some time be obtainable in England, Mr. Donisthorpe, in five pages of the 'Ent. Record,' has given an excellent account of it for present use.—W. J. LUCAS.

"SACBROOD": A BEE DISEASE.—In 'Bull. 431, U.S. Dept. of Agriculture' (Washington, D.C., 1917), Mr. G. F. White has given in 55 pages a full account of this disease, illustrated by 4 plates and 33 very clear text-figures. "Sacbrood" is an infectious disease of the brood of bees, to which adults are not susceptible. It is more frequent in the first half of the brood-rearing season than in the second. Since colonies have a strong tendency to recover from the disease without treatment, its economic importance consists in the weakening of a brood by loss in individuals. Mr. White considers that the number of colonies which die out as a direct result of "sacbrood" is comparatively small.—W. J. LUCAS.

WILLIAM KIRBY: BIOGRAPHICAL NOTE.—It seems a far cry from the "Letters of Dorothy Osborne to Sir William Temple (1652-54)," recently published in the 'Wayfarer's Library,' to the above premier entomologist; yet every detail concerning the latter's career is of interest to us. This William Temple married Dorothy, daughter of Sir Peter Osborne, of Chicksands, in Beds., during 1654; and he died 1699. Their granddaughter Dorothy married Nicholas Bacon, Esq., of Shrubland Hall, in Barham, which adjoins Coddendam, near Ipswich; she died 1758, leaving at least two sons. These were John Bacon, of Shrubland Hall, Esq., and the Rev. Nicholas Bacon, Vicar of Coddendam, who survived. The latter's will was proved P.C.C., December 16th, 1797: by it he gave the manor of the

Vicarage of Coddendam, with several messuages, farms, and land situate in the parishes of Coddendam and Hemingstone; and Advowson of the Rectory of Barham (subject to the next presentation thereto, to which he nominated the Rev. William Kirby); and all other his lands in the said parishes, to the Rev. John Longe, of Bramford, in Suffolk. (From 'East Anglian Miscellany,' published July 21st, 1917.) Freeman, in his 'Life of Kirby,' at p. 174, tells us no more than that the "rector of Barham" died in 1796 and "Mr. Bacon" appointed the curate (*i. e.* Kirby) to the living thus vacated. That Bacon's will was at first, though erroneously, thought to be invalid will account for the hiatus of a year.—CLAUDE MORLEY.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, May 2nd, 1917.*—Dr. C. J. Gahan, M.A., D.Sc., in the chair.—Mr. Arthur Dicksee, 24, Lyford Road, Wandsworth Common, S.W. 18, was elected a Fellow of the Society.—Mr. O. E. Janson exhibited specimens of *Euchraea caelestis*, Burm., a rare Cetoniid from Madagascar.—Mr. W. J. Kaye exhibited two cases of *Caligo* species from the collection of Mr. J. J. Joicey as well as from his own collection, together with a number of microscopical mountings of the male genital organs.—The Rev. F. D. Morice exhibited a set of six photos showing the ovipositor and apex of the ♀ abdomen in three species or subspecies of the Siricid genus *Paururus*, viz., *juvenescus*, F., *noctilio*, F., and *cyaneus*, F.—The President remarked that the *Xestobium* which he had exhibited at the previous meeting was still living, and that he had discovered that it was a ♀. It had tapped when touched on the head with a bit of paper, and when this was continued had extruded its ovipositor.—The following papers were read: "New and Little-known Heterocera from Madagascar," by Sir George Kenrick, Bart., F.E.S.; "A Preliminary Catalogue of British *Cecidomyiidae*, with special reference to the Northern Gall-flies," by R. S. Bagnall, F.E.S., and J. H. Harrison, M.Sc.

Wednesday, June 6th, 1917.—Dr. C. J. Gahan, M.A., D.Sc., President, in the chair.—Dr. H. G. Breijer, Ph.D., Director of the Transvaal Museum, Pretoria, Transvaal, S. Africa, and Dr. Alfred E. Cameron, M.A., D.Sc., The Entomological Laboratory, Agassiz, British Columbia, were elected Fellows of the Society.—Mr. E. E. Green exhibited two new and (at present) undescribed species of British Coccidæ, both belonging to the genus *Lecanium* and both occurring on the birch (*Betula alba*).—Mr. W. J. Kaye exhibited *Morpho adonis*, three males and a fine female from British Guiana, also on behalf of Mr. J. J. Joicey *M. adonis* males and one ♀ from French Guiana, and *M. eugenia* males and one female also from French Guiana, together with preparations of the genitalia of both to show that there was no room for doubt that *M. eugenia*, Deyr., 1860, is a distinct species from *M. adonis*, Cram.—Mr. G. Talbot, on behalf of Mr. J. J. Joicey, exhibited: (1) A white-banded mimetic group of African Heterocera from the Cameroons. (2) An example of resemblance which is not mimetic, seen in *Scoriopsis infumata*, Warr., from Peru, a Geometrid bearing a strong likeness to a species

of Lymantriidæ from Angola. (3) A mimetic group from Dutch New Guinea. (4) Two forms of *Tellervo* from the Island of Misol. (5) *Papilio erlaces*, with its races, including a new race from North Peru, and showing the mimetic ♀ of *P. harmodius*, Doubl., from the same district.—Prof. Poulton gave recent instances of birds capturing butterflies on the wing at Oxford. He also exhibited forms of *Papilio polytes romulus*, Cram., from Singapore Island and the mainland opposite. Also a set of predaceous Reduviid bugs and fossors, with their prey, from the S. Paulo district of South-east Brazil. He also read an observation recorded in a letter written to him January 18th, 1917, by Dr. Carpenter, which threw further light on the storing of *Hesperidæ* by *Bembecides*.—The Secretary read an interesting letter from Mr. E. M. Dadd, F.E.S., written from the internment camp at Ruhleben.—The following paper was read: "On a collection of Lepidoptera made in East Africa by Mr. W. A. Lamborn, F.E.S.," by H. Eltringham, M.A., D.Sc., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 12th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Ashdown exhibited a long series of aberrations of *Coccinella variabilis*, taken this year in Surrey.—Mr. Turner, the life-history of *Coleophora palliatella* on oak, and parts 1, 2, 3, 4, and 7 of the rare book, Thunberg's "Dissertatio Entomologica Ins. Suecica," 1784-94, all dealing with Lepidoptera.—Mr. Frohawk, a series of *Cupido minimus* from Coulsdon, Surrey, showing much individual aberration, including an asymmetrical example which appeared to be gynandromorphic.—Mr. West (Greenwich), Coleoptera taken recently in the New Forest, including *Elater lythropterus*, *E. minutus*, *Pyrochroa coccinea*, *Tomoxia biguttata*, etc., the last around the burrows of a wasp.—Mr. Barnett, varied series of *Ematurga atomaria* and of females of *Polyommatus icarus* from near Coulsdon, Surrey.—Mr. Edwards, a series of *Papilio polytes*, and remarked on the dimorphism expressed in continental and island forms.—Mr. Moore, *Papilio aristolochiæ*, from the Nilgherry Hills, India.—Mr. Bunnett, newly hatched larvæ of *Fumea casta*, and a living example of *Porthesia similis*, which emerged from a pupa the cocoon of which was surrounded by a number of the cocoons of an *Ichnemon*.—Mr. Leeds reported that *Chattendenia w-album* was out at Monkwood on June 24th; Mr. Frohawk, *Argynnis aglaia* in Kent on June 25th, and *Aglaia urticæ* common at Horsley on June 17th; and Mr. Pearson, *Argynnis paphia* and *Limenitis sibylla* in numbers in the New Forest.—Mr. Main described a successful method of getting the larvæ of the Coleopteron, *Dytiscus marginalis*, to pupate in confinement.

July 26th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—The "Proceedings" for 1916-17 were announced as ready for issue.—Mr. Ashdown exhibited a series of the pale and dark races of *Setina irrorella* from Mickleham Downs, and larvæ, pupæ, and imagines of *Anisosticta 19-punctata* from Surrey.—Mr. H. Main, a pupation chamber of *Dytiscus marginalis*, with pupa *in situ*, and several chrysalids of *Vanessa io*, most of which had gold markings.—Mr. Edwards, various exotic species of *Hesperidæ*, and read a note on the distribution of the family.—Mr. West (Greenwich), a number

of *Vespidæ*, *Ichneumonidæ*, and *Chrysididæ* taken by him recently in the New Forest.—Mr. Hy. J. Turner, a specimen of *Argynnis cydippe* (*alippe*) with silver points in several of the large black spots on the under surface, a phase of aberration not previously known to him.—Attention was called to the swarms of the three common species of "Whites" which had appeared in many places recently. *Polygonia c-album*, *Celastrina argiolus* (second brood), and *Cosmia trapezina* were also reported as abundant locally.—HY. J. TURNER (Hon. Ed. of Proceed.).

RECENT LITERATURE.

Noctuelles et Géomètres d'Europe. Première partie. Noctuelles. Vol. ii, pp. 244, plates 41. Par J. CULOT. Genève. 1913-1917.

M. J. CULOT, the artist and illustrator of the 'Lépidoptérologie Comparée' has completed the second volume of his monumental work, and the Noctuids now give place to the Geometers, though we are promised supplements to complete the plates and descriptions already issued. The plates of the first and second volumes are 81 in number, and 1458 species are figured therein with uniform fidelity of detail unsurpassed by any one of those, ancient or modern, who have depicted this group of Lepidoptera. M. Culot explains quite frankly the object of his labours. It is to provide a reliable key to the western palaearctic species in their entirety whereby collectors may readily determine the identity of their specimens. The author disclaims all intention of dealing at adequate length with species in the text. He sets out sufficient to indicate the individual illustrated in each case, with a general account of its distribution and more striking peculiarities. The thorny problem of nomenclature he ignores entirely, following for convenience sake alone the already out of date Catalogue of Staudinger and Rebel; while professing preference for the classification adopted by Guenée in his "Spécies générales des Lépidoptères," 1851-52, discarded, we think somewhat unnecessarily, in view of the numerous discoveries of the past sixty years. In the two volumes already published close upon 1500 "Noctuelles" have been figured, and for those who have not access to the National or one of the larger private collections of palaearctic lepidoptera, as distinguished from British, it is obviously a great assistance to have the figures which M. Culot has hand-painted with meticulous industry; and to estimate the industry he and his talented daughters display in this direction, it must be remembered that this work appears simultaneously with M. Charles Oberthür's publications, also illustrated at the Villa-Les-Iris. We offer, therefore, our sincere congratulations to the author-artist and his coadjutors, and strongly advise those of our British lepidopterists who hold that a good illustration is worth at least as much as a copious text alone for identification purposes, to assist the publication of the second part commenced in May last which is to deal with Géomètres as completely as these first two volumes of the first part have dealt with Noctuelles. It is something to have achieved a regular output during three years of war in which time the cost of paper and printing has increased 40 per cent.; while we are promised a fuller text for the Geometers than was considered necessary for the Noctuids.

H. R.-B.

Subscriptions for 1917 (7s.) should be sent to R. South (Editor),
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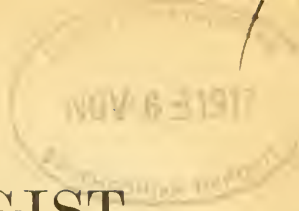
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PERONEA CRISTANA: ITS LIFE-HISTORY, HABITS OF THE IMAGO, DISTRIBUTION OF THE VARIOUS NAMED FORMS, AND SOME SPECULATIONS ON THE PRESENT TREND OF ITS VARIATION.

By W. G. SHELDON, F.E.S.

A GOOD deal has been written in the past century about this most fascinating moth, but the various writers seem to have restricted themselves almost entirely to the task of giving names to its different forms; its life-history, which many Lepidopterists have attempted to solve, remaining almost entirely unknown. The published accounts of the habits and habitats of the imago are almost invariably misleading, and it does not seem to have occurred to anyone that some knowledge of the forms to be found in the various localities that produce the species would be of interest to students of *Peronea cristana*. The present paper is an attempt to throw some light on these various points.

LIFE-HISTORY.

The late J. A. Clark, in his Memoir on *P. cristana* ('Ent. Record,' xiii, p. 227), dealing with this point, writes: "Little indeed, seems to be known of its life-history. Like myself, many have bred odd examples of the species, the larvæ having been obtained by general beating and without actual knowledge of the species, until after pupation had taken place and the imagines had emerged. My recollection of the larvæ is that they have been brownish-green in colour, and I believe that they feed upon the lichen growing upon whitethorn; but the authorities, such as they are, appear to be against me. Wilkinson notes ('British Tortrices,' p. 174): 'The larva is unknown, though the insect has in one or two instances been bred promiscuously from whitethorn,' an experience very similar to mine. Meyrick states ('Handbook,' etc., p. 521): 'The larva on rose and hawthorn, June and July.' Merrin says ('Calendar,' p. 115): 'Dwarf sallows and hawthorn between united leaves.' Sorhagen says ('Die Kleinschmett.,' etc., p. 64): 'Die Raupe 6-7 [June and July] in den Herzblättern von *Prunus spinosa*, *Salix caprea*, *Ulmus*, *Carpinus*, dringt auch in die stengel-spitzen.' One is rather astonished at Sorhagen's list of food-plants, and would be inclined to suggest, were it not for the

general well-known accuracy of this author, that some of the references were possibly made to other species of *Peronea*, of which, however, it must be confessed there is not the slightest evidence. I have repeatedly tried to obtain ova in the autumn, but have never been successful. I had long supposed that the imagines hibernated, and Mr. Tutt tells me that Frey says ('Lep. Schweiz,' p. 281): 'Falter im tiefsten Spätherbste und nach der Ueberwinterung im Frühling.' Merrin states that the imagines are found from September to November, but says nothing of their re-occurrence in spring."

I may say here in passing that Sorhagen's list of food-plants, which caused Clark to express doubts as to its correctness, is absolutely correct so far as it goes, although it is by no means complete.

Since Clark wrote, which was in 1901, Mr. E. R. Bankes ('Ent. Record,' xxi, p. 44, 1909) writes ('Trans. Chich. and West Sussex Nat. Hist. and Micr. Soc.,' 1885-6, p. 70): "Mr. W. H. B. Fletcher stated that he had bred *P. cristana* 'from larvæ on flowers and fruits of *Pyrus aria*, collected in Arundel Park,' and in his 'Catalogue of Sussex Lepidoptera,' published in 1905, in the 'Victoria History of Sussex,' he gives the species as occurring in Arundel Park, where the larvæ feed upon fruits and flowers of *Pyrus aria*, and doubtless also on those of hawthorn there and in many other places on the Downs.' I learn from my friend Mr. Fletcher that, although the number of imagines reared was limited, his experience was quite sufficient to prove that in Arundel Park it is a regular habit of these larvæ to feed in the manner described."

This was, so far as I am aware, all that was known of the earlier stages at the time I commenced to try and work them out in 1915.

In the autumn of that year I paid two week-end visits to that chief locality for *P. cristana*, the New Forest, and one of the precise localities having been pointed out to me, I collected therein 218 specimens, which included examples of 34 named forms. On my return from the later visit, which took place in October, I dug up a small bush of whitethorn, which the authorities considered the most likely food-plant, and replanted it in a large flower-pot. I then cut it down to a convenient shape and enclosed it with a muslin cover, and on October 12th I put inside this cover about a dozen imagines of *P. cristana*, consisting of both sexes, which I had brought home alive from the New Forest. This bush I placed on the north side of a yew hedge in the garden, and allowed it to remain exposed to the weather all the winter.

The moths moved very little during the winter months so far as I could ascertain, and rested chiefly on the branches, with their wings closely wrapped round a twig, often at its juncture

with the main stem. In this position they were exceedingly well protected from observation, and could hardly be detected, unless one saw the "buttons" raised clear of the twig; and they were not easily detected with the aid of the buttons, because these resembled very strikingly whitethorn buds.

March 19th, 1916, was a very warm, sunny day, and the moths were almost lively, for them, for *P. cristana* is one of the most sluggish moths I know. One example was found resting on the muslin, and on this being touched it flew to the other side of the enclosure. On March 26th I untied the bottom of the muslin sleeve or enclosure, and found that one imago was dead, although it was quite limp, and had evidently recently been alive. It was amongst the dead leaves which had accumulated at the bottom of the sleeve. The remainder were alive, and seemed quite strong and healthy. On being disturbed they flew off the twigs on which they were resting, and settled on the muslin sides of the enclosure. I counted six of them on this occasion, and the remainder were no doubt somewhere inside.

I should say that when placing the moths in I had put in the sleeve a thick piece of dead oak branch covered with lichen, which I thought would possibly be a suitable object for them to winter upon. Although I frequently looked this over, I could never see a moth resting upon it, and on this day I took it away. On May 17th I emptied out the sleeve, and found that all the moths were dead, although I had seen one alive a few days previously.

I then carefully examined with a lens the whole of the whitethorn bush and also the sleeve for ova, but the search was entirely without success, and thus my first attempt ended in failure so far as obtaining eggs was concerned. I had, however, gained certain experience, and proved that the supposed habit of the imago to hibernate was a fact: and this, of course, meant that the ova were deposited in the spring, and not in the autumn.

Thinking the matter over during the summer of 1916, I came to the conclusion that what was wrong in my method was something in the spring treatment, which I must try and vary in some way; but that the winter treatment was correct.

In October of that year I procured a fresh supply of moths, dug up and potted another whitethorn bush, enclosed it in the sleeve that had served the previous winter, and stood it in the same spot that had been occupied on the former occasion. I should here say that the moths enclosed were twelve in number and that they consisted of two of the most abundant forms, which I did not require for my own or friends' series, *ab. nigrana* and *semiustana*, half of each: to these I added, a few days later, three examples of *ab. cristana*, all males.

On April 1st, 1917, I examined the contents of the sleeve,

and found that five of the moths, *all females*, were alive; these consisted of three ab. *semiustana* and two ab. *nigrana*. I next obtained a large glass cylinder about 18 in. high; in this I placed in water two sprays of whitethorn and one of blackthorn, introduced the moths, and covered the top of the cylinder with muslin, feeding them on sugar and water, with which I saturated a small piece of sponge.

On April 7th, looking through the transparent side of the cylinder, I saw, at the junction between the main stem of the blackthorn spray and a twig, an unmistakable Tortrix egg. I then took the sprays out of the cylinder and found hundreds of ova deposited upon them.

These were deposited by the females on all the sprays placed in the cylinder, but although only one spray of blackthorn was available, at least 90 per cent. of the ova were upon it. This spray was crowded with them, mostly singly or in little clusters of three or four. There were, however, two groups of over two dozen each. The ova were usually deposited on the twigs, generally underneath, but occasionally on the outside of the undeveloped buds; never on the leaves. I should mention that the sprays had been kept in water in a warm greenhouse for some weeks; the whitethorn leaves were opened, and the trusses of buds were exposed; the blackthorn was partly in flower and the leaves showed green.

DESCRIPTION OF OVA.

The outline is oval; it lies, as is the case with the ova of all the Tortrices with which I am acquainted, with its polar axis horizontal. The length is .85 mm., the breadth .6 mm., and the height .12 mm.; the surface is granular, divided into a large number of irregularly shaped cells by very fine raised lines; it is highly glabrous and opalescent; it consists apparently of an outer and an inner envelope. The outer envelope is transparent, and it projects a considerable distance beyond the inner envelope. The outer envelope is light grey in colour; the inner envelope is white, and within this, again, is an irregularly shaped nucleus which is reddish-brown in colour. The micropylar area, which is very difficult to deal with in all horizontal eggs, I was unable to examine.

In five days after they were first observed the ova had changed to reddish-brown, and they then harmonised exceedingly well with the twigs on which they rested, and were very inconspicuous. The period from the depositing to hatching was about twenty-one days.

My experience, as narrated above, leads me to infer that the ova are deposited in a state of nature in March or April on the stems or twigs of their food-plant.

THE LARVA.

I should observe that in order to get the larvæ fed up before I left home for an engagement early in June I kept both them and the ova indoors, and under these conditions the dates on which they arrived at the various stages would be somewhat more advanced than would be the case if they had been kept out of doors, for of course there are always periods of cold weather in our springs, during which an insect exposed to the elements advances very little, if at all; and this does not apply to ova kept or larvæ reared indoors to such a great extent, because the cold snaps are not then so much felt, even though there is no fire in the room.

A larva kept in a small glass-top tin box from emergence to pupation hatched on April 26th. It was then about 1 mm. in length; the head and prothorax were black and glabrous; the remainder of the segments were pale brownish-green, and semi-transparent, the alimentary canal showing plainly. I fed this larva whilst it was in the first instar on blackthorn, transferring it afterwards to plum. The larva on emergence spins the blackthorn buds and flowers to the adjoining stem, and feeds and dwells inside the web so formed; sometimes it is found within the petals and sometimes between the calyx and the corolla.

On May 1st this larva had changed into the second instar, and was then about 2 mm. in length; the head was black, the prothorax was light brown, and both were highly glabrous. The remainder of the segments were light yellowish-green. On May 4th the third instar was reached; it was now about 3 mm. long; the head and prothorax were both glabrous; the head black; the prothorax was dark brown; otherwise the colour was the same as in the last instar. The larva was still very transparent and the alimentary canal was plainly visible.

On May 11th the fourth instar was reached. The larva was now about 5 mm. long; the head and prothorax were intensely black and glabrous; otherwise it was very similar to the last instar, except that the divisions between the abdominal segments in the dorsal area are much darker green than the segments themselves. There was no trace of a chitinous anal plate in this or any of the previous instars.

The fifth and last instar was reached on May 21st. A great change had now taken place in its appearance; it was about 12 mm. long, of average stoutness; the head was dark amber-coloured, with darker shading around the mouth; it was highly glabrous. The prothorax was greenish-brown and not very glabrous, with darker shading in front and at the rear; below the thoracic plate, when viewed laterally, are two large black tubercles on each side; down the centre of the dorsal area, and commencing at the rear of the prothorax, is a narrow grey-green

line; the dorsal and subdorsal areas are grey-green, the tubercles showing up distinctly, and being lighter in colour than the surrounding area; the intestinal canal was distinctly visible as a dark green line; the anal plate, which is grey-green, has several minute black dots distributed over its surface; the prolegs are black and glabrous. The spiracular and ventral areas are paler than the dorsal and subdorsal; the spiracles are very inconspicuous. The tubercular spines are in this stage long and conspicuous.

On May 26th this larva had attained its full growth and had reached a length of 15 mm.; it ceased feeding on May 30th and spun together a portion of a plum-leaf within which it changed to a pupa; the change was effected on June 4th.

The larva conceals itself during the day by spinning together the edges of a leaf (it does not roll it in any way) and hiding therein, coming out to feed at night. When disturbed it is intensely active, wriggling violently, and progressing backwards.

It bears a very strong resemblance to many of the other species of the group *Peronea*, except when it is in the last instar. It is in the earlier instars superficially not at all unlike the nearly-allied *P. hastiana*, and I think it should be recognised at once, the black shining head and the grey-green segments behind the prothorax should determine it from any other larva feeding at the same time that I am acquainted with. In the last stage, however, it is not so distinctive, but I do not know another Tortrix larva that has a similar prothorax.

(To be continued.)

ON THE PROCTOTRYPID GENUS GONATOPUS, LJUNCH.

By CLAUDE MORLEY, F.Z.S., ETC.

THERE has recently appeared a "Note on a Rare Hymenopteron (*Dicondylus pedestris*, Curtis)," by J. Ray Hardy, in the 'Lancashire and Cheshire Naturalist,' x, 1917, p. 77, with a photo of the insect. The photo is somewhat indistinct, showing neither the thoracic structure nor that of the front legs in detail. It was captured in July, 1916, running on the roadside near Hollingworth, in Cheshire, amongst a number of black ants (*Lasius niger*, Linn.) at the roots of grass. The sole description vouchsafed is: "Four millimetres in length, wingless, greatly resembles an ant in general appearance, and is extremely agile in its movements." Nor am I satisfied that "the accompanying photograph will enable this insect to be readily recognised," for Mr. Hardy appears to know nothing of the literature thereto relating later than 1874. Parasitic Hymenoptera have been so

generally ignored in Britain that a word of enlightenment may be of service in general, the more especially as the genus to which Mr. Hardy's insect belongs was left in a somewhat inconclusive condition by the late Arthur Chitty in 1907.

Subfamily DRYININÆ.

This may be distinguished from all the other subfamilies of the Proctotrypidæ by having: Head transverse, neither globulose nor oblong; antennæ ten-jointed and inserted close to the mouth; scutellum wanting or broadly truncate basally, not tripartite; abdomen neither margined nor acute laterally; front tibiæ with a single bifurcate calcar, their tarsi ending in forceps; wings of female often wanting.

Tribe GONATOPINI.

The Dryininæ have been divided (André, Hym. d'Europ., 1904, p. 494) into three tribes, of which the present is distinguished by the extension of the prothorax to the tegulæ, by the lack of female wings, and by the very narrow, lanceolate stigma of the male wings.

Genus GONATOPUS.

Distinct from other genera of the Dryininæ in having: Capital vertex broadly but not deeply concave, never distinctly convex (as in *Anteon*, *q.v.* E. M. M. 1908, p. 141); occiput not margined (as it is in *Anteon**); thorax bi- or tri-nodal; scutellum obsolete or wanting; front legs raptorial, with pincer; form tarsi; posterior tarsal claws neither bifid nor basally lobate-wings wanting. Females alone known.—Some fifty species of this genus have been described, of which thirty-five are European and no more than eight have hitherto been ascertained as British. Like everything he and Dr. Arnold Förster touched, M. l'abbé J. J. Kieffer has split up old and well recognised species to such an extent that the synonymy of even so little worked a genus as the present is already considerably involved. In the following table of the British species I have followed Chitty in the Entom. Rec. 1907, p. 81, which is the last word we have had upon the subject in England since the brilliant author died early in the following year.

TABLE OF BRITISH SPECIES.

- (4) 1. Second thoracic node with erect pilosity; vertex slightly excavate.
- (3) 2. External joint of pincers armed beneath with 6-8 plates, incrassate, with subapical tooth; internal joint inflexed before its apex, with plates in rows
1. *striatus*, Kieff.

* *Anteon subapterus*, Kieff (1904, p. 138), is, I believe, known only in a unique Scots female. Mr. Ernest A. Elliott has kindly presented to me another of the same sex, captured by him at Kingussie during August, 1912.—C. M.

- (2) 3. External joint of pincers mutic, with neither plates nor tooth; internal joint inflexed before apex, with one row of contiguous plates and one row of much longer bristles 2. *sepsoides*, Westw.
- (1) 4. Second thoracic node glabrous; vertex usually strongly excavate.
- (6) 5. Vertex slightly depressed, but not strongly excavate 3. *pedestris*, Dalm.
- (5) 6. Vertex strongly excavate.
- (8) 7. Thorax entirely rufotestaceous; second thoracic node basally trans-striate 4. *oratorius*, Westw.
- (7) 8. Thorax partly black; second node not basally trans-striate.
- (12) 9. External joint of pincers mutic; internal joint strongly inflexed before apex, with one row of plates and one row of bristles.
- (11) 10. Thorax entirely black; external joint of pincers centrally armed with bristles beneath 5. *distinguendus*, Kieff.
- (10) 11. Thorax red and black; external joint without bristles 6. *Marshalli*, Kieff.
- (9) 12. External joint of pincers with one row of incrassate plates and one tooth before apex; internal joint not inflexed before apex, with two rows of plates.
- (14) 13. Internal joint of pincers with two rows each of five very thick plates 7. *bicolor*, Curt.
- (13) 14. Internal joint with two rows of compact and contiguous plates 8. *distinctus*, Kieff.

1. *Gonatopus striatus*, Kieff.

André, Spp. Hym. d'Europ., 1904, p. 92.

Described from an example taken in Austria during May, and (*lib. cit.* p. 500) from one—erroneously ascribed to *G. pilosus*, Thoms., at p. 91—found by Bignell in a nest of *Formica fusca*, Linn., doubtless in Devon. Chitty took it on May 6th, 1906, at Brandon, in Suffolk, but I who was with him took none. Donisthorpe in 1915 records it as also consorting with *Lasius flavus*, Fab.

2. *Gonatopus sepsoides*, Westw.

Loudon's Mag. Nat. Hist. vi, 1833, p. 496; Chitty, Entom. Rec. xix, 1907, p. 80; *G. sociabilis*, Kieff. *lib. cit.*, p. 7; ? *Dryinus pedestris*, Hal. Entom. Mag. ii, 1835, p. 221.

Westwood's name was sunk as a synonym of *G. pedestris* by Francis Walker at *lib. cit.* 1837, p. 412, and revived by Chitty on examining the Oxford type in 1907. The latter considered it not improbably identical with *G. pilosus*, Thoms., not hitherto known to occur with us; he instances it as the commonest British species, apparently distributed over the whole country "in suitable localities," and records it from Suffolk, Kent, near London, near Edinburgh Sussex, and three places in Hants. I found

two or three specimens in August, 1908, at the roots of rough grass and beneath stones on the coast sand-hills at Lowestoft; and possess two more found, presumably at Feldeu, in Herts, by Albert Piffard about 1900.

3. *Gonatopus pedestris*, Dalm.

Sv. Ak. Handl. 1818, p. 86; Nees, Mon. ii, 1834, excell. synon. et ♂; Thoms. Öfv. 1860, p. 180; Kirchner, Lotos, vi, 1856, p. 233, fig. 5; Mik. Wien. Ent. Zeit. i, 1882, p. 215, pl. iii, figs. 4-10; Kieff. Hym. d'Europ. 1904, p. 96. *G. Ljunchii*, Westw. Loud. Mag. vi, 1833, p. 496; Chitty, Ent. Rec. 1907, p. 80.

Till the end of the last century it was customary to consider all British *Gonatopus* as referable to *G. pedestris*, so nothing can be ascertained respecting its true distribution with us. Chitty could not distinguish Westwood's type—taken on Wimbledon Common—from true *G. pedestris*, and thought them synonymous.

4. *Gonatopus oratorius*, Westw.

Loudon's Mag. Nat. Hist. vi, 1833, p. 496; Chitty, Entom. Rec. xix, 1907, p. 79.

Sunk as a synonym of *G. pedestris* by Walker, and reinstated by Chitty on examining the Oxford type. The latter regarded it as distinct from any of Kieffer's species. It was found on Ripley Common, and "it ought to be possible still to take this insect on the Surrey commons."

5. *Gonatopus distinguendus*, Kieff.

André, Spp. Hym. d'Europ. 1904, p. 116.

Described from a British female taken in a sandy place. The late Alfred Beaumont subsequently found it at Kilmore, in Ireland, on August 11th and 15th, 1898. I possess one of those taken on the 11th; it is labelled "sand-hills by sweeping."

6. *Marshalli*, Kieff.

Gonatopus lunatus, Nees, Mon. ii, 1834, p. 383 (*nec* Klug); *G. Marshalli*, Kieff. Hym. d'Eur. 1904, p. 121.

Kieffer gives the above synonymy, but it is difficult to understand how Nees' species could differ from that of Klug, when the former distinctly and only says of it: "Habitat Berolini (Klug). Feminam vidi, a cl. Klugio ad me missam," without claiming to have taken it himself. Also Kieffer does not record it from Germany; simply, "Angleterre: Ile de Purbeck, Swansea," which Chitty considers an error for Swanage, and doubtless correctly, for at *lib. cit.* p. 510 we find nothing but "Patrie: Ile de Purbeck et ile de Corse. (D'apres les types de la collection de Marshall.)" I have taken this species running in a gravel pit at Lymington on August 15th, 1901.

7. *Gonatopus bicolor*, Curt.

Dryinus pedestris, Hal. Entom. Mag. ii, 1835, p. 221 (?); *Dryinus bicolor*, Curtis, Brit. Entom. fol. 206-7, 1828; *Gonatopus nigriventris*, Nees, Mon. ii, 1834, p. 386; *Dicondylus pedestris*, Walk. Entom. Mag. iv, 1837, p. 412; Entom. vii, 1874, p. 27, fig.; *G. bicolor*, Kieff. Hym. d'Europ. 1904, p. 108 (*nec* Ashm.).

Germany, Corsica, and Britain, whence Chitty records it in the counties of London, Kent, Herts, and Haddington. Probably not rare, though formerly merged in error with *G. pedestris* by Walker. The synonymy given in 'Genera Insectorum,' liv, 1907, is erroneous. I took the Herts specimen beneath *Genista anglica* on a common just above Boxmoor station on August 9th, 1903.

8. *Gonatopus distinctus*, Kieff.

André, Spp. Hym. d'Europ. 1904, p. 509.

This species was thought sufficiently distinct to merit a name by its author, who picked it out of the series, considered by the latter to be identical, in Marshall's British collection. Chitty knew the species from Surrey in June and July, and from Cornwall. I have recorded it (Proc. R. Irish Acad. xxxi, 1911, No. 24, p. 17) from Clare Island during June, 1911; and Donisthorpe tells us in 1915 that it consorts with the ants *Myrmica rubra* var. *larinodis* and *Formica fusca* var. *glebaria*, Nyl. It has twice occurred to me in the New Forest by sweeping; once in a gravel-pit at Brockenhurst on July 7th, 1909, and once in Matley Bog on June 9th, 1911.

To these I can now add :

9. *Gonatopus pilosus*, Thoms.

G. formicarius var. γ , Nees. Mon. ii, 1834, p. 383; *G. pilosus*, Thoms. Öfv. 1860, p. 180; Kieff. Spp. Hym. d'Europ. 1904, pp. 91, 501.

A specimen of this genus with both the thoracic nodes bearing erect white pilosity (that on the anterior node distinguishes it from the remainder of the genus) occurred to me among dead leaves of bracken in shallow rabbits' scratchings in a sandy bank at Icklingham, in Suffolk, on June 6th, 1916; it was running among the *débris* in company, not only of the two ants *Tetramorium cespitum* and *Lasius niger*, but also of males and females and nymphs of the rare Capsid *Systellonotus triguttatus*, said by Saunders to occur with ants. Another specimen occurred to me in the same parish, but upon the sandy "plains," some mile and a half from the above locality, in company of *Lasius alienus* beneath *Erodium cicutarium* on the preceding June 18th. The species figures in Marshall's 1873 catalogue as British upon an erroneous foundation, since *G. striatus* was mistaken for it.

This well-authenticated association of *Gonatopi* with ants is

the more remarkable, and can, as far as we at present know, be for no more direct purpose than protective resemblance (Haliday records a battle between the insects), because their economy is entirely connected with Homoptera. Members of the Fulgoridæ, Cercopidæ, Jassidæ, and Membraciidæ are all known to be destroyed by Dryinidæ. Douglas, in the E. M. M. 1882, pp. 116, 142; my references on the "Hymenopterous Parasites of Rhynchota" ('Zoologist,' 1909, pp. 216-220); and Perkins' "Leafhoppers and their Natural Enemies" (Bull. Hawaiian Sugar Plant. Ass. i, 1905, pp. 1-62), cover most of the known facts of their life-cycle. But these parasites are extremely retiring, for in twenty-five years' collecting I have captured no more than some dozen imagines.

Monks' Soham House, Suffolk,
August 20th, 1917.

NOTES ON THE LEPIDOPTERA OF THE BRITISH LINE IN FRANCE.

BY CAPT. H. D. SMART, M.C., R.A.M.C., F.E.S.

SINCE I last wrote on this subject I have been able to add a good many species to my list, and to note further localities for some of the less universal insects. These additions chiefly concern the moths, as, to the time when a shrapnel bullet put a stop to my continental activities, the season has been a particularly poor one for butterflies. This has probably been due chiefly to the arctic winter and sub-arctic spring, bringing to Northern Europe degrees of cold, and particularly of wet cold, that are very unusual. Another reason may be the prevalence of strong winds throughout the very hot early summer. The insect shortage seems to me to have affected one great class, united not by structural resemblances but by habit—that is, the tremendous body of diurnal grass-frequenting species.

C. pamphilus was less numerous than usual; *P. icarus* was almost scarce. None of the day-flying Noctuids were plentiful; some of the commoner species I did not see at all. Of the Crambids only *C. perlellus* had appeared in normal numbers up to July 14th, and of the Pterophori I saw only *pentadactylus*. On the other hand, getting an opportunity for a little sugaring, I found abundance of common *Noctuæ*, with a sprinkling of better things, and the woods produced the usual number of moths of all families.

The destructive hosts of cockchafers that I saw on the Somme in 1916 did not reappear this year in Pas-de-Calais.

My beat has been more restricted this year, extending only from Arras to the neighbourhood of Messines. The portion of

Belgium included is so insignificant that I have not thought it worth while to change the title of the paper. No doubt all the species that I have taken in Belgium only are to be had in the neighbouring parts of Nord.

Papilio machaon appeared in very small numbers in Pas-de-Calais and Nord.

The appearance of the early Pierids was rather curious. I was able to watch for them daily at the sheltered end of a large wood in the Arras area at the end of April, having seen no specimen earlier. Although the weather was quite suitable throughout the last week of April, and I was in a position to make a short visit to the locality daily, I saw no butterflies but hibernated Vanessids till May 2nd. On that date I found numerous worn males of all three common whites. Fresh examples of *P. napi* appeared a few days later, but the other two species disappeared after May 3rd and were not seen again up to May 9th, when my leave put a stop to the observation.

A fortnight later all four species were abundant in Arras, *P. napi* being well on the down grade. A second brood of *P. napi* appeared in Nord and Belgium in the third week of June, and was followed by *P. rapæ* and *P. brassicæ* before the end of the month. I took a *napi* female of the second flight with an extra black spot on the fore wing, confluent with the apical patch, and the veining of the under side of hind wings reduced to the slightest dusting of grey scales on the basal ends of the nervures.

I have a distinct impression that several species got through their larval states in abnormally short periods during this hot early summer. Although climatic conditions must have made oviposition later than usual, summer flights of *A. urticæ*, *P. cardui*, and *G. libatrix* all appeared in very good time.

Euchloë cardamines appeared in very great numbers at Arras Citadel, but the proportion of females was even smaller than usual. Aberration took the form of excessive size in both sexes, and of bright yellow ground colour on the under side of the male fore wings.

Of *Colias hyale* I met with one specimen only, in Belgium.

Brenthis euphrosyne and *Melitea aurinia* both occur at Arras; *Eugonia polychloros* I saw at Croisette, near St. Pol. At this place I was billeted in a house the owner of which had pinned local lepidoptera all over the kitchen wall. Of several hundred specimens there was no species that does not occur in Britain, and only one, *E. antiopa*, that I have not myself seen in the Pas de Calais.

There was an extensive immigration of *Pyrameis cardui*, wasted specimens being abundant in all districts in May. A very numerous second brood had appeared when I left France in July.

Pararge egeria var. *egerides* occurs near Fruges, but was very

scarce in mid-June. The specimens seen were exceedingly bright, and probably of the second emergence.

Celastrina argiolus was common at Arras, and I took one *Adopœa lineola* at Messines.

(To be continued.)

NOTES AND OBSERVATIONS.

VARIETIES OF *CUPIDO MINIMUS*.—During last June, in the neighbourhood of Purley, Surrey, *Cupido minimus* appeared in abundance in certain spots. On the 10th of that month I captured a very interesting specimen which is undoubtedly a gynandromorphous example, having the left side male and the right side female. The left pair of wings are much the larger and of the normal shape of the male, the right pair being small and rounded. On the under side the markings do not in any way correspond on the respective sides, and the ground colour corresponds in accordance to the sexes, showing the duller and slight ochreous tinge on the female wings. Again, on June 12th, I took a very unusual variety of this little butterfly, having on the upper side of the left hind wing several intensely black streaks which are conspicuous on the bronze-brown ground colour. I have in my collection a specimen of *C. argiolus* of the same type of variation, having a bold black streak extending across the right hind wing on the under surface.—F. W. FROHAWK.

ASYMMETRICAL VARIETY OF *AGRIADES CORYDON*.—On August 10th last I captured a very remarkable asymmetrical female example of *Agriades corydon*. Owing to the upper side being of normal colouring, the specimen is set to show the under side. It is remarkable in many respects, as exactly one-half of the entire insect is different in size, colour, and markings to the other half. The left pair of wings are unusually large, measuring 21 mm. from base to tip of the fore wing and the hind wing 19 mm. The whole central area of the former is dull white, the marginal markings are much elongated, and the lower median spots are united, forming a bar. The hind wing is washed with whitish and the marginal markings elongated, corresponding to those of the fore wing. The right pair of wings are normal in both size, colour, and markings; the fore wing measures 18 mm. and the hind wing 16 mm. The palpus, antenna, and legs are also smaller on the right side. The two halves are so conspicuously dissimilar that they have the appearance of belonging to two totally distinct insects.—F. W. FROHAWK.

CHRYSOPHANUS PHLÆAS AB. ALBA (SCHMIDTII) IN STAFFORDSHIRE.—I should like to record the capture of a fine specimen of *C. phlæas ab. alba (schmidti)* to-day in the Barnet Woods, North Staffs. When I first saw it it was fluttering over ling flowers, but almost immediately settled and expanded the wings. I am sending it to the Oxford University Museum.—F. C. WOODFORDE; Market Drayton, September 8th, 1817.

ARGYNNIS AGLAIA AB. MOLYBDINA.—The name proposed for the ab. of *A. aglaia* (*antea*, p. 307) should be ab. *molybdina*, and not ab. *molybdena*, as given in last month's 'Entomologist.'—F. B. NEWNHAM; Church Stretton.

POLYGONIA C-ALBUM AB.—On August 16th last I captured a female specimen of *P. c-album* in which the *c* mark is replaced by a very distinct *o*. This I call ab. *o-album*.—F. B. NEWNHAM, Church Stretton.

SPHINX (HERSE) CONVULVULI IN 1917.

DURHAM.—I had brought to me a fine male *Sphinx convolvuli* on August 26th by a friend of mine, who took it on a pair of bathing wings in the yard.—W. RICHARDSON; 12, Salem Street South, Sunderland, Durham.

I captured a male specimen of *S. convolvuli* near the gasworks, Sunderland, on August 28th. This is the second capture, to my knowledge, within ten days.—J. DOUSEY; 147, St. Leonard, Street, Hendon, Sunderland.

S. convolvuli female captured on a railway sleeper by a platelayer about one mile east of Barnard Castle Station on August 29th, 1917.—J. P. ROBSON, 10, Vane Road, Barnard Castle.

YORKSHIRE.—I am writing to place on record the capture of a female specimen of *Sphinx convolvuli* at Wensley, near Richmond, Yorkshire, on September 7th by myself and my sister. It was a nearly perfect specimen and was caught at dusk while hovering over tobacco plants. It measured $4\frac{3}{8}$ in. across the wings.—N. ORDE POWLETT; Wensley Hall, Leyburn, Yorks.

NORFOLK.—It may be of interest to mention that I captured a fine specimen of *Sphinx convolvuli* here yesterday.—J. ANTHONY PLOWMAN; Clifton House, Victoria Street, Sheringham, Norfolk.

KENT.—I have to record the capture of two female specimens of *Sphinx convolvuli* in this town. One was taken at rest on a pavement by Mr. F. Waghorn and brought to me; the other was found by my wife on a fence. The dates of the captures were August 27th and 30th respectively.—E. D. MORGAN; 24, Queen's Road, Tunbridge Wells, Kent.

SURREY.—I have received an excellent specimen of *Sphinx convolvuli* caught at Shirley, near Croydon, Surrey, last week.—EWAN CLOSE; Woodcote, Camberley, August 26th.

SUSSEX.—This species appears to have been of not at all uncommon occurrence in this neighbourhood lately. On the 4th inst. my attention was called to a large moth hovering at the blossom of tobacco plants in the dusk of evening, but while I went to get a net it disappeared. However, I had not to wait long before another came along and was secured—a rather wasted individual. I had no further opportunity of looking for them until the 12th, when a couple more were seen, but a fitful wind and fast falling darkness combined to frustrate an attempt at their capture.—ROBERT ADKIN, Eastbourne.

SOMERSET.—We have caught three specimens of the *Convolvulus Hawk Moth* in two nights and have seen several others. The front

of our house has a border of sweet-scented white tobacco plants, and we caught two specimens in the front hall on the first night (September 7th), and the second night we hunted the tobaccos with a lantern. We saw several specimens and succeeded in capturing one. The specimens comprise two females and one male. About three years ago we took a specimen of this insect, but have never seen them on other than these two occasions.—G. THRING; Charlton House, Charlton Mackrell, Somerset.

DEVONSHIRE.—A specimen of *Sphinx convolvuli* (I believe a female) was captured in a garden at Okehampton on August 29th. It was taken on some linen hanging out to dry by a maid-servant, and was brought to me alive to identify.—(Rev.) R. T. HOLMES, 1, Park Villas, Okehampton, Devon.

I captured three worn specimens on verbena and nicotiana blossoms in my garden here on September 6th and missed another. The third I caught half an hour after dark with the aid of a lantern. It was a still, cloudy, warm evening. On the following evening I saw only one *convolvuli* and missed another, as the light was bad, on September 11th.—H. M. PARISH, Totnes, South Devon.

N. WALES.—I beg to report the capture of two specimens of *S. convolvuli* at Aberdovey, Wales, during a short stay in August. The first was caught on August 27th resting on the door of a bathing hut. On August 29th I was walking along the front, and was just in time to rescue the second as it was being driven out of a cottage by the scared housewife. Both were but very slightly damaged.—ALBERT J. BARNES; 1, Ashley Street, Shrewsbury, Shropshire.

DONEGAL.—On September 5th Mr. T. Patterson took a male *Sphinx convolvuli* at Ramelton, co. Donegal. He very kindly brought it to my father to send to me. The fore wings were badly frayed, but when perfect it must have been a very large specimen.—G. COULTER, Bank House, Ramelton, co. Donegal.

DUBLIN.—On September 9th, 1917, I was given a living female, *Sphinx convolvuli*, by Miss Flynn, Blackrock, co. Dublin. The insect was in an exhausted condition; one of its front legs was missing, and almost all the scales were off its wings. Miss Flynn informed me that her sister found it on the hall doornat.—G. COULTER, Bank House, Ramelton, co. Donegal.

PAPILIO MACHAON IN 1917.

ESSEX.—It may be as well to put on record the capture of a perfect female specimen of this species on August Bank Holiday last near High Beach. The specimen was recently shown to me and appears to have been freshly emerged when caught. It is a good example of the form with rusty spots at the apices of the posterior wings.—C. NICHOLSON; 35, The Avenue, Hale End, Chingford, E. 4.

SUSSEX.—I was taking a walk over the downs on the path leading from Eastbourne to Jevington on Sunday, August 5th, about 4 o'clock in the afternoon when I saw a *Papilio machaon* hovering over a gorse bush on the brow of the hill overlooking Jevington. As I drew near to the butterfly, it settled in the centre of the bush, and, waiting for a seasonable opportunity, I captured it.

It is a female with an expanse of $3\frac{1}{2}$ in., and is in beautiful condition—DONALD TOWNER; 26, Mill Road, Eastbourne, August 21st, 1917.

KENT.—On August 13th I captured a fine specimen of the *Papilio machaon* near White Hill Woods, Canterbury. The specimen is in perfect condition. I saw one a week previously in the same locality, but failed to capture it. I believe that only one has been caught in Kent before. Since that date I have taken two "Clouded Yellow" butterflies (*Colias edusa*).—GEOFFREY STANBRIDGE; St. Paul's School House, Canterbury.

KENT.—A fine freshly-emerged female Swallow-Tail (*P. machaon*, L.) was caught by the Rev. C. E. Woodruff in the Rectory garden at Godmersham, near Chilham, on August 5th this year. Stragglers have been caught at times, according to the 'History of Kent (Insects),' at about Herne Bay, Ramsgate, Deal, and Dover. Knaggs (1870) says: "Machaon have been met with year after year on the East Cliff, Dover, beyond the Castle," and in the same history a few larvæ are recorded as found in 1874 at Stone, near Dartford, and that larvæ have also been found in the neighbourhood of Faversham. The specimen from Chilham was evidently hatched out locally owing to its excellent condition, and I know of no one likely to have turned out any in the neighbourhood.—FRED. V. THEOBALD; Wye Court, April 20th, 1917.

COLIAS HYALE, AND C. EDUSA IN 1917.

OXFORDSHIRE.—The frequent occurrence of *Colias edusa* in the spring was a sure sign that a considerable immigration had taken place from the Continent, and the expectation that this insect would be common this autumn has been fully realised. I have just returned from Milton in Oxfordshire, where I had been staying for a fortnight, and was much struck by the unusual abundance of *edusa* in that locality. It seems to show that this insect is able to penetrate with ease, after an immigration, to those parts of England most remote from the coast. The Vanessids (*atalanta*, *io*, and *urticæ*) were also extremely common in that part of Oxfordshire.—H. G. Q. WALES; August 6th, 1917.

MIDDLESEX.—I noticed, on August 29th, at Wood Green, Middlesex, a specimen of *Colias edusa*. It was in excellent condition and was flying about some waste ground. I note this as being rather unusual, as this is not a very productive neighbourhood for butterflies, being so near London. A list of the species I have noticed in this district (Highgate) may not be uninteresting: *P. brassicæ*, *P. rapæ*, *P. napi*, *E. cardamines*, *G. rhamni*, *A. urticæ*, *P. atalanta*, *E. ianira*, *C. phlæas*, *P. icarus*, *C. argiolus*, some eleven species.—W. S. THOMSON; Highgate, Middlesex.

On September 11th I caught a good specimen of *Colias hyale* on the Chiswick Park Cricket Club ground. The same afternoon one of my friends, Mr. K. Horton, caught two specimens of *C. edusa* on the same ground. Another one had been reported from there on the 8th, but was not captured. I also caught one *Pyrameis cardui*, and have seen several *P. atalanta* there this month.—EDRIC BUTLER; 81, Sutton Court Road, Chiswick.

ESSEX.—This morning I visited two lucerne fields in Purleigh, about a mile apart. In the first one I found *Strenia clathrata* abundant, but not variable, and also saw such common butterflies as *P. atalanta*, *V. io*, and *A. urticae*, as well as *Rumicia phlaeas*, worn, *Canonympha pamphilus* in abundance, and a few belated *Adopæa lineola*, but no trace of either species of *Colias*. I had, however, no sooner entered the other field than I immediately saw several *Colias edusa* on the wing at once, and succeeded in catching a dozen specimens in about half-an-hour. They were all males, and flew very swiftly, not condescending to settle at all. In the afternoon I visited the same field, and in an hour captured sixteen specimens—again all males. Towards 4 p.m. (summer time) they settled a good deal, but generally low down among the lucerne, so as to be difficult to detect. The last one seen on the wing was at 4.45 p.m., thus corroborating a note about *C. hyale* which I made in my diary in 1900 to the effect that this insect flies from 10.30 a.m. to 3.30 p.m. (Greenwich time), but rarely settles before 1 o'clock. The male *C. edusa* I took this morning were mostly in fine condition, but did not vary except in size.—(REV.) GILBERT H. RAYNOR; Hazleleigh Rectory, Maldon, Essex, September 4th, 1917.

KENT.—On August 26th my brother and I saw three specimens of *Colias hyale* flying in a chalk pit near a clover field. Of these my brother was fortunate enough to capture one, a male. We have also seen several specimens of *Colias edusa* flying, and *Pyrameis cardui* has been quite common here this year.—R. M. NOWELL; Chester Cottage, Kingsdown, near Deal, Kent.

SURREY.—On September 3rd I saw in Bromley High Street a male specimen of *C. edusa*, and a little further on in a turnip field a male *C. hyale*. Since then, while walking through Cheam village (September 8th), a fine specimen of *C. hyale* settled just in front of me in the road (male). As soon as I approached it was off like a bird. Since then I have made a thorough search of four clover fields near Sutton, and was rewarded with one female *C. edusa*.—NORMAN C. PILLEAU; c/o T. Knight, Esq., The Beeches, Carshalton.

I saw, but failed to catch, a couple of *C. edusa* near East Horsley to-day (September 16th). They were flying over a rough field of sainfoin, etc.—LESLIE C. E. BALCOMB; 26, Hardman Road, Kingston-on-Thames.

HAMPSHIRE.—On September 8th two male specimens of *C. edusa* were seen by the side of the railway near Wood Fildley, in the New Forest. Mr. Lucas reports a male taken on September 11th at Fletcher's Thorns, also in the New Forest.—RICHARD SOUTH.

On September 12th I saw a male *C. edusa* flying over the golf-course at Shawford, and on the 15th I saw five *C. edusa*, one of them a female, flying over the Hockley golf-course, by St. Katharine's Hill. All of these seemed to be perfectly fresh.—HAROLD HODGE.

CORNWALL.—A young friend of mine reports the capture of a male and female *C. edusa* at Constantine, near Padstow, in August.—H. ROWLAND-BROWN.

COLIAS EDUSA, ETC., IN THE ISLE OF WIGHT.—I spent a fortnight at Ventnor from August 21st to September 6th, renewing agreeable recollections of my first collecting butterflies in the island forty years ago. I found the terrain changed in many respects. The fields in part of Winterbourne, Bonchurch, where *Colias edusa* and var. *pallida* (*helice*) swarmed in the great *edusa* year of 1877, had completely disappeared, being now part of a garden. The then open flowery terraces shelving therefrom to the shore, where I had effected my sole British capture of *Callimorpha quadripunctaria*, are now fenced in with a dense thicket of tamarisk and garden shrubs. Ventnor itself has doubled in size; but the downs remain pretty much the same, and from the day of my arrival onwards, whenever the south-west wind abated, which blew furiously for a week from the 24th to the 30th, though usually the sun was hot, were alive with *Hipparchia semele*, *Pararge megara*, and the second emergence of *Agriades bellargus*. I think the adverse weather conditions had delayed the advent of the British-born *C. edusa*. I saw about a dozen examples in all (none inland), six on the last two days of my visit. Of four netted, one was a hopeless cripple, and two torn to shreds by the gales. Those observed were mostly in the little, rare, sheltered chalk quarries—a blaze of colour with the two red valerians and the white; the bloom proving an irresistible lure also to the Vanessids—*Vanessa io*, *Pyrameis atalanta*, *P. cardui*, and *Aglais urticae*—*H. semele* being also in evidence, fighting for the possession of the flower heads, and thus demonstrating a predilection which has sometimes been questioned (*cp.* ‘Entomologist,’ vol. xlviii, p. 264, etc.). The warm chalk sides of these quarries were also visited by not a few *Macroglossum stellaturum*, but after the rainy interval during the last week of August I did not see them in those particular haunts again. Of *A. bellargus* it may be added that it occurred even on the sea front towards Steephill Cove right down to the edge of the cliff, but though I examined some hundreds of males and females I did not secure a single noteworthy aberration. A pronounced tendency to blueness among the females was, generally speaking, conspicuous only by its absence. Indeed, in my experience abroad, *c. g.* with vars. *ceronus*, *Esp.*, and *caelestis*, *Obthr.*, in France, it seems more or less the rule that the blue females are chiefly of the spring emergence, or at all events show a smaller proportion of the normal form than is the case with the autumn emergence. The butterfly has been so collected (and by a few over-collected) by “variety hunters” in England, that their experience would be interesting on this point. It is perhaps worthy of note, too, that, whereas all females taken at Otford, Kent, on August 27th, 1915, and 1916 were *ab. marginata*, Tutt, I did not observe a single complete example of this form on the Ventnor downs. In 90 per cent. the orange marginal spots of the hind wings on the upper side were altogether wanting, obsolescent, or few in number. The Ventnor specimens are also consistently smaller in both sexes than those from North Kent. Meanwhile the strict and necessary rules in the Isle of Wight with regard to display of light by night renders the chase of nocturnal insects almost impossible. Of the day-flying Geometers few were seen, an exception being *Cnophos obscurata*, among them the speckled *ab. woodiata*,

Prout, which affected the thyme and marjoram. A bed of petunias on the sea front, marked for the wandering Sphingids, was burnt black by the wind, while the hedges and trees, especially the elders in exposed places, were brown as in October, or entirely stripped of their foliage.—H. ROWLAND-BROWN; Harrow Weald, September 9th, 1917.

COLIAS EDUSA, SPHINX CONVULVULI, AND LYTTA VESICATORIA IN DORSETSHIRE.—Perhaps this season has produced conditions specially favourable to insect immigration. As in Sussex, both *Colias edusa* and *Pyrameis cardui* are present here. But the latter, I fancy, appears every year near Winfrith. I picked up, too, on July 18th, near Overmoigue, a mangled specimen of *Sphinx convulvuli*. Last month I saw other specimens hovering over the honeysuckle arch in my garden on which I took so many in August, September, and October, 1901. I have already taken four, the only ones captured since that year. Although the habit of dancing, in isolated companies, over particular sprays or other selected points of land or water, is common among insects, I do not know any beetles, except, perhaps, the Melolonthæ, that have this habit, save *Lytta vesicatoria*. My examples hovered over the ash, just as do the Adelas, or *Gnophria rubricollis*, over their chosen branches. Several bushes, at intervals, were favoured, but *always* ash, although privet was plentiful around. My insects, like those noted by Mr. Guermontprez, fed voraciously, when settled, and, I think, only the ♂'s sported in the air, possibly round the ♀'s. The habit of gregarious flitting, in the case of parasitic Hymenoptera, is, probably, often due to the presence of the hosts attracting the ♀'s, which are then sought by the ♂'s. But in the case of Lepidoptera, Trichoptera, Ephemeroptera, and Diptera, the causes are, perhaps, partly sexual and partly a mere gambolling and playfulness in the pure enjoyment of genial weather.—F. H. HAINES, Brookside, Winfrith, Dorset, September 1st, 1917.

EUVANESSA ANTIOPA IN 1917.

SURREY.—On August 2nd, whilst collecting at Oxshott, in Surrey, I saw a *Euanessa antiopa*. It was flying low, so that I had a clear view of its upper wings, and as it passed within a yard of me I am positive of its identity. I chased, but failed to capture it, as it quickly mounted over some high trees.—W. DALLAS; 13, Cromwell Road, Wimbledon, S.W. 19.

HERTFORDSHIRE.—On August 23rd, a perfect specimen of the Camberwell Beauty was brought alive to my boy. It was captured entangled in a cobweb in a high jack-boot (of all strange places) in a motor-garage. The insect is in very fresh condition, the marginal band of the wings being yellow, not white, as in many captured English specimens.—A. T. GOODSON; Tring.

A splendid specimen, apparently freshly emerged, was seen in Hitchin Park on August 10th, and again at the same spot on August 15th. A week later another specimen was reported as seen in a garden in the town about half a mile from the place above mentioned. Probably this may have been the same individual.—A. H. FOSTER; Sussex House, Hitchin.

AGRIADES CORYDON VAR. SYNGRAPHA IN BUCKS.—As I feared when I published in the 'Entomologist' last year a note on the discovery of this charming variety, the dealers and other collectors have paid especial attention to the Chiltern Hills this season, and, if what I hear is true, some hundreds of examples have been deported during the past month. My consolation is that one of the most assiduous of these gentlemen informed me that he has found var. *syngrapha*, Kef., at several other spots than that in which, I assume, he locates my particular ground. Indeed, I can corroborate the observation that this form is by no means so local as I myself thought to be the case. Pushing my cycle on September 7th up a steep hill at a considerable distance from where I took *syngrapha* last year, I boxed a perfect example. The air was heavy and the sky overcast, and I had seen hardly an insect on the wing; only a few Geometers, chiefly *Anaitis plagiata*.—H. ROWLAND-BROWN.

HETEROCERA IN MIDDLESEX.—Among Geometers (new, I think, to this district) I boxed a perfect and recently emerged example of *Chloroclysta siterata*, Hfn., in July from a fence about a quarter of a mile from our house in Oxhey Lane. Another welcome addition to our local list is *Halias bicolorana*—a mutilated specimen picked up on the tennis lawn on August 5th. The only other local record appears to be that of a single specimen near Harrow, June 23rd, 1893 ('Harrow Butterflies and Moths,' vol. i, p. 23); and of *C. siterata* in Middlesex, Muswell Hill ('Trans. City of London Soc.,' 1900, p. 72). *Hypena rostralis* is another moth not hitherto observed by me here.—H. ROWLAND-BROWN.

OCCURRENCE OF DAPHNIS NERII IN DERBYSHIRE.—On August 21st a gentleman named Mr. C. H. Oliver brought me a fine specimen of *Daphnis nerii*, which he had taken on August 18th in a conservatory at Littleover in Derbyshire. As it had been confined in a small box for three days, the edges of the fore wings were naturally damaged, otherwise it was quite lively and in good condition. The specimen was a male and measured 110 mm. across the fore wings.—J. H. GRANT; Ward End, Birmingham.

MACROGLOSSA STELLATARUM IN LONDON.—I saw a *Macroglossa stellatarum* flying round a delphinium in flower in the garden of this house one evening in the third week of last July; HAROLD HODGE; 9, Highbury Place, London, N.

PYRAMEIS ATALANTA, CYANIRIS ARGIOLUS, AND MACROGLOSSA STELLATARUM IN DONEGAL.—In the first week of May, 1917, I found *Cyaniris argiolus* in fair numbers in large woods near Rathmullen, Ramelton, and Milford, co. Donegal. On July 14th, 1917, I noticed a fresh-looking specimen of *Pyrameis atalanta* on the slopes of Ganiamore, near Cárri Gart, co. Donegal, and on August 27th I saw another *atalanta* in Drummonaghan Woods, near Ramelton. On July 19th I took a badly worn *Macroglossa stellatarum* on the sand dunes near Rathmullen, co. Donegal, and saw many others in the vicinity.—G. COULTER, Bank House, Ramelton, co. Donegal.

ABUNDANCE OF *POLYGONIA C-ALBUM* IN SHROPSHIRE.—I am very pleased to report that this declining species is remarkably plentiful this autumn in Shropshire, where it has been seen in many localities. At Church Stretton it has been very common. Seven on one bramble-bush were noted by Mr. F. B. Newnham, who took one ab. with the "c" developed into a perfect "o." On the 12th inst. I found a fine ♂ in company with numerous *atalanta*, *io*, and *urtica* on the marigolds in the garden of the Shrewsbury Club in the centre of the town.—MARTIN J. HARDING; Oakdene, Church Stretton, September 17th, 1917.

AGRIADES BELLARGUS IN IRELAND.—During the latter part of August, 1916, I took a ♂ *Agriades bellargus* (*adonis*) at the Amphitheatre, Giant's Causeway, Portrush, co. Antrim. The specimen was in fresh condition. So far as I know, this is the first record of this species in Ireland.

GEOMETRA VERNARIA IN IRELAND.—In the first week of August, 1917, I took ♂ and ♀ *Geometra vernaria* on alternate nights in the garden at Roan House, Coalisland, co. Tyrone. The ♂ was in good condition, but the ♀ had a slit in her left fore wing. *Clematis vitalba*, the food-plant of this species, grows abundantly in many gardens in the vicinity. So far as I know, this species has only once before been recorded from Ireland.—J. S. WILSON, Roan House, Coalisland, co. Tyrone.

CYANIRIS ARGIOLUS DEPOSITING OVA ON HEATHER.—I noticed the Blue *argiolus* ovipositing on heather at Ascot in August. I do not remember to have seen this food-plant mentioned.—E. E. BENTALL; The Towers, Heybridge, Essex. [*C. argiolus* haunts Mediterranean heath both on the Riviera and in Corsica, and I have not much doubt, after watching the females on the plants, that their ova are deposited upon it.—H. R.-B.]

PERIZOMA TĒNIATA IN DUMBARTONSHIRE.—I am pleased to be able to record the presence of this interesting Geometer in this district. I turned up quite a considerable number when beating at Loch Long during the first week of August. The habitat was curiously restricted, not more than fifty yards square, outside of which I did not see one specimen. It seems to require a very damp situation, and I incline to think that, if collectors systematically tried beating of herbage overhanging streams during July, this insect would prove to be more widely distributed than is commonly supposed.—R. Y. HORN; 217, New City Road, Glasgow, W.

FOOD-PLANTS OF *SPHIX LIGUSTRI*.—In the August 'Entomologist' (p. 187) the unusual feeding habits of some of the "hawk moth" larvæ are discussed. Holly is given as an alternative food-plant on which *S. ligustri* is sometimes to be found. I have lately found large numbers of this species feeding on ash near Milton, Oxfordshire.—H. G. Q. WALES; Gillwell Bury, Sewardstone, near Chingford, E. 4.

STAUROPOUS FAGI AT GODALMING.—Having seen a note in the August number (p. 191) recording the capture of a male specimen of

Stauropus fagi in Eastbourne on July 11th, I should like to say that a large female specimen was taken near Godalming this year. The date was, I think, June 18th. It was resting on a tree trunk, but was not in a quite perfect condition. It laid several batches of eggs, amounting to a total of about eighty. I do not know if this is the full number, as she may have laid some before capture. The eggs were fastened singly or in irregular batches to the inside of the glass jar in which she was confined. They hatched at intervals on June 28th probably corresponding to the intervals between the laying of each batch of eggs. I do not know whether *Stauropus fagi* is of regular occurrence in the Godalming district, but I have not met with it there myself before. It is by no means a common species, and it would therefore seem desirable to publish the localities in which it is found to occur in order that we may have a better idea of its distribution than at present seems to be the case.—H. G. Q. WALES.

NOTES ON PAPILIO DEMOLEUS.—This handsome butterfly is common at Rawalpindi, Punjab. It is on the wing there from April till December, and eggs and larvæ are abundant throughout this period. Eggs are easily obtained by taking up one's stand near an orange or lime bush and carefully watching the female. She flutters about the bush and settles for a moment here and there, depositing a spherical, light yellow-coloured egg. The eggs hatch in from two to five days. The young larva is dark brown, with irregular white markings, and a number of short spines. The head and two longer spines on the first segment are yellow. The young larva feeds and rests openly on the upper side of a leaf, and closely resembles a bird's excreta. The larva retains this colouring through two or three changes of skin, till about twelve days' old, when it changes entirely. The body becomes smooth and apple green in colour, head and legs brown. On the third body-segment there is a dark eye-like mark on each side, these marks being connected by a brown and yellow transverse band. On the fourth segment is another brown and yellow transverse band. The underparts and two spines on the first and two on the last body-segment are yellow. On the seventh, eighth, and ninth body-segments are irregular brown markings edged with white. The larva, when irritated, protrudes from a fold in the first segment, just behind the head, a fleshy V-shaped organ similar to that of *Papilio machaon*. This organ is orange-yellow in colour, and has a wet, sticky appearance. After about fifteen days from hatching the larva, which is then about one and a half inches long, prepares to pupate. It attaches itself to a twig in an upright position by a silken pad at the claspers and a silken band round the body. A day or two later it turns to a pupa, which is usually green but sometimes brown. The butterfly emerges in about twenty-three days from the hatching of the larva. Larvæ were abundant up to the beginning of December, but I found none during the cold weather. I tried to keep several of the larvæ found in December, but only two survived the cold weather. They grew very slowly, and when fully grown were only half the size of the June larvæ. One turned to a pupa on March 10th, 1916, and a small deformed butterfly emerged on April 2nd, 1916. Young larvæ,

apparently just hatched; were plentiful again in April, 1916. From this it would appear that larvæ which had not pupated before the cold weather, died. Probably the butterflies spent the cold weather in the pupal state. These emerged in April, laid eggs, and gave rise to the young larvæ found in April.—F. B. SCOTT; Capt., I.A., Aden, June 13th, 1917.

SOME NOTES AND OBSERVATIONS FROM THE NEW FOREST.—Cycling through to the Forest on July 20th, I was struck with the unusual number of butterflies on the wing. On arrival, I proceeded on the 21st to my *valezina* ground, to find my expectations more than fulfilled. *Dryas paphia* was to be seen in thousands: every flowering bramble-clump was alive with them. As many as a dozen *valezina* could be seen at once on a single clump. After as careful an estimate as could be made with insects on the wing, I found the proportion of *valezina* to ♀♀ *paphia* to be as high as 1 in 10. In previous seasons I have known the proportion to be 1 in 100. No specimen of *A. adippe* was seen. It was probably over. This species, however, appears to be a decreasing one—at any rate in the northern parts of the Forest. It was very plentiful early in July in some other parts of Hampshire, notably in the Portsmouth district. *Limenitis sibylla*, though evidently *passé*, was in greater abundance than in previous seasons. Of *Apatura iris* I saw three, though only one was captured (on the 27th), and that a ♀ ovipositing on willow. *Eugonia polychloros* was more in evidence than usual from the 20th to the 30th. Some species I usually take fairly plentifully at the same time and place were, this year, unaccountably scarce, notably *hippocastanaria*, *plumaria*, *obscuraria*, *agathina*, *neglecta*, and *anomala*. Sugaring gave only moderate results. *Catocala promissa* was fairly abundant; *C. sponsa* represented by a single example. The latter insect, like *adippe*, appears to have become much less plentiful of late. During the last eight or nine years the proportion of *sponsa* to *promissa* bears a ratio of about 1 to 60. With the exception of three *Nola strigula* (on the 21st) and two *Noctua stigmatica* (on the 26th), the rest of the visitors to the sugar consisted of *trapezina*—*trapezina*, however, in amazing variation, including all the named vars., and, in addition, a unique uniform brown speckled form. Beating for larvæ produced the usual mixed bag, which included, among others, *trepida* (14), *fagi* (8), *chaonia* (12), *dodonea* (3), *alni* (1), *leporina* (2), *piniperda*, *firmata*, etc. Of these, a fair, or, rather, unfair proportion, including, as usual, *alni*, were stung. Whilst larvæ beating, a very nice, varied series of *Sarothripsa revayana* (*undulanus*) was obtained, accompanied, it may be added, by swarms of pestiferous and ubiquitous mosquitos, of an especially vigorous and attentive disposition. Beating for *Cleora glabraria*, as I expected, gave very poor results. I have seldom taken *glabraria* plentifully, except after a mild, wet winter. Finally, I may mention that *T. interjecta* flew intermittently on certain nights, being very uncertain in its times of flight, appearing as early as 5 and as late as 9 o'clock. One curious habit of this moth I remarked for the first time this season, and that was its habit of flying for a time, and then hiding on the grass for a period varying from nine minutes to forty-five minutes—the shortest and longest periods under observation—

before taking to the wing again. On searching for one of these in a bunch of nettles, I found it clinging to a leaf, from which it quietly allowed itself to be boxed. It was, contrary to my expectation, a male. The promise of mid-July was ruined by the break-up of the weather at the end of the month: a succession of thunderstorms practically put an end to entomological pursuits. This part of the Forest was converted into the consistency of a wet sponge. This condition, combined with the scarcity of insects, the spectre of rheumatism, and rapidly approaching age (as measured by the military authorities), checked entomological ardour for a time, though the ever-verdant optimism of the entomologist looks forward to every coming season as a time of new triumphs in fresh fields and pastures new.—A. E. BURRAS, B.A., Portsmouth.

"RARE BUTTERFLIES IN FLOCKS.—A remarkable spectacle may be seen now in County Roscommon, and, indeed, throughout Central Ireland, where myriads of rare and beautiful Lepidoptera are disporting themselves. The lovely peacock butterfly is the most numerous, and clusters of this species may be seen on a single plant. They can be taken in the hand or plucked, like fruit, from a tree. The swallow-tail, red admiral, painted lady, and many other varieties are here in profusion. It is a record occasion for collectors." The above cutting from this day's 'Daily Mail' may be found interesting. Fancy plucking peacocks, like fruit, from a tree! But I have my doubts about the swallow-tails.—GERVASE F. MATHEW; 5, The Terrace, Instow, N. Devon, September 11th, 1917.

OBITUARY.

By the death of Arthur Charles Vine, which took place on July 30th last, we have lost another of those workers of the latter half of the last century who collected Lepidoptera more from a love of Nature than with any ulterior scientific object in view. Resident in Brighton, his chief hunting grounds were the Downs between that town and Lewes, occasionally extending the range of his activities to more distant places such as Abbott's Wood, Tilgate Forest, and so forth, and probably few had a more intimate knowledge of the capabilities of these districts than he. Ever generous to his intimates, he never tired of sharing with them the fruits of his work, whether by the gift of specimens or by imparting to them such information as he possessed in regard to species in which they might be interested; but he contributed little to literature. Indeed, so far as we are aware, a couple of notices in the earlier numbers of this magazine, the one recording the capture of *Catocala electaa* near Brighton and the other that of *Polygona c-album* in Sussex, were his chief contributions. For many years during the later part of his life he delighted in tracking down and rearing many of the obscure species of Micros, and it is to be regretted that much useful information that he thus obtained was not put on record. His manipulation of the minute specimens that resulted was worthy of all praise. He was born on Christmas Day, 1844, and was therefore in his seventy-third year at the time of his death.

R. A.

Subscriptions for 1917 (7s.) should be sent to R. South (Editor),
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WITH THE ASSISTANCE OF

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NOVEMBER, 1917.

[No. 654

NOTE ON THE INFLUENCE OF TEMPERATURE ON THE DEVELOPMENT OF PIGMENT IN *PIERIS RAPÆ*, L.

By J. J. LISTER, F.R.S., F.E.S.

THE spring of the present year was exceptional for the continuance of cold weather to nearly the end of April and for the sudden coming of summer. The maximum and minimum readings of the thermometer at Grantchester (two miles to the south of Cambridge) from January 1st to May 31st are shown on the accompanying chart.

From March 19th to April 26th there were only four nights in which the temperature did not sink below the freezing point, bitter snow storms lasted on till April 10th, and there were only six days in which the temperature rose above 50° F. At the end of April summer came almost with a bound. On May 4th the glass was up to 68° F., and on May 12th to 80° F., and, with the exception of two brief cool spells, the fine hot weather continued throughout May and June.

It was not till May 2nd that I first saw *P. rapæ* on the wing, and *P. brassicæ* and *napi* and *C. argiolus* appeared on the 4th. Wishing to obtain a good series of the spring brood of *rapæ* (var. *metra*, Stephens), I took a considerable number, beginning on May 3rd. As usual the males at first exceeded the females in number. I was soon struck with the number of males in which a spot appeared to be absent on the upper side of the fore wing and the apex of this wing was very pale, and I took as many of these as came my way. About the 18th of May it occurred to me that it would be interesting to find the proportion which these apparently spotless forms bore to the commoner form of male, and from that date till the 25th I took all males in fairly good order that came my way, without any selection. To my surprise, I now found that there were none of the spotless form among the fifty males collected in these eight days. Later, on June 4th, I took one more, a rather torn specimen with imperfect fringes. With this exception the dates of capture of the apparently spotless males all fall in the first fortnight of May, viz. one on May 3rd, four on the 4th, one on the 5th, one on the 7th, two on the 8th, one on the 9th, two on the 11th, one each day on the 12th, 13th and 14th, and one on June 4th.

These specimens evidently approach the form of the spring

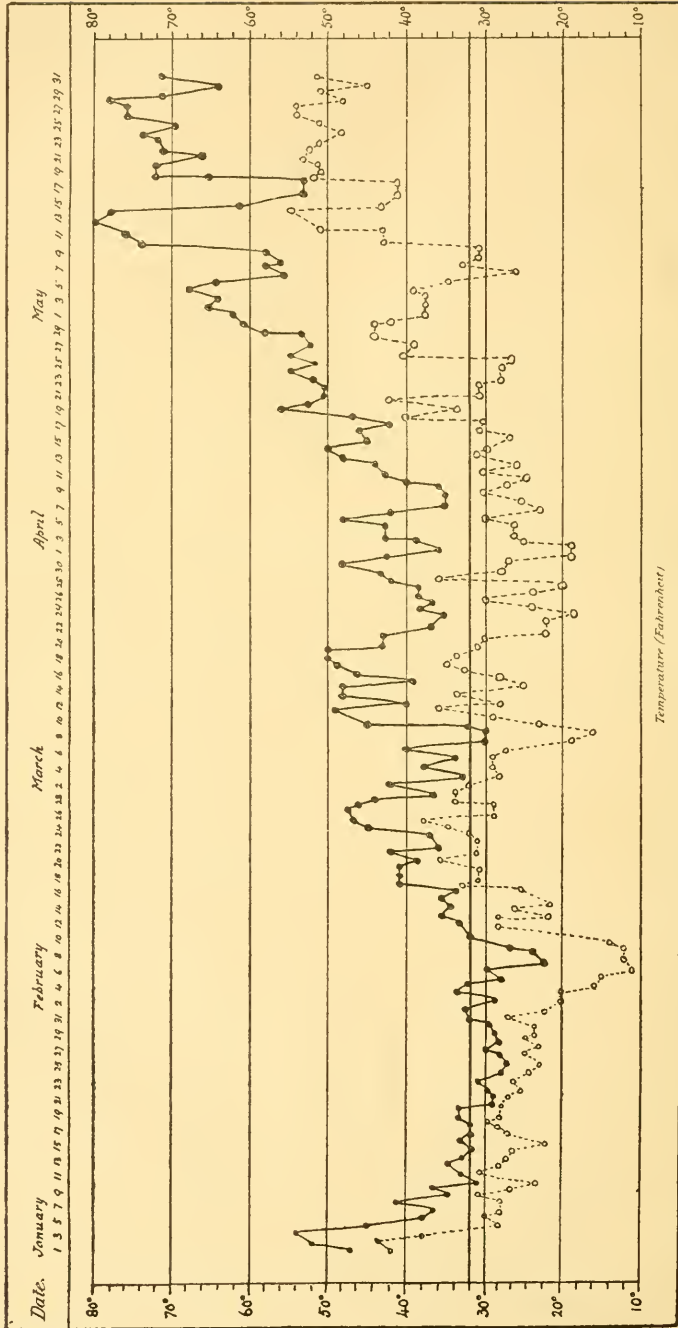


Table of maximum and minimum temperature readings for the first five months of 1917. (Merton House, Grantchester.)

brood *immaculata* of Cockerell, which Tutt ('British Butterflies,' p. 232) describes as "an extreme aberrational form of this brood (*metra*) without apical tips or spots." But they fall short of this form in that they have faint apical tips, and, though the spot on the upper side of the fore wing appears at first sight to be absent, examination with a lens shows in all of them a few black scales, often not more than one or two, in the position of this spot; also a few scattered scales represent the costal spot on the upper surface of the hind wing. The anterior spot on the under surface of the fore wing is present in all, though it is generally faint. The under side of the hind wing presents the same variation between yellow and dull greenish as is found generally in var. *metra* as well as in the later brood of *rapæ*.

I give sixteen as the number of these specimens, but they are only the extreme forms of a series which passes insensibly into typical *metra*. I have altogether 102 examples of *metra* taken in May and June. All those which come nearest to the sixteen were taken before May 20th.

Two questions appear to present themselves for consideration from this experience: (1) Why, having found the form approaching *immaculata* common at the beginning of May, did I fail to take any between the 18th and 25th? and (2) why was the appearance of this form confined to the early days of May?

(1) Although it is common knowledge that the colours of butterflies fade as they grow older, I am aware of no evidence that they ever become more intense after the imago has fully emerged, and I suppose that it is unnecessary to consider the idea that the immaculate became maculate. I also suppose that the average life of members of this species is more than three weeks. We must, I think, conclude then that, the emergence of the *immaculata* form being confined to the earlier days of May, the maculate form emerged so abundantly from the middle of May onwards, and so far outnumbered the earlier *immaculata* form still on the wing, that I was able to take fifty from the 18th to the 25th without including a single example of the latter form.

(2) The second question is of wider interest. I would submit that the facts seem to show that the difference in pigmentation between the insects emerging in the earlier days of May—"faint and frail and first"—and those appearing later is due to the conditions of temperature to which their pupæ were exposed. The pupæ of those which emerged on May 3rd were subjected to night frosts for three-quarters of the last two months of their pupation, and often to severe frost; while those emerging later completed their pupation in the balmy weather of May. The warmth and light of May seem to have "brought out" the pigment, to use a photographic simile, which failed to develop under the more rigorous conditions to which those that were earlier on the wing were exposed.

The dependence on temperature of the characters of the spring brood of *P. napi* is shown by the observation of Mr. Hawes, quoted by Tutt (*l. c.* p. 236). Part of the offspring of a female of this brood emerged in the summer with the usual characters of the summer brood; but the remainder did not emerge till the following spring, when they presented the characters of the spring brood. The behaviour of *P. rapæ* this spring appears to be in harmony with this result, the exceptionally cold weather having exaggerated the features of the spring brood in those that were earliest out.

Both results show that the critical time for the development of pigment is near the end of pupal life.

I should be much interested to know if other collectors have had a similar experience to mine.

BALDRATIA SALICORNIAE (KIEFFER) AND *STEFANIELLA BREVIPALPIS* (KIEFFER), TWO
CECIDOMYIDÆ NEW TO THE BRITISH FAUNA,
WITH REFERENCES TO OTHER INSECTS.

BY J. W. HESLOP HARRISON, D.Sc.

1. *Baldratia salicorniæ* Kieffer.

For several years now my friend Mr. Bagnall and myself have devoted much of our very limited leisure to the study of that extremely interesting group, the Cecidomyidæ, and with no little success. Much of our work has been done systematically, *i. e.* we have deliberately planned out a campaign on a certain group of plants and have carried it out. Amongst the many plants designed for examination the salt-marsh plants almost of necessity fell to me. Consequently, in the winter of 1916 and the early spring of 1917, I worked Greatham Marsh for its specialities, but my sole success was to find small numbers of old galls on *Salicornia* stems. Still I was not disheartened, and botanical survey work gave me many opportunities of working the ground, with the result that I swept a number of the present insect from the *Salicornia* and later discovered ONE gall.

Kieffer states that the gall is a lateral swelling, red in colour, affecting the internodes of *Salicornia fruticosa* L. (= *radicans* Sm.). My specimen was collected from a red-coloured form of *Salicornia ramosissima*; this rendered the gall very hard to detect.

My aim in writing the present note is to invite workers in the South to attack their much richer *Salicornia* flora, especially the species *Salicornia radicans*. We here are on the extreme northern limit of the range of this plant; in fact, it is not on record for Durham, although I have found it sparingly there after discovering the insect. Naturally we cannot expect any great numbers of a southern insect on a plant slowly dying out

from us. Whilst in Italy and Portugal the insect is apparently restricted to this plant, in Turkey, Trotter ('Nuovo Giorn. Bot. ital.,' Firenze, vol. x, p. 218) reports it from *Salicornia herbacea*, which is common enough here, but is unsuitable as a food for the *Baldratia*, as our winters cut it off completely—hence the gall on the solid stems of *Salicornia ramosissima*.

The larval cavity is comparatively large, measuring 5 mm. by 2 mm., and containing a single reddish-orange larva which pupates therein and emerges the succeeding year.

2. *Stefaniella brevialpis* (Kieffer).

Here again we are concerned with an insect attacking a plant, *Obione portulacoides*, on the very verge of its range. Again southern entomologists have a far better chance of getting the insect in quantity, although on our restricted colony I found several galls, consisting of a shuttle-shaped swelling of the somewhat woody stem, each hollow containing several reddish larvæ.

To show how precarious an existence the insect leads with us it is sufficient to state that a week later an enterprising goat-keeper, who had evidently realised the potentialities of Chenopodiaceous plants as food for cattle, had tethered a goat amongst it, with the subsequent destruction of over one-third of the Durham stock of plants, and almost one-half of the Durham colony of that rediscovered Psyllid *Trioza atriplicis*, which feeds on *Obione*, and not on *Atriplex patula*, as usually stated. As a matter of fact, the latter plant straggles into the midst of a clump of *Obione* carrying large numbers of the Coccid-like *Trioza* larva, and is nevertheless utterly untouched.

It is well to note here that *Gelechia obsoletella*, an insect not on record for Durham, occurs in precisely the same patch of plants.

181, Abingdon Road, Middlesbrough.

PERONEA CRISTANA: ITS LIFE-HISTORY, HABITS OF THE IMAGO, DISTRIBUTION OF THE VARIOUS NAMED FORMS, AND SOME SPECULATIONS ON THE PRESENT TREND OF ITS VARIATION.

By W. G. SHELDON, F.E.S.

(Continued from p. 222.)

THE PUPA.

Length is 7·8 mm., width 1·5 mm.; the abdominal segments are light greenish-brown, the wing cases are dark greenish-brown; it is rather stout in proportion to its length. The front three abdominal segments are of the same width as the thorax when viewed dorsally, the next three are narrower, they are of equal width; the seventh is narrower still, the

remainder of the segments taper rapidly and regularly to the anal segment, which at the rear is .4 mm. wide. The rear outline of this segment when viewed dorsally is square, but when viewed laterally it is hooked, with the point of the hook directed ventrally. The segmental divisions are very clearly defined; the skin is rough and without noticeable hairs; the head and thoracic segments are smooth and slightly polished; they are reddish-brown in colour; the head is rounded in front and it is without a cocoon opener; the eye cases are rather prominent; the wing cases are slightly polished, rough, and striated longitudinally; they reach to the rear end of the third abdominal segment; the abdominal segments have only rudiments of spikelets.

The pupæ were kept in a room under conditions as to heat that would be approximately normal, and the first imagines were noticed on June 30th, on which day nine had emerged. They continued to emerge in about equal numbers each day until July 10th, after which date odd ones appeared until the 19th, on which day the last specimen emerged.

Altogether eighty examples were bred; these consisted of 37 ab. *nigrana*, 35 ab. *semiustana*, and 8 ab. *cristalana*. This remarkable result means that although there are some fifty or more forms of *P. cristana* to be found in the locality from which the parent moths were obtained, every one of the specimens bred followed one of the three parent forms. It also seems to point out that the union of the sexes takes place in the winter or early spring.

The bulk of the specimens emerged in the morning, but this was not invariably the case, for a considerable number were seen with wings undeveloped at or about sunset. They usually sat quietly on the leaf which had contained the pupa, but on being gently touched they took a short flight, settled on the side of the cage, ran quickly up it, and if allowed took flight at once, rising until they reached the ceiling of the room; on this they would generally settle, and when once fixed they would allow themselves to be boxed without difficulty.

With respect to the important question of the food-plant, or plants, I confined single larvæ separately with foliage of every tree and shrub grown in the localities where the moths occurred, and which I was able to obtain; I found they would eat the following: blackthorn, whitethorn, pear, crab-apple, dog rose, *Pyrus avia*, plum, beech, oak, hornbeam, birch, elm, lime, and hazel; and that they rejected holly, privet, maple, sycamore, bramble, willow, *Fiburnum opulus*, *Rhamnus frangula*, and aspen.

From this experiment it will be seen that although not quite a general feeder, *P. cristana* has a very wide range of available food, and this is perhaps unexpected in view of its decidedly local distribution.

My next experiment was to try and ascertain the food-plant

most favoured, and on May 18th I placed half-a-dozen larvæ in a small cage with foliage of the following: blackthorn, elm, hazel, hornbeam, oak, whitethorn, pear, beech, willow, and mountain ash.

On May 21st the contents of the cage were examined, when it was found that pear, oak, beech, and whitethorn had been eaten to a certain extent, that blackthorn was much more eaten than any other foliage; that four of the larvæ were in folded blackthorn leaves, and two on other foliage, but as this had got somewhat mixed up, I tried another method on this day, placing in a small cage foliage of blackthorn about one-third, and of whitethorn about two-thirds, one on one side of the cage and the other opposite to it. I then placed seven larvæ between them.

On May 22nd four of these larvæ were feeding upon blackthorn and three upon whitethorn. I removed these larvæ and substituted eight others in their place. The next day equal numbers were feeding upon each foliage. On the same day I placed seven larvæ on equal portions of blackthorn and whitethorn; twenty-four hours after, there were five on blackthorn and two on whitethorn.

I think the result of the above experiments, coupled with my experience with the ova, and bearing in mind certain of the habits of the imago to be described presently, will show pretty conclusively that the favourite food-plant is blackthorn, followed at some distance by whitethorn, and not improbably by crab apple, for this latter tree grows pretty freely in all the habitats in which I have found the moth, and it certainly is very partial to resting amongst its branches.

HABITS OF THE IMAGO.

A great many lepidopterists have hunted *P. cristana* with more or less (generally more) ardour, but, so far as I am aware, with the exception of some delightful verses—which I strongly recommend everyone who is not familiar with them to read—by Prof. Image, and to be found in 'Ent. Record,' xix, p. 299, what they have said on the subject of the habits of the imago is either nothing at all, or something which is misleading, and therefore worse than nothing.

Barrett says ('British Lepidoptera,' vol. x, p. 222): "The moth sits by day in trees and bushes, more particularly in hawthorn when grown as trees, or occasionally in hedges; some collectors say also in blackthorn; and the collectors who used forty years ago to find it freely in the (now destroyed) Hainault Forest took it, as I understand, mainly from hornbeam. It is readily beaten out in the day, but flies hastily to the ground or some other hiding place."

There is a small stratum of correctness in this, but the whole gives one quite a wrong impression; at any rate it did so to me,

and caused me to pass several hours for two days vigorously thrashing whitethorn bushes, entirely without result; whereas late on the second day, thanks to some correct information obtained from another lepidopterist, I found I had been working unsuccessfully within a few hundred yards of perhaps one of the most prolific localities for the species in the country. I had been thinking of Barrett's sentence, "It sits more particularly in hawthorn when grown as trees." I took this to mean the more or less solitary large hawthorns that are plentiful enough in certain parts of the New Forest, and I now know that I might have beaten them for a month without result.

The habitats of *P. cristana* par excellence are the dense thickets of blackthorn, whitethorn, crab apple, and other trees and shrubs that exist in certain portions of the New and Epping Forests and elsewhere. It does not care for the outskirts, although one may get occasional examples there; but if one wants many specimens, it is necessary to get into the heart of the thickets. This is generally not difficult, for there are usually cattle or other paths that will conduct one there. Once arrived in the dim recesses of these thickets, the collector will find the blackthorn and whitethorn bushes almost killed and covered with lichens, owing to absence of light and air, with, in certain places, great accumulations of dead wood.

It is necessary to be provided with a strong thick stick, which should be not less than 5 ft. in length, and with it to give the hiding place a sound whack, and not one only, several are desirable, for the quarry usually requires a great deal of rousing; in fact I have not infrequently worked a thicket, from which ordinarily I have obtained many specimens, twice in one day, and have found almost as many on the second occasion as on the first. When disturbed the moth is recognisable at a glance; it usually appears grey—although some of the reddish forms show brownish—and looks fully its actual size. I may say here that the only other moth usually to be met with in its haunts in any numbers is *Teras contaminana*; this is a somewhat smaller and more tawny-looking species on the wing, and has a more rapid darting flight.

When knocked out and forced to take wing *P. cristana* behaves very remarkably. It at first appears dazed, as if it had been suddenly aroused out of deep slumber and was not fully conscious of what had happened. Whilst in this state, which will be for one or two seconds, it does not make much progress, and if the spot is clear of undergrowth it can be easily captured. When once it has taken its bearings it will usually make for the nearest available cover, which is not generally more than a yard or two away, and if this is once reached you may say good-bye to it.

If the moth is dislodged by a slight tap of the bush on which

it is resting there is no preliminary hesitation, and it will at once make for the nearest cover. When this happens the time available for capture will be reduced by at least one-half. In any case the flight is weak and slow, and the only difficulty in making a capture is that, if this is not effected in the first yard or so, the nature of the ground makes it probable that some thorny branch will impede the stroke or render it impossible. The amount of elbow grease that it is necessary and advisable to exert in order to flush the moth depends largely upon the meteorological conditions; if they are very favourable a slight tap is all that is necessary; if not, then the amount of thrashing the bushes receive can hardly be too severe.

A short-handled net is necessary to effect a capture—I use a medium size kite net without a stick—for the space available will often be only one or two cubical yards. One must have a good eye, too, for the light is dim, and a quick arm, for the available time is very short.

When once the quarry reaches cover it will be seen slowly drifting away into invisibility, or it will provokingly pitch on a twig a yard or two away, just out of reach, and amongst such a tangle of thorns and branches as will make its capture utterly impossible.

The interest and charm of *cristana*-hunting consists largely in the state of expectation in which those who pursue it are kept continuously. One never knows but that the next whack will dislodge some rare and beautiful form that has been the ideal of one's quest for years, and each moth dislodged is regarded as that particular form until actual inspection has proved that it is not. On each occasion, when a specimen is missed, the would-be captor's feelings can be imagined.

Occasionally *cristana* will vary her tactics, and after a short flight she will settle quietly, either on the ground, or more probably on some twig a few inches above it. If this happens, the resting place chosen will usually be well adapted for invisibility—the moth is well built for this purpose—and you must glue your eyes upon it until they can be brought to the best focus for actually seeing her, for if again disturbed she will almost certainly drop, and then you may say good bye.

So well is the moth adapted to her environment that in the great majority of instances it will be found impossible to locate it whilst settled. Of course a certain proportion of specimens dislodged will not come out in the open at all; these are usually not seen, and in any case are lost. It is a good plan to give an upward stroke with the beating stick whenever possible, as this has a tendency to force the moths upwards and towards you; whilst a downward stroke will often drive them into the thickets and also to the ground.

In the heart of the thickets, especially under the larger trees, are often thin straggling bushes, and, if the weather is settled, *cristana* will often rest upon them in preference to the thicker growth around. If in this position, a slight upward tap will usually dislodge it.

When in the net the instinct seems to be to burrow downwards, instead of making for the mouth, as is the almost invariable custom with lepidoptera. The attempts to find a way out of the bottom of the net are most pertinacious, and give the insect the appearance of frantically executing a dance on its head.

So secretive in the daytime is *P. cristana* that I have never seen one fly unless it was first disturbed, and a professional collector who must have captured many thousands of examples informs me that his experience in this respect is identical with my own.

If the day is cold, or if there is much wind, especially cold wind, one had better give *cristana* a rest, for on these occasions she will, on being disturbed, drop to the ground and will not be seen. The best days are those which are calm and warm, and especially when there have been several of such days in succession. I understand that after a warm shower of rain the moth will fly freely when dislodged. The afternoon is better than the morning.

The imagines are to be found from mid-August to well on into November. In fine settled weather, especially in the earlier part of its period, the moths will get up to the top of the thickets; if there is a cold snap, say a sharp frost in October, they will go down amongst the dead wood, and it will usually take several days of better weather before they will be up again.

Late in the year, that is to say during the second half of October and throughout November, I understand that the moths keep low, and in the thickest parts of their haunts, no doubt hibernation takes place amongst the accumulations of dead wood which are so abundant underneath the thickets.

In the spring it is very unusual to meet with the moths, though they are occasionally seen, and I am informed one or two examples have been found on the flowers of blackthorn when these were searched at night for imagines of *Aleucis pictaria*. I learn also that some years ago whilst certain thickets in the New Forest were being cleared away in the early spring, quite a number of *P. cristana* were disturbed out of the dead wood in their recesses.

Specimens captured in November are usually in perfect condition, and this would lead one to suppose that the moths had a continuous period of emergence, extending over several months; my eighty specimens, however, emerged in a period of twenty days, and it would seem, therefore, that intense sluggishness is the cause of the absence of wasted specimens throughout the autumn.

(To be continued.)

NOTES ON THE LEPIDOPTERA OF THE BRITISH
LINE IN FRANCE.

BY CAPT. H. D. SMART, M.C., R.A.M.C., F.E.S.

(Continued from p. 229.)

A FEW nights of sugaring in the grounds of a chateau near Fruges, Pas-de-Calais, enabled me to fill in several gaps in the list of the commoner moths. I had hoped by this means to find species unknown in Britain, but was disappointed. The weather was good and insects numerous, but many British localities would have given me a greater number of species.

The first addition to my list from this source is *Thyatira batis*, which with *Habrosyne derasa* turned up fairly commonly. The former I took also at Loere, in Belgium.

The Fruges locality also produced *Palimpsestis octogesima*. At Mazingarbe I found the cocoons of *Eriogaster lanestris* in considerable numbers, but confined apparently to one hedge. This was at the extreme end of February, but there were no cocoons from which the moths had emerged, probably because there had been no weather likely to tempt any insect into the outer world.

The larva of *Cosmotriche potatoaria* was fairly common about Fruges.

Of the Nolidæ I have three species to report: *N. cucullatella*, from Caestre and Kemmel, in Belgium; *N. strigula*, from the Forêt de Nieppe; *N. confusalis*, from Fruges. This leaves *N. albula* the only British *Nola* that I have not taken in France.

Hylophila bicolorana occurs on Mont Kemmel, which appears to be a very promising locality, especially as regards the small patches of marsh on the lower slopes.

Lithosia griseola and *L. lurideoli* are common in these marshes, and *Pelosia muscerda* occurs there. *L. sororcula* was abundant in a large wood near Avesnes le Comte, but confined, so far as my efforts went, to a locality a few yards long. In the same wood I found one specimen of *Demas coryli*.

Acronycta aceris and *A. ligustri* both came to sugar at Fruges.

Agrotis corticea, *A. augur*, *Noctua brunnea*, *N. primula*, *N. rubi*, *N. plecta*, *Eurois prasina*, *Aplecta nebulosa*, and *Mamestra thalassina* were all taken at Fruges.

Of *Dianthæcia compta* I took one specimen at Rely, in the Pas-de-Calais.

Eumichtis adusta I found at Fruges, and the larva of *Diloba ceruleocephala* was common there.

Hadena sordida, *Apamea gemina*, *Miana strigilis*, *M. fasciuncula*, *Euplexia lucipara*, *Nenia typica*, *Leucania comma*, and *Grammesia*

trigrammica were all taken at Fruges, the last showing the usual variation, including var. *bilinea*.

Rusina tenebrosa was common at Fruges.

I came across a larva of *Calymnia trapezina* with its head and anterior segments in the shell of a small snail. Its jaws were, of course, invisible, but from the rhythmical movements of the parts that were visible it appeared to be indulging its carnivorous instincts in an unusual direction.

Dyschorista fissipuncta was common near Kimmel.

Heliaca tenebrata appeared in small numbers at Arras, Avesnes, and Fruges.

Haplotis fasciana I found in the Forêt de Nieppe.

This is another rich locality. After a very long and tiring march, we billeted about two miles from its western border. I walked over in the early evening, and filled all my boxes in a few minutes. Next morning I had to get up at 1.30 to pin my captures, so that they might be packed in time for an early start.

Scoliopteryx libatrix was unusually abundant in all districts visited. Fresh specimens were on the wing as early as the first week of July, before the hibernated insects had disappeared.

Plusia chrysitis was common at Fruges.

Abrostola triplasia and *A. tripartita* were both common at Heuchin and Fruges.

Zanclognatha tarsipennalis occurred in fair numbers at Fruges. *Pechipogon barbalis* and *Hyppena rostralis* were both taken near Avesnes.

Iodis lactearia was quite common from Heuchin up to Locre, in Belgium. At the latter place *Hemithea strigata* was abundant.

Ania emarginata was extraordinarily abundant in one patch of marsh near Kimmel, and at the same time absent from a similar patch a few hundred yards away.

Ephyra linearia was common at Avesnes le Comte.

Eucosmia undulata was common at Locre.

Cidaria pyrallata occurred abundantly on Mont Kimmel, and *C. fulvata* less commonly at Locre.

I am told that *Coremia designata* is becoming scarcer in Britain, but in the Fruges area it was the commonest Geometer in June.

I took *Mesoleuca albicillata* and *M. bicolorata* at Kimmel.

Hydriomena impluviata was taken near Fruges, but did not appear common.

Eupithecia castigata, also from Fruges, is the only addition I have to make to this genus.

Bapta temerata occurs in the same district.

Ourapteryx sambucaria was common at Kimmel.

I spent only one night at Heuchin, and, after a little dusk, retired to bed with a book, a pipe, and a net within reach.

Among other things I took two perfect *Eurymene dolabraria* by this method, more otiose than dignified.

At Heuchin I at last found *Opisthograptis luteolata* in sufficient numbers to be a nuisance. I found it far less common in the surrounding districts, but everywhere much more in evidence than it was last year.

Epione apiciaria was a common insect all through the wood at Avesnes.

Angerona prunaria occurred near Fruges, and was very common in Belgium.

Hybernia leucophaeria, *H. marginaria*, and *Anisopteryx æscularia* were all abundant in several woods between St. Pbl and Arras.

Phigalia pedaria was common in the same woods, and I took *Apocheima hispidaria* at Avesnes. I saw no specimens of these insects with any tendency to melanism.

Boarmia repandata was very common in the Arras woods and the Forêt de Nieppe, but again there were no melanic or other atypical forms.

B. consortaria occurs at Fruges.

The Hepialids were nearly as infrequent as in 1916, though *H. lupulinus* and *H. hectus* were not uncommon in many places. Of *H. humuli* I saw only two specimens, one at Fruges and one at Kemmel, though I often went dusking, and must have seen it if it had been at all common.

It will be noticed that with one exception (*D. compta*) all my macro-lepidoptera might have been taken in Britain. The relative predominance of the Nolidæ and Lithosiidæ in the list, and the relative scarcity, or even absence, of some of the commonest British genera and species, are probably the result of chance. Such a condition of things is usual in two seasons of haphazard work in any district when no insect has been specially searched for.

(To be continued.)

NOTES AND OBSERVATIONS.

RHOPALOCERA AT MARLBOROUGH IN 1917.—In the following notes of the remarkable season I have just spent in the Marlborough country I have included the observations of some energetic members of the College Natural History Society, especially Messrs. Greenham, Lowe, and Paton. In every case, except *Colias edusa*, I have seen and verified the insects recorded. Hibernated *Aglais urticæ* were very abundant, with a sprinkling of *Vanessa io*, at the end of April, and later the larvæ of both species abounded on the nettles. Both broods of the former swarmed everywhere, and the latter was common in August. Thanks to magnificent weather in May insects were well up to date, *Euchlœe cardamines* appeared by May 8th, and *Callophrys rubi* in fair numbers from

the 13th, *Brenthis euphrosyne* (19th), and *B. selene* (30th) swarmed in every wood—I saw five on one head of bugle—and were still to be seen in July, long overlapping the species of *Argynnis*. *Melitæa aurinia* (at one time almost extinct in these parts), was first taken on the 26th, and was afterwards very numerous in one or two localities with stragglers elsewhere. *Cyaniris argiolus* (8th) was not very common, but *Hesperia malvæ* (8th) was everywhere; *Nisoniades tages* (14th) not so common. The 30th brought records of *Polyommatus icarus* (very late), *P. astrarche*, and *Cupido minimus*. *P. astrarche* was scarce in this brood but much commoner in August. There was also a second brood of *C. minimus* at the end of July. *Nemeobius lucina* (25th) was not uncommon in a few localities and larvæ were found later on. All the June insects were extremely early. *Argynnis adippe* and *aglaia* appeared on the 17th. When it is remembered that Savernake Forest is 500 ft. above sea-level, and usually ten days later than other localities in the same latitude, this is a strikingly early date. *Adippe* was so excessively numerous that it was difficult to get *aglaia* except on one common remote from high woods, where the latter reigned alone. *A. paphia* was a few days later (25th), but extremely abundant in some woods up to the middle of August. Var. *valesina* was taken on July 24th, and was seen in another wood. *Melanargia galatea* put in an appearance on June 25th, and while most abundant in certain localities might be met with wandering very widely. I saw the last survivors in the third week of August. *Pararge megæra*, which had disappeared for some years, was taken on the 26th (one only), but I saw specimens of the second brood in August in five different localities, so that it is happily returning. *Agriades sylvanus* (June 5th) was locally very abundant, *Adopæa thaumas* (28th) not so common. The most interesting of the local butterflies, however, was *Thecla w-album*, and one of the most remarkably forward. I found larvæ crawling up palings and wych-elm trunks on May 28th, and, returning with an umbrella next day, soon had as many as I wanted. Imagines were out on June 19th. I can fully endorse what has been written about the curious habits of this fly. For some time I gazed in vain at the trees where the larvæ had abounded, then one dull day I found some boys beating them out of a hedge in the vicinity. Later on one hot afternoon I hit upon a patch of thistles on which they were clustered thickly and could be boxed without the use of the net, but although the under sides of the wings looked perfect I never captured a specimen that was perfect on the upper side. It was well into August when I saw the last wasted female on a thistle bloom. In July the season slowed down; *Limenitis sibylla* (three) were taken from the 11th on but were not quite fresh. *Zephyrus quercus* (8th) was not very common. A precocious *Agriades corydon* was taken on July 7th but it was not common till the end of the month. I saw it still fresh on August 7th in amazing abundance in one hot and sheltered escarpment. I have never seen anything like such numbers even in the Isle of Wight or at Eastbourne, but it is by no means universally distributed on the Marlborough Downs.

On the 22nd *Polygonia c-album* was taken—a rare visitor here—and another was seen. In August the weather broke down: on the 15th I found *Agriades comma* abundant in one locality, but the feature of the month was the profusion of *Chrysophanus phlæas* which had not been common in the earlier broods. Had I stayed Marlborough I might have added *Hipparchia semele* to the list and possibly *Zephyrus betulæ* which occurs here. As it was, thirty-seven species of Rhopalocera were recorded, including a *Colias edusa*, seen and pursued (not by myself) in June. None appeared at Marlborough in August. I might add that on August 16th I found a nest of *Melitæa aurinia* larvæ at roots of scabious; they seemed to be already hibernating, as the plant had not been recently eaten. *Pyrameis cardui* was taken on May 30th, and there were a few about in August. On June 6th I saw *P. atalanta* ovipositing on nettles. It only laid one egg (which I secured), on a patch, and then hurried on evidently bent on distributing them widely. It was not abundant in August.—E. A. C. STOWELL; Fowey Grammar School, Cornwall.

BUTTERFLIES OF THE COTSWOLDS (PAINSWICK DISTRICT) IN AUGUST.—This year I had the pleasure of spending a fortnight at Cranham (from August 4th to August 18th inclusive), and although the weather was very unfavourable on the whole, the number and variety of butterflies I encountered were well up to the average. There were only two absolutely fine days—August Bank Holiday and the day following (August 6th and 7th), and on these two days *Vanessa io* absolutely swarmed on Painswick Beacon and in the Cranham Woods, the specimens being of large size and in perfect condition. I also saw about ten specimens of *Polygonia c-album*, the majority of these being much worn. I have never seen these previously in such numbers on the hills, and even in the valleys they are far from common as a rule. There were a fair number of *Aglais urtica* on the wing, and full-fed larvæ and pupæ were to be found in large numbers on every clump of stinging nettles, many of the latter resembling burnished gold, the metallic colouring being so bright. I noticed a number of wasps feeding upon the larvæ which were suspended beneath the leaves prior to pupating, and upon examination I discovered a large number of empty skins of larvæ, which, I have no doubt, had been destroyed by the wasps. I only saw one specimen each of *Pyrameis cardui* and *P. atalanta*, but I noted several larvæ and pupæ of the latter. On August 7th my little girl took three specimens of *Colias edusa* in a clover field at Sheepscombe. These were in fine condition, but I did not observe any others during my stay. *Agriades corydon* were in large numbers on the hills at Cranham, Birdlip, and Sheepscombe, and the second brood of *Cyaniris argiolus* were common on Cooper's Hill and around the holly trees in the lanes. I only saw one newly emerged specimen of *Agriades bellargus* (male), but *P. icarus* and *P. astrarche* were becoming fairly common when I left, all these being of the second brood. *Pararge egeria* and *P. megæra* were common everywhere in the woods and along the walls, and I saw a few battered specimens of *Melanargia galatea*, *Dryas paphia*, and *A. aglaia*. I noted large

numbers of the larvæ of *Macrothylacia rubi* on the grass on Painswick Beacon, more especially after rain, and on August 18th I took a full-fed larva of *Acronycta alni* on a stone wall adjoining Pope's Wood, the only trees in the vicinity being beech, the larva pupating in decayed wood on the following day.—J. H. GRANT; Ward End, Birmingham.

HYPENA OBSITALIS IN DORSET.—On July 11th we were walking through a thick tangle of nettles, with patches of *Cenanthe crocata* and other rank herbage, on an expanse of warm, sheltered osier-beds, near the Frome, at Iford. Suddenly my son, who was just behind me, called my attention to a specimen of *Hypena obsitalis*, Hb., which was quietly seated on a stem of coppiced osier about 6 in. in diameter. In my surprise, an unconsidered and, perhaps, over-anxious attempt at "boxing" failed, and the moth slipped away, sideways, between my glass-bottomed box and the stem. It is probably unwise, as a rule, to record insects thus *seen* and not *captured*. But the great interest of this occurrence may excuse my note. I am quite positive of the identity of this specimen of this unmistakable species. We both saw it well, and I know it by cabinet specimen, description, and plate. The previous Dorset record has always caused me to keep the insect in mind. Careful search has failed to retrieve the too vexatious disappointment, but these osier-beds will receive further attention next season.—F. H. HAINES; Brookside, Winfrith, Dorset, October 6th, 1917.

ORNEODES HEXADACTYLA, A LEAF MINER.—In the 'Bulletin de la Société Entomologique de France,' 1917, No. 14, just received, there is an interesting observation on the life-history of *Orneodes hexadactyla* by M. P. Dumée. Larvæ collected on June 14th last in the forest of Sénart, Seine-et-Oise, from *Lonicera perichlymenum* were found living, and were subsequently bred, not only on the flowers, but also in mines on the leaves of the same plant. The mines, round in shape, occupied in some instances half the leaf, showing one part reddish-brown where the excreta accumulated, the rest of the mined area being transparent. M. de Joannis states that this is the first record of the species as a leaf miner. Tutt ('Practical Hints') says that the larvæ feed inside the buds and the flowers, but Gregson (cited *loc. cit.*) that they confine themselves to the flowers. *O. hexadactyla* has been unusually abundant here this season.—H. ROWLAND-BROWN; Harrow Weald, Middlesex.

WHAT IS THE FOOD-PLANT OF *CEROSTOMA SEQUELLA*?—Some writers state that the larva of this species feeds on *Salix* and lime, but I have read somewhere that the food-plant is maple. It may be all three, but my experience with *C. sequella* points to the last mentioned. I took my first specimen in Cromer close to a maple. This year I found two females at rest on the stem of a small maple, in a wood at Bathampton, and a third on a chestnut trunk close to a maple tree at Bathford. There may be sallows at both the last-mentioned spots, if so, I have not seen them.—ALFRED SICH; October 2nd, 1917.

TORTRIX PRONUBANA IN LONDON DISTRICT.—I have to report the capture yesterday of *Tortrix pronubana* at Chiswick Park. To-day I revisited the locality to search for more, and took another within about 500 yards of the first. There is a great deal of *Euonymus* in neighbouring front gardens.—H. DOUGLAS SMART; A.Z. Ward, 4th London General Hospital, S.E. 5, October 9th, 1917.

SIREX GIGAS AND S. JUVENCUS IN RENFREWSHIRE.—Three specimens of the former and one of the latter were brought to me during August of this year. I also heard of several other specimens of *gigas* being taken in this neighbourhood. This is the first specimen of *juvencus* taken here; all were ♀♀. The *juvencus* measured 2¼ in. in expanse.—A. M. STEWART; 38, Ferguslie, Paisley.

LIBELLULA DEPRESSA, L.—Concerning Mr. C. Morley's request for particulars as to the occurrence of this species this year, it may be of interest to know that I saw a specimen by the bank of the River Wey, near Godalming on June 17th. It is the only specimen I have seen this year.—H. G. Q. WALKES; Gillwell Bury, Sewardstone, Chingford, E. 4.

DRAGONFLIES IN 1917.—I have bred this year *Cordulegaster annulatus* (two ♂, two ♀; nymphs from Angarrack, Cornwall), *Aeschnia grandis*, *Cordulia aenea* (nymphs from Byfleet), *Calopteryx splendens* (♂ and ♀; nymphs from Anningsley Park, near Chertsey), *Pyrhosoma nymphula* (Angarrack, Cornwall), and *Agrion puella* (Byfleet). Emergences this year were late. *C. annulatus* in particular showed none of the usual signs of contemplated change until quite late in June, and the last to emerge (a female) was as late as July 26th. By the stream in Anningsley Park in June both *C. virgo* and *C. splendens* were plentiful. This is the first time I have seen these two species flying together. I could observe no distinction in their habits or habitat. I have seen more *Anax imperator* this summer than I have for many years. In August I saw it at Purton, near Swindon, and at Burley-in-Wharfedale, Yorkshire, and in September by the Itchen, near Winchester. I did not see this last one very clearly, but I have no doubt it was *Anax imperator*, and it was interesting seeing them on Burley Moor again. I had seen them in the same spot many years ago, but though I have been there many times since in the bright season for them I had not seen them again until this year. It has seemed to me for some time that this species is getting scarcer. Certainly my impression is that as a boy I saw them much oftener than I have in later years. I am very desirous of breeding *A. imperator*, and should be very grateful to any one who could tell me of a likely place to get the nymphs.—HAROLD HODGE; 9, Highbury Place, N.

DIPTERA ON WAREHAM HEATH.—*Bombylius minor* was not very uncommon, fourteen ♀ and seven ♂ being taken during three days of rather inclement weather, August 7th–13th. One ♀ was watched ovipositing after the fashion of *canescens*, as described by Verrall, and one pair taken in cop: on the wing. *Anthrax fenestratus* seemed nearly over, it had been plentiful in July; of *A. circumdatus* fourteen specimens were taken and many more seen. These three species

should be killed and packed in cotton-wool as soon as taken, if kept alive in tubes they beat themselves about and are spoilt. *Atylotus fulvus* rather unexpectedly turned up here, two ♀; *Chrysops sepulchralis* was plentiful in the habitat I discovered in 1915, and on August 7th, five ♂ were taken and about thirty ♀. The ♂ sits on grass stems round the edge of the swamp, and rises for short flights when approached, the ♀, which is very abundant, settles on one's coat, from which it can often be tubed or boxed, if a net is used two or three are often taken at once. *Asilus crabroniformis* were not plentiful, and it was generally too windy to catch them, this species is so strong, and clings so tightly to the heather when it alights, that the net often sweeps over it. Both the *Sericomyias* were taken and *Chrysotoxum festivum*, and I am fairly sure that I saw but did not take *Physocephala nigra*, which I believe Verrall used to find here. *Conops quadrifasciata* occurred sparingly; it may be noted that *C. flavipes* was fairly common at flowers in gardens on the West Cliff, Bournemouth.—N. D. F. PEARCE; E. K. PEARCE; Crantchester, Cambridge, August 26th, 1917.

EUVANESSA ANTIOPA IN SCOTLAND, ETC.—Examples of *Euvanessa antiopa* are reported by Mr. W. H. St. Quintin, in Kincardineshire, at about 1800 ft., on August 21st ('Field,' September 8th); and at Dinnet, on Deeside, on August 7th ('Country Life,' August 18th); also, the Editor of the 'Field' Naturalist Section states that it had been observed in Surrey during the first week of the same month. These reports suggest a wider and earlier emergence than usual as the progeny of migratory hibernators.—H. R.-B.

SPHINX PINASTRI IN SUFFOLK.—Single specimens of this rare species were taken here by my brother, T. N. Waller, in 1875, 1877, 1879, and 1894. Three larvæ were discovered in 1893 and one in 1899. I captured a worn female in 1906. Since this latter date neither imagines nor larvæ have been noticed. I was very glad, therefore, to pick up a pupa (unfortunately dead) on September 30th, a few yards from the pine tree, on which I had taken my last specimen in 1906. It is interesting as showing that the species still apparently maintains itself in the district.—Rev. A. P. WALLER; Waldringfield Rectory, Woodbridge, October 8th, 1917.

ACHERONTIA (MANDUCA) ATROPOS.—Up to the present date (September 19th) I have seen or heard of at least seven larvæ or pupæ of this species this season in this neighbourhood—five in or round Hitchin, and two at Letchworth. It is many years since this species has been reported, with the exception of isolated individuals at intervals of several years. Most of those reported this year were found feeding on *Atropa belladonna*, which is somewhat extensively cultivated in this district for the purpose of drug manufacture.—A. H. FOSTER; Sussex House, Hitchin, Herts.

BUTTERFLIES AT SEVENOAKS.—It has been a wonderful year for butterflies trying to establish themselves on fresh ground. *Aglaia euphrosyne*, and *tithonus* appeared in the fields round the house, whereas formerly I have not found any of these species within several

miles. It may be worth recording that out of a couple of dozen larvæ of *Aglais urticæ* taken from the road below the house two emerged with the two small black spots on the upper wings absent; the specimens were no smaller than the rest. *Cardui* and *edusa* have been scarce, although I have seen both. *V. io*, *atalanta*, and *urticæ* have been in amazing numbers.—FREDERICK GILLET; Shootfield House, Sundridge, Sevenoaks.

COLIAS EDUSA IN HAMPSHIRE.—In addition to those recorded in last month's 'Entomologist,' I have since seen three *C. edusa* (2 ♂ and 1 ♀) near S. Katherine's Hill, Winchester, and two at Brockenhurst. Canon Vaughan, of Winchester, saw one in his garden in the Close. A niece of mine saw one on September 29th at Shawford, and another butterfly which she took to be *C. hyale*. She is not an entomologist, so it may have been but a light-coloured *C. edusa*; but she saw it plainly, and was struck by its being very much lighter than the specimens of *C. edusa* she had seen when out with me. Possibly it was var. *helice*.—HAROLD HODGE; 54, Piccadilly, W. 1.

COLIAS EDUSA AND *COLIAS HYALE* IN SUFFOLK.—On September 4th Mr. C. Morley and myself saw *C. edusa* at Baylham, close to the railway line, but did not capture it. Mr. Morley tells me that he saw *C. hyale* at Monks Soham on July 6th.—C. H. S. VINTER; The Hannings, Framlingham.

I take it that this interesting butterfly has been fairly plentiful this year. I noticed several *C. edusa* towards the end of August and early in September flying about the clover fields in this parish. I have not, however, observed the var. *helice*, nor have I seen *C. hyale*. I saw a beautiful specimen of this latter insect last year quite late in October.—REV. A. P. WALLER; Waldringfield Rectory, Woodbridge.

COLIAS EDUSA IN SOUTH DEVON.—I know of thirteen specimens having been caught and others seen during the first and second weeks of September in and around Beer, near Seaton, South Devon.—S. A. ST. J. WINSTON.

COLIAS EDUSA IN GUERNSEY.—In the early summer several *C. edusa* gave promise of something better in the autumn. It has, however, been a disappointing year. A tremendous gale on August 28th and 29th, with cold and rain, had the effect of early winter on vegetation. Trees were lashed so that their foliage was completely killed; many, of course, were blown down, suffering more from the wind because in full leaf. Even low-growing plants, as fields of lucerne, were devastated, and larvæ must have been destroyed in numbers. I saw perhaps some half-dozen *C. edusa* in August before the storm, but none after. I took a female on the 25th and caged her. She laid four eggs on lucerne, and died September 1st. These hatched and are now feeding on white clover, but remain very small. Another female was caged for a week, but, I think, was not paired, and I got no eggs. *C. hyale* did not appear. On the whole, I should say *edusa* was much scarcer than in average years. It is quite an exceptional thing not to see a few every autumn in Guernsey, though abundance of the species is hardly more usual here than in England.—FRANK E. LOWE; October 9th, 1917.

COLIAS EDUSA, *MACROGLOSSA STELLATARUM*, ETC., IN CORNWALL.—I might mention that I saw *Colias edusa* in my garden here at Fowey on September 29th, but have seen no others along the coast. *Pyrameis atalanta* swarms here on ivy-blossom, and earlier in September *Pararge egeria*, var. *egerides*, was a common garden butterfly here. *Macroglossa stellatarum* came into my class-room on October 2nd.—E. A. STOWELL; Fowey Grammar School, Cornwall, October 6th, 1917.

SPHINX (HERSE) CONVULVULI IN 1917.

NORTHUMBERLAND AND DURHAM.—The *Convolvulus* Hawk Moth appears to have been unusually plentiful in this district lately. Several have been brought to us to be set, and there have been paragraphs in the local papers referring to the abundance of this species this year.—JOSEPH J. GILL; Hancock Museum, Barras Bridge, Newcastle-upon-Tyne.

DERBYSHIRE.—A female specimen was taken in Derby (in the town) on September 1st. I have heard of another having been captured in the town but have not seen it. A specimen of *M. stellatarum*, taken in Derby, July 28th, has been given to me.—S. A. ST. J. WINSTON.

SUFFOLK.—On September 8th I noticed at dusk a large moth hovering round plants of *Nicotiana sanderae* in my garden, but I was unable to capture it as my net had just been placed *hors-de-combat* by an encounter with a holly bush. The next evening, however, at the same time (7.50 summer time), with net repaired, I waited at the same spot. Nor had I long to wait, for within two minutes I had a fine ♀ specimen of *S. convolvuli* in the net. On many subsequent evenings I have visited the garden, but no further specimens have been seen.—C. H. S. VINTER; The Hannings, Framlingham.

MIDDLESEX.—I took a specimen of *S. convolvuli* in Queen Elizabeth's Walk, Stoke Newington, London N., on September 22nd. It was in perfect condition and had every appearance of having just hatched out an hour before. It was resting on a wall close to some bindweed.—J. LAKER; 8, Allerton Road, N. 16.

KENT.—I took a specimen of *Sphinx convolvuli* on a fence near this house on September 1st.—A. R. KILNER; "The Oaks," Station Road, Sidecup, Kent.

This insect put in an appearance pretty regularly at a small bed of *Nicotiana* near Chatham, which I had opportunities of observing during the first ten days of September. The specimens I caught—two ♂♂ and three ♀♀—were all rather worn.—F. W. GARDNER; Lieut.-Comdr., R.N.V.R., Kingsnorth Air Station, Hoo, North Kent.

On August 29th last a specimen of *S. convolvuli* appeared at dusk in my garden, and on the next evening three were seen at flowers of the tobacco plant. On September 1st there was one and after this no more appeared until September 7th, when one turned up and was followed by another on the 17th. Of these seven I captured three.—FREDERICK GILLETT; Shortfield House, Sunbridge, Sevenoaks.

A worn specimen of *S. convolvuli* was caught at dusk, hovering before the flowers of tobacco plant, on September 30th, at Cranbrook, Kent.—H. K. WOOLACOTT; Bedales, Petersfield, Hants.

ISLE OF WIGHT.—*Sphinx convolvuli* has appeared in Shanklin, Isle of Wight, in great numbers this season; as many as nine at a time have been seen in the public gardens hovering over tobacco flowers. My brother, myself, and other collectors have caught twenty-one, and we could easily have largely added to that number. Some were caught quite a mile inland, others in the heart of the town, especially where *Nicotiana* was in bloom.—W. D. W. GREENHAM; Wentworth, Shanklin, Isle of Wight, September 21st, 1917.

SOUTH DEVON.—Since writing on September 13th I have captured three more and missed two *Herse convolvuli*, the last on September 24th, a female and the least worn. In all I have captured six, missed four, and seen one at *Nicotiana* blossoms. The moths almost invariably came when it was nearly too dark to see, hence the number of misses.—H. M. PARISH; "Mount Vernon," Totnes, South Devon, October 7th, 1917.

I have recently taken three specimens of *Sphinx convolvuli* at Torquay; the first, a male, on August 31st; the second, a female, on September 2nd; the third, a male, on September 12th; except the first they were in very fair condition; they were all hovering over a bed of petunias. Since I took the first two at about nine o'clock, the place being low-lying and partly overshadowed by trees, it was much too dark to see them in an ordinary way so I had recourse to artificial light. It was curious to see how intent they were when they had once commenced to feed, for they would hover over the flowers only about 3 ft. from me in the bright light of an electric torch. The third insect I took at dusk.—E. B. FORD; Thursby Vicarage, Carlisle.

SCOTLAND AND IN GLOUCESTERSHIRE.—Two specimens of *Sphinx convolvuli* were captured on September 3rd, on the window of the railway station at Bo'ness, Linlithgowshire, Scotland, by Mr. John Gilmour. A specimen of the same species, but in very worn condition, was also taken in Clifton during the month of September by Mr. E. J. Lowther. The above-mentioned specimens were presented to the Bristol Museum by the captors.—GEO. C. GRIFFITHS; 3, Leigh Road, Clifton, Bristol.*

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 9th, 1917.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—The Rev. A. O. Soames, M.A., F.E.S., Bromley, Kent, was elected a member.—Mr. Ashdown exhibited *Tipula gigantea* from the New Forest, and the Tachinid, *Echinomyia grossa*, from the same place.—Mr. Edwards, a living pupa of the stag-beetle, *Lucanus cervus*, from Blackheath, and specimens typical of the groups of exotic *Hesperiidæ*.—Mr. Hugh Main, a food-mass of *Copris lunaris* (Coleoptera) containing a nearly full fed larva, and

* Several records are held over.—ED.

living larvæ and pupæ of *Gortyna ochracea* in stems of thistles, and pointed out the exit arranged for the emergence of the imago, closed by a thin "door" of epidermis.—Mr. Turner, a very light grey aberration of *Amorpha populi* bred from the egg, and two males of *Hyponomenta cagnagellus* united with one female.—Mr. B. Adkin, an aberration of *Argynnis cydippe (adippe)* from Kent with silver dots in some of the black blotches on the under side fore wings.—Mr. Brooks reported an abnormal pairing of *Ptychopoda aversata* ♀ × *Camptogramma bilineata* ♂.—It was generally noted that the three species of *Pieris* were almost everywhere in considerable abundance. *Vanessa io* was almost locally abundant, and *Eugonia polychloros* had been seen about 20 miles from London.

August 23rd, 1917.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—The decease of Mr. A. C. Vine, of Brighton, a member since 1889, was announced.—Mr. Frohawk exhibited the following aberrations of British butterflies: *Cupido minimus*, with jet-black streaks on the upper surface of the left hind wing. *Agriades coridon*, a female with thin, bright blue streaks on right hind wing; another female, an abnormal asymmetrical under side, right side 21 mm. in expanse, unusually pale ground of hind wing and abnormal markings on both wings. Left side 18 mm. in expanse, of normal colour and markings; *Adopæa flava (linea)* three males—1, straw yellow; 2, washed silver bronze; 3, rich coloured bred example. *A. lineola*—1, pale ochreous; 2, broad, dark markings and generally dusky.—Mr. Edwards, exotic butterflies, a *Neptis venilia* collected by Wallace, *Mycalesis nicotia*, *M. lepsha*, and *Abisara neophron* from Burmah, with *Limnas jarbus*, and *Smyrna blomfieldia* from Bogota.—Mr. Gibb, on behalf of Mr. Jæger, specimens of a second brood of *Amorpha populi* bred in confinement.—Mr. H. Moore reported that he had found *Pararge megera* numerous and generally distributed in Herts this year, and had also seen *P. egeria* in the county, both species of the second brood.—Various members gave seasonal notes.—HY. J. TURNER (Hon. Editor of Proceedings.)

RECENT LITERATURE.

The Biology of Dragonflies (Cambridge Biological Series). By R. J. TILLYARD. (Cambridge University Press, 1917. 15s. net.)

SOME twenty-five years ago there did not exist in English a reliable textbook on the dragonfly. No modern one was to be found in our language at all, and the late Baron de Selys Longchamps in Belgium was almost their only champion. Of the "neglected orders," in fact, the Odonata did seem, indeed, neglected. Yet for their size, their beauty of shape and colour, their powers of flight, and their peculiarities biologically, they stand out pre-eminent amongst the Insecta. Now, however, there is a great change in this respect. Their students, indeed, may not be as numerous as they might, but there is no question about the value of the work which has been, and is being, done to raise the dragonflies from the obscurity into which they had undeservedly fallen. The work done, however, has been extremely scattered in numberless papers in many languages.

Mr. Tillyard, in addition to his own extensive work on the subject, has collated the scattered material and given us a more or less complete account of the biology of the dragonfly as well as its morphology and anatomy.

Although sufficiently popular for anyone acquainted with the insecta generally, the work is not elementary and presupposes some little preliminary knowledge of an insect. Popular books on natural history may be found by the score: real students do, however, exist amongst entomologists, and Mr. Tillyard is writing for them, but they need not fear to get out of their depth. One point which struck us particularly was the wealth of illustrations, particularly good, and nearly all original. There are, in fact, 188 figures, besides four plates and a map. They can scarcely be too highly praised.

Living in Australia—at Sydney—Mr. Tillyard naturally uses Australian material in most cases for his experiments and researches, but in a biological treatise this does not matter. Further, he has added a very useful summary of the British species—now, owing to additions and subtractions as our knowledge has increased during the last quarter of a century, found to be 42 (with still the chance of increase). The nymphs (we still prefer the term, although our author uses larva) are, of course, less known, but our knowledge is increasing. Mr. Tillyard seems to think some of the *Sympetra* inseparable, but for British species this may not be impossible. In this genus the dorsal and lateral hooks are a help in classification.

Attention is called to the large amount of protective coloration that dragonflies display. In the case of the nymphs this is very obvious; but it is very pronounced also in the imago. Examination "in the field" soon bears this out. The spots and bands of the large species hide them effectively when they rest on foliage or tree trunk.

Mr. Tillyard deserves the thanks of odonatists for his stimulating book, and the Cambridge Press are to be congratulated on the way in which they have produced it.

W. J. LUCAS.

OBITUARY.

RICHARD S. STANDEN, F.L.S., F.E.S.

Born October 11th, 1835. Died July 29th, 1917.

At the ripe age of eighty-two there has passed from among us one of the most enthusiastic lepidopterists and botanists of our time. By all who knew him, whether as artist, musician, or collector, Richard Standen will always be remembered as the most energetic, cheerful, and able exponent of the particular art, science, or hobby which for the time being occupied his busy leisure. Born at Oxford, and educated at King's College, London, he was engaged in commerce until the age of forty-five, from which time onwards, having already accumulated at home and abroad a useful knowledge of science generally, he devoted himself heart and soul to his activities. An expert linguist, he was well equipped for the many foreign expeditions made in search of specimens. He spoke French as his mother-tongue, was fluent in German and Italian, and late in life

acquired both the Spanish and Norwegian languages. In 1865, having made the "Grand Tour," he published for private circulation 'Continental Wayside Notes,' brimful of humour and observation, the chapters dealing with visits to Berlin, Potsdam, and Constantinople having a particular interest in the light of current events. Indeed, with his love of art and appreciation of literature, it is a thousand pities that he did not again venture beyond the pages of the several magazines to which he contributed articles and papers, among others, 'The Musician,' the 'Journal of the Linnean Society,' the 'Entomologist,'* and the 'Selborne.' Quick to determine species, I rather think he was the first British entomologist to report *Plebeius zephyrus* var. *lycidas*, both in the Stalden Valley and on the Gemmi Pass at a time when it was supposed to be localised on the Simplon; and he also claimed *P. ægon* var. *corsica* for Norway, though not having seen the examples referred to ('Entomologist,' vol. xxxvii, p. 63) I am unable to confirm the identification. Mr. Standen's collections were sold at Stevens' in November, 1913. The purchaser of the Plebeids could no doubt assist us. For many years notes of scientific interest have appeared from his pen in our pages. Meanwhile, also, his complete herbarium of English flora was presented to the Natural History Museum, though to the limit of his life his love of Nature never flagged. Painting, however, was his most loved hobby. His pictures were exhibited at the Dudley Gallery Art Society, for which Society he officiated as a member of the Hanging Committee for some years. Mr. Standen was President of the South London Natural History Society in 1879. In 1889 he joined the Entomological Society of London, and in 1906 was elected to serve on the Council, but retired the same year, having now transferred his household to an inconvenient distance from London. I am told that his entomology began in the early "seventies" when resident at Surbiton. He lived afterwards at Aylsham and Framlingham Earl Hall in Norfolk, in London, at Thorpe-le-Soken, Lindfield, Sussex, and, lastly, at Cupersham House, Romsey, varied with years spent in Germany, where he devoted himself chiefly to music, having a fine bass voice, and with winters in Italy, Belgium, and the Riviera. We were to have explored Auvergne together in 1909, but the trip never came off, as I was prevented unexpectedly at the last moment from leaving London at the time fixed. A man of persistent industry and manifold talent his intellectual vitality never deserted him, and physically strong to within a few years of the end he could walk down the youngest butterfly hunter, and enjoy golfing and cycling, his favourite exercises. His last years were spent at Romsey, where he died peacefully in July, leaving a widow, six daughters, and one son, Commissioner of Berar, in the Indian Civil Service. As one who knew him for five and twenty years I can say sincerely that no kinder heart ever beat, and that, though an octogenarian, he died, as those whom the gods love, young.

H. R.-B.

* Principal contributions—'Among the Butterflies of Corsica,' vol. xxxvi. 1893. 'Among the Butterflies and Flowers of Norway,' vol. xxxi. 1897. 'Rhopalscera at Barcelona, Montserrat, and Vernet-les-Bains,' vol. xxxviii. 1905.

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A. FORD, 36, IRVING ROAD, BOURNEMOUTH.

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OCCURRENCE OF AN AUSTRALIAN ŒCOPHORID IN ENGLAND.

BY EDWARD MEYRICK, B.A., F.R.S., ETC.

IN the 'Entomologist,' 1910, vol. xliii, p. 96, Mr. C. G. Clutterbuck recorded the capture by the Rev. J. W. Metcalfe in Devon of an insect identified by me as *Ocystola æthopis*, an Australian species of the *Œcophoridae*. Mr. Metcalfe took this year at Exmouth a similar example and sent it to me for identification; this is without doubt the closely allied and much commoner *acroxantha*, Meyr., and I am therefore now of opinion that the first example was wrongly identified, and was probably a melanic variety of *acroxantha*, the normal form of which is characterised by the yellow terminal cilia of fore-wings. This species has lately been introduced from Australia into New Zealand. I suppose it to be attached to Eucalyptus, but whereas saplings could easily be, and probably are, sent from Australia to New Zealand, it seems very improbable that they are sent to England, plants being easily raised in this country from seed (I have raised five or six kinds myself). Hence the importation is difficult to explain. But Mr. Metcalfe states that the specimen was beaten from an elm in a field, and adjoining this field is a nursery in which imported plants may be growing; moreover, Eucalyptus grows well at Exmouth, where, I expect, several species would stand the winter. He thinks that the former specimen may probably have been from the same locality, and hopes to investigate further.

Thornhanger, Marlborough,
November 8th, 1917.

TWO NEW HUMBLE-BEES FROM CHINA.

BY T. D. A COCKERELL.

SOME time ago Mr. N. Gist Gee sent to the U.S. National Museum two species of *Bombus* from the Chinese province of Kiangsi. Both are new, and are herewith described.

Bombus geei, n. sp.

Female.—Length about 20 mm., anterior wing 16; broad and robust, black, with black hair, but a rather obscure patch of yellow hair on each side of basal part of abdomen sublaterally overlapping

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second segment, and from apex of fourth segment to end of abdomen the hair is bright ferruginous; outer side of anterior tibæ and tarsi with some red hair, hair on outer side of middle tibæ and tarsi all red; hind tibæ and tarsi with both tegument and hair red; wings dilute orange, with the outer margin very broadly dusky. Clypeus shining, very sparsely punctured; malar space about as broad as long; third antennal joint about 1.5 times as long as fourth, fourth considerably longer than broad.

Kuling, Kiangsi, China (*N. Gist Gee*, 52*a*). This is very closely related in all respects to *B. latissimus* Friese, from Formosa, and must be considered the mainland representative of that species. It adds one more to the numerous instances in which Formosan species possess close allies on the mainland. Superficially, *B. geei* is like the Japanese *B. ignitus* Sm., but the wings are quite different.

Bombus kulingensis, n. sp.

Female.—Length about 20 mm., anterior wing 17; broad and robust, black, the colour-pattern of hair nearly as in *B. pyropygus* Friese, but the thoracic dark patch is very large and subquadrate, the hair is not so long, and the wings are very much darker. Head with black hair, pallid on occiput; clypeus shining, the disc almost impunctate; malar space a trifle longer than broad, not nearly 1.5 times longer; mandibles with two notches on inner half of cutting margin, and a ferruginous patch (tegumentary) near first notch; third antennal joint longer than fourth, but not 1.5 times longer, fifth about as long as third; thorax with pale yellow hair, strongly mixed with black on prothorax, and disc above, extending to middle of scutellum, very broadly black; legs with black hair; wings dark reddish-fuscous, not quite as dark as in *B. fragrans*; abdomen with yellow hair on first three segments, but black on sides of third; fourth segment basally with black hair, more or less mixed with red, and beyond this the hair is bright ferruginous.

Kuling, Kiangsi, China (*N. Gist Gee*, 54*a*). Related to *B. trifasciatus* Sm., but with much longer fourth antennal joint, and black band on abdomen narrow and weak.

STEPHANUS (PARASTEPIHANELLUS) DAMELLICUS,
Westw.

By E. A. ELLIOTT, F.E.S.

IN the June number of this Journal, p. 129, I published some remarks on the differences between Westwood's species as described by him, from Australia, and one from New Guinea and Borneo, considered by Enderlein to be identical. Through the courtesy of Prof. Poulton I have been able to examine the handsome and perfect type, now in the Hope Museum at Oxford, and find certain modifications necessary.

Westwood says of the hind femora: "subtus serratis dentibusque tribus majoribus armatis," whereas they are most distinctly bidentate. Also he describes the metanotum as only basally striate, but Enderlein's species has this part longitudinally striate throughout. In this case I was misled by the different sense in which the two authors understand the term; Westwood includes under it both the narrow visible strip of the true metanotum, which is longitudinally striate, and the median segment, Enderlein describing them separately, and the latter part is rugose in both.

The characteristic points in *damellicus*, Westw. are: the conspicuous transverse carina on vertex, and the rather broad white line under the eyes, both of which are wanting in Enderlein's species; the sculpture of the pronotum is also different.

In the 'Arkiv för zoologi,' ix, 1915, p. 1, Roman describes a species from West Australia which certainly comes very close to *damellicus*, West., if not actually, as Roman suggests, a dark variety of it. He quotes the erroneous tridentation of the hind femora as the principal difference, which now disappears. His species has the carina on vertex and the white line under the eyes, though apparently less developed, as they might well be in a melanic variety, but the five frontal tubercles are all well developed and the posterior margin of the head is not bordered; in *damellicus* the two posterior tubercles are subobsolete and the occipital margin is strongly bordered, hence I prefer to retain Roman's name *pictipes* for his species, which has also the intermediate tarsi basally white.

16, Belsize Grove, N.W. 3,
November 12th, 1917.

PERONEA CRISTANA, FAB., AB. NOV. SUBNIGRANA.

By PROF. SELWYN IMAGE, M.A., F.E.S.

PALPI, head, and thorax cinereous. Fore wing divided in colour diagonally from the base to near the apex into two portions. Of these the upper portion, including the button, is a dull strong blackish-brown; the lower portion is shining purplish-grey, with usually some small blackish tufts in the tornal area.

Subnigrana, though closely allied to the *nigrana* of Clark, is readily distinguishable from it, inasmuch as *nigrana* has no division of colour in the fore wing, which is blackish throughout and brilliantly mottled with darker colour.

This aberration is, I think, worth a special name, because, at any rate in Epping Forest, it is by far the most common form of the species, and is very constant in colour and markings.

Between the years 1905 and 1914 my friend, Mr. Janson, and I must have seen in the Forest many hundred *cristana*, and he agrees with me that certainly the majority of these were the form I have ventured to name and describe above.

78, Parkhurst Road, Holloway, N.,
October 19th, 1917.

PERONEA CRISTANA: ITS LIFE-HISTORY, HABITS OF THE IMAGO, DISTRIBUTION OF THE VARIOUS NAMED FORMS, AND SOME SPECULATIONS ON THE PRESENT TREND OF ITS VARIATION.

BY W. G. SHELDON, F.E.S.

(Continued from p. 250.)

There are two features that are apparent immediately one commences to study the variation of *P. cristana*. The first of these is that, whilst the majority of the forms to be found in each locality are identical, in each there are quite a number that are peculiar to it, or that are abundant or frequent in it, and rare elsewhere.

The second point is that there has been a great change in the forms to be found, at any rate in certain localities, and probably throughout the species' distribution, during the last twenty or thirty years; certain forms that were obtainable then do not seem to occur now, and, on the other hand, a large number of new forms have appeared; many of these are quite common, and in two cases the new form has outnumbered any other to be found at the present time.

These facts being apparent, I have thought it desirable to place on record the present position of the species, so far as its variation is concerned, by giving lists of the forms to be found in its three principal localities—the New Forest, Epping Forest, and Folkestone—to the extent that I have been able to compile them.

These lists will accomplish two objects—firstly, they will inform the student what aberrations are to be found in each of these localities; and secondly, what is much more important, they will constitute a record of the present stage the variation of the species has reached, from which it will be possible to trace and establish future developments and their significance.

I will first deal with the variation in the New Forest, following with that in Epping Forest, and finishing with the Folkestone aberrations.

The specimens in the first of these lists have been either captured or observed by myself. There are in the New Forest quite a number of habitats of *P. cristana*, but my specimens, in

order to make the comparison as reliable as possible, were all captured in one locality, which is of considerable extent. They were, as the list states, taken in the years 1915, 1916, and 1917, and the numbers represent the quantities of each form met with. Many of the forms, and probably all, are exceedingly local; for instance, in certain thickets almost any specimen knocked out is ab. *nigrana*; one of these thickets which I have in mind has an area of perhaps half an acre, but in the immediate neighbourhood are other thickets that do not produce more than 8 or 10 per cent. of this aberration. This is, of course, to be expected when one knows the extreme tendency in captivity of the offspring to produce the parent form.

LIST OF ABERRATIONS TAKEN IN THE NEW FOREST IN THE YEARS 1915, 1916, AND 1917, WITH THE NUMBER OF EXAMPLES OF EACH ABERRATION CAPTURED.

	1915.	1916.	1917.		1915.	1916.	1917.
<i>cristana</i> , Fab.	5	7	15	<i>merlana</i> , Clark	7	2	2
<i>fuscana</i> , Clark	2	—	1	<i>nigropunctana</i> , Clark	2	1	3
<i>albipunctana</i> , Stphs.	2	1	—	<i>xanthovittana</i> , Dsvs.	—	2	—
<i>ochreapunctana</i> , Clark	1	1	—	<i>semiustana</i> , Curt.	20	8	15
<i>albonigrana</i> , Clark	6	4	—	<i>bentleyana</i> , Curt.	10	4	4
<i>subvittana</i> , Stphs.	—	—	1	<i>provittana</i> , Dsvs.	1	—	2
<i>punctana</i> , Clark	1	2	2	<i>jansoniana</i> , Webb	1	—	2
<i>chantana</i> , Curt.	4	1	—	<i>nigrana</i> , Clark	36	25	44
<i>subchantana</i> , Clark	3	1	—	<i>atrana</i> , Clark	5	1	6
<i>spadiceana</i> , Haw.	11	12	11	<i>desfontainiana</i> , Fab.	8	3	8
<i>vittana</i> , Stphs.	6	—	5	<i>cousimiliana</i> , Stphs.	4	1	3
<i>intermediana</i> , Clark	3	1	1	<i>sericana</i> , Hub.	1	—	—
<i>brunneana</i> , Stphs.	10	—	6	<i>ulotana</i> , Clark	4	4	4
<i>rufinigrana</i> , Clark	6	5	9	<i>flammeana</i> , Webb	2	3	1
<i>alboruficostana</i> , Clark	1	2	4	<i>cristalana</i> , Don.	16	3	13
<i>nigrocostana</i> , Clark	—	—	1	<i>sequana</i> , Curt.	1	2	2
<i>alborvittana</i> , Stphs.	1	2	—	<i>fulvovittana</i> , Stphs.	1	—	1
<i>fulvocristana</i> , Stphs.	—	—	1	<i>subfulvovittana</i> , Clark	12	4	9
<i>striana</i> , Haw.	15	3	9	<i>sepiana</i> , n. ab.	—	—	2
<i>substriana</i> , Stphs.	4	1	2	<i>nigrosbuvittana</i> , Clark	—	—	1
<i>prostria</i> , Clark	—	—	1				
<i>semistriana</i> , Dsvs.	5	3	—	Total	218	109	192
<i>insulana</i> , Curt.	1	—	—				

In addition to the forty-three forms enumerated in the above list, I am indebted to Mr. South, who has worked *P. cristana* for many years in the New Forest, and who has kindly furnished me with a list of eight additional forms which he has met with there; these are abs. *nigrocristana*, Clark, *postchantana*, Webb, *subunicolorana*, Clark, *ruficostana*, Curt., *subcapucina*, Dsvs., *profanana*, Fab., *masoniana*, Clark, and *flavostriana*, Webb; and this autumn I have received three specimens of ab. *subcristalana*, Curt., a form which, whilst common at Folkestone, has, so far as I am aware, not been previously met with in the New Forest.

The total number of forms that I have been able to locate as having occurred in the New Forest for the past ten or twelve years is therefore fifty-two.

In addition to these there are the following old records: ab. *capucina*, Johnson, the original type specimen ('Ann. Mag. Nat. Hist.,' x, p. 366); ab. *alboflammana*, Curt. Mr. Sydney Webb mentions having taken this form in 1891 (*cp.* 'Ent.,' xxiv, p. 271).

In the foregoing list I have included the name *sepiana* n. ab. The head and palpi of this aberration are ashy grey, the superiors are of an almost unicolorous grey-brown, of a tint intermediate between that of abs. *subunicolorana* and *profanana*; the button and a number of minute points are dark fuscous; there is no trace of a vitta. I have five examples of this form from the New Forest and one from Epping Forest, and I have seen in various collections quite a number which came from the Hampshire locality.

It will be noted that I have included in the list two specimens of ab. *xanthorittana*, and one of ab. *nigrosubrittana*. The determination of these forms by the authorities is exceedingly vague, and therefore it seems incumbent upon me to explain precisely what these specimens of mine are.

To take first ab. *xanthorittana*. Desvignes's description ('Zool.,' iii, p. 841, 1845) is indefinite and quite insufficient. He says: "Similar to ab. *unicolorana* and ab. *alboflammana*, but with a yellow or fulvous dash; palpi, head and thorax of the same colour." This description is quoted by Clark; in his paper (*l. c.*) he describes another form, ab. *proxanthorittana*, which he diagnoses, "The almost complete absence of the button constitutes a marked difference between this aberration and ab. *xanthorittana*." Obviously, therefore, he intended to express his conviction that the two forms were alike, except that one had a button and the other had not, or had only a very small one; he does not, however, say what colour the button in ab. *xanthorittana* is; neither does Desvignes; and therefore we are in doubt upon the point, except that, as the latter does not call attention to the button, it was probably of the same colour as the surrounding area of the superiors, *i. e.* a shade of brown.

Turning next to 'Ent.,' xliii, p. 266, we find Mr. Sydney Webb—whose knowledge of the forms of *P. cristana* in the old collections is probably at the present day unique—writes of a "similarly coloured *brown tufted* insect, which has long stood in a mixed series in our cabinets under the name of *xanthorittana*." (The italics are mine.) I should say that Mr. Webb expresses the opinion that Desvignes's description, "similar to ab. *unicolorana* and ab. *alboflammana*," means "absence of the central tuft," which, of course, these two forms possess in common with ab. *proxanthorittana*, Clark, and thereupon sinks the latter as being identical with ab. *xanthorittana* Dsvs.

It appears to me, however, that there is another, and a very much more probable, interpretation of Desvignes's meaning. I take it that, "similar to ab. *unicolorana* and ab. *alboflammana*," refers to the ground colour of the superiors, which is similar in all three forms; and if I am correct, Clark's ab. *proxanthovittana* will stand.

My two specimens have a button of a bright brown colour, and are thus easily separable from ab. *nigropunctana*, of which Clark writes that it has a "large blackish button."

The difficulty with respect to ab. *nigrosubrittana*, Clark, is that his figure, or rather the figure of his artist—see Fig. 4 in the plate given with his paper (*l.c.*)—does not agree with his description. It shows a form with *dark brown* superiors, a *lighter* button, three *lighter* dots, and a short cream-coloured vitta. Turning now to his description, we read: "Head, thorax, and palpi ashy white; anterior wings *black*, with an ashy white patch at the extreme base of the inner margin, and a large *blackish* button; there are also from three to five minute mixed spots in the marginal area" (the italics are mine). There being this discrepancy, it is obvious that the description, which is Clark's work, must be followed in preference to the plate, which is not, in all points on which they differ, especially as the figures in this plate are many of them unsatisfactory.

My specimen agrees with Clark's description in every respect.

Unquestionably the striking feature of the trend of the variation of *P. cristana* in the New Forest of recent years is its movement towards melanism.

The first recorded instance of a melanic tendency that I am aware of is contained in an article by Mr. Sydney Webb, written in 1891, and to be found in 'Ent.,' xxiv, p. 271, in which he says that he took "one with the whole of the wing and tuft of a unicolorous blue-black." This, of course, refers to a specimen of ab. *nigrana*, Clark. Mr. Webb further says in 'Ent.,' xliii, p. 269 (speaking of ab. *nigrana*): "The form first appeared in the New Forest a year or two earlier than 1890, and we only saw one of it among a series of nearly two hundred specimens examined in the following year."

If the reader will turn to my list of New Forest forms, he will see that the proportion this form bears to the total of specimens captured by myself was—in 1915, 16½ per cent.; in 1916, 23 per cent.; and in 1917, about 23 per cent.

As Mr. Webb's specimen represented about ½ per cent. of the total number taken, it will be seen at once what enormous progress towards *total* melanism the species has made in the last twenty-five years.

In addition to ab. *nigrana*, there are at the present time ten other forms found in the New Forest which are more or less melanic, and it is important to note that *all these* are of recent

origin; they are not mentioned by Mr. Webb in 1891, and their names date from a period not before Clark's paper in 1901.

These melanic forms are *ab. albonigrana*, *nigrocostana*, *rufinigrana*, *merlana*, *jansoniana*, *atrana*, *ulotana*, *flammeana*, *nigrocristana*, and *nigrosuavittana*.

If the total number of specimens of all the melanic forms in my list is taken, and a calculation made of their relation to the total of specimens captured of *all* forms, the proportions work out in 1915 about 31 per cent., in 1916 about 40 per cent., and in 1917 about 37 per cent.; and taking the average of the three years together, over 35 per cent., or more than one third.

These statistics give an idea of the rate at which *P. cristana* has progressed towards becoming, in the New Forest, a melanic species; but of course to fix the approximate date when this development is likely to culminate, if it ever does, it would be necessary to collect statistics for a much greater number of years than I have been able to do; but there can be no doubt as to the present tendency.

It is interesting to speculate on the manner by which the change now going on has been brought about, and how the new forms have originated. Two theories seem to me possible. According to the first of these, a specimen of a melanic form—say, *ab. nigrana*—may be the direct issue of a specimen of any one of the non-melanic forms. According to the second theory, which seems to have evidence in support of it, each melanic form is descended from a certain non-melanic form, or group of forms. Take first *ab. nigrana*. Mr. Webb says ('Ent.,' xliii, p. 267) it "is only an intensified form of *ab. profanana*." I am afraid I cannot agree with this view. In the first place, *ab. profanana* is—now, at any rate—a very rare form in the New Forest. Then *ab. profanana* is a plain form, without any darker markings—except the button—or cloudings, according to Fabricius. *Ab. nigrana*, on the other hand, is by no means a plain insect, in spite of its blackness. Clark's description reads: "Anterior wings blackish, mottled over with darker colour." I think that its parents were probably *ab. cristalana*, and perhaps *ab. semiustana*, and other strongly clouded and variegated forms; and in support of this theory I may say that Mr. Charles Gulliver, who has collected *P. cristana* in the New Forest for over forty years, informs me that previous to the advent of *ab. nigrana*, *ab. cristalana* was by far the most abundant form. At the present date, so far as the evidence of my list shows, it has receded in number to the fourth place.

Of course, once *ab. nigrana* had evolved, we know from our experience during the past half century of other species of Lepidoptera displaying a melanic tendency, how very dominant it would be likely to become. This tendency, with the remark-

able power which the species seems to possess for the offspring to produce the parent form, is quite sufficient to account for the present position of ab. *nigrana*.

Ab. *albonigrana* is undoubtedly a development of the type form of *P. cristana*; ab. *nigrocostana* is, of course, a melanic *alboruficostana*; ab. *merlana* and ab. *jansoniana* are obviously derived from a member, or members, of the ab. *striana* group; ab. *rufinigrana* bears strong evidence that it is a melanic form of the abs. *chantana* and *spadiceana* or forms closely allied to them; ab. *ulotana* is plainly derived from ab. *desfontainiana*; and ab. *flammeana* from ab. *consimiliana*. The origin of ab. *atrana* is more obscure, but I take it that it is a modern development of abs. *fulvovittana*, *subfulvovittana*, or *bentleyana*, or all of them.

Ab. *nigro-subvittana* is obviously a melanic ab. *punctana*, or ab. *subvittana*. Of course there is no doubt that all these new melanic forms are more or less dominant, and in addition to obtaining recruits in each generation—once the melanic tendency was established—from certain of the old non-melanic forms, each melanic form would tend to reproduce itself each generation in increasing numbers.

(To be continued.)

LEPIDOPTERA COLLECTED IN 1917, MAINLY IN GLOUCESTERSHIRE AND SUSSEX.

BY THE REV. J. W. METCALFE, M.A., F.E.S.

A RATHER bad break down in health during the trying winter led to a three months' rest from work by doctor's orders. Fortunately it was possible to arrange that my holiday should cover the three best collecting months in the year—May, June, and July—and, if it represented a rest from normal work, it afforded a most acceptable opportunity for work of another kind amongst the insects. The weather proved all that could be desired, and the long spells of brilliant sunshine were only broken by an occasional day's rain.

As we all know, the winter prolonged itself far into the spring, and the season on May 1st, when the fine weather really set in, was undoubtedly three weeks behind-hand. So favourable, however, were the ensuing weeks that by the beginning of June insects, with the probable exception of those that feed up in the early spring, were fully up to time, if not ahead of it. Undoubtedly the season now going over has been, from the collector's point of view, one of the best experienced for many years; and equally beyond doubt this fact is due to the bitterly cold and prolonged winter. Not only must the cold weather

have kept hibernating larvæ from moving about, and so greatly increased their chance of escaping destruction, but it also must have kept their enemies at home, and marauding trips after larvæ, pupæ, and ova could seldom have been undertaken. Whether all will agree with these statements or not, the fact remains that insects, usually extremely scarce, were met with in profusion, whilst others, seldom or never met with in the localities visited, were found in quite respectable numbers. A bag of over 1200 insects, amongst which very few could be set down as really common, and the result of three months' collecting, speaks for itself.

My main interest lies with the "Micros," but good "Macros" were worked for as the opportunity occurred.

Before May 1st not much had been done save the forcing of a few nice series of *Lithocolletis*, and, on going to Exmouth on that date, the immediate prospects did not appear very bright. *C. festaliella* and *I. muscallella* were the insects most in evidence, whilst on Dawlish Warren, where a fortnight later *E. vectisana* began to appear, *G. velocella* was in great numbers. It was a pleasure to note that *M. virgata* has not quite been exterminated by the squatters and golfers. The capture of a very bright form of *E. ciliella* on Woodbury Common, amongst heather and gorse and far removed from any cowslips, was the event most worthy of note.

Leaving on May 18th for Gloucestershire, a stop of a few days was made *en route* near Taunton, but nothing much was taken except one *S. gallicolana* and some cases of *T. pseudo-bombycella*, which afterwards produced one ♂ and several ♀♀. *P. lewenhoekella* was noted in numbers on the hills.

The end of May was spent in the Stroud district of Gloucestershire, where the early Tortrices of the locality abounded. Single examples of *E. euphorbiana* and *P. dimidiana*, a few *C. aspidiscana* amongst golden-rod, and three or four specimens of the new *D. æratana* were met with, whilst *E. satyrata* showed some nice forms. On the upper slopes of the hills *O. parvidactylus* flitted about with *A. sabbaumanniana*; lower down *B. pandalis*, *M. murinata*, and *E. trigeminata* were much in evidence; in the meadows, amongst plenty of *D. plumbagana* and *D. plumbana*, the pretty little *A. fibulella* was to be taken. *E. ciliella* was going over, but one patch of tansy was the home of many *D. saturnana*.

June 1st found me at Fareham, in Hampshire, the guest of the Rev. J. E. Tarbat. The following day, a very windy one, produced, beside a couple of *A. servilana*, one other insect of note in *S. communana*. Any one who takes a *Sciaphila* the size of the common *S. chrysanthæana* at the end of May or the beginning of June should be careful to box it. At that date it will almost certainly be *S. communana*. My six specimens, including one

much wanted ♀, had a distinct bluish tint, such as one sees in some forms of *S. conspersana*.

Arriving at Lewes on June 4th, to be joined by Mr. Tarbat on the following day, a start was at once made on the search for *I. globulariæ*. Having not much by way of guidance except the name Cliff Hill, and a rather indistinct remembrance of an article on the Lewes Foresters, it was a piece of luck to strike *I. globulariæ* in plenty and fine order after barely an hour's walk. *I. geryon* flew in equal plenty higher up the hills. On the Downs *A. bellargus*, *O. ahenella* (some fine forms), and *C. chryseucellus* were the predominating insects. The small fry were rather disappointing; *P. dilutella*, *P. sellana*, *C. straminea*, and one ♀ *E. fractifasciana* were the best things taken. Mr. W. E. Nicholson spotted two fine ♀ *A. cinerea* crawling up from the turf, fresh from their chrysalids.

Two journeys to Abbot's Wood produced *M. hastata*, *E. dolobraria*, and *P. barbalis* in some numbers, whilst *C. bistriga*, *P. lactana*, *P. upupana*, *R. arcuana*, *A. degeerella*, *T. fulvimitrella*, *D. olivierella* were also netted. One fine *C. fluctuosa* was a fore-runner of what was after to be met with at Tilgate Forest. At the last-named favoured spot *C. fluctuosa* was really plentiful amongst the birch trees in company with *M. notata*. The same trees also harboured many *A. corticana*, *P. bilunana*, *E. nana*, and *T. proximella*. A few *E. venustula*, kicked up in the early afternoon, led to much heavy work, which might have been avoided, as it flew in great numbers at dusk, but wanted picking over. The special object of our visit to Tilgate, viz. *S. spheniformis*, was rather poorly satisfied by one specimen.

Returning to Gloucestershire on June 18th, the splendid character of the season at last became fully apparent. My collecting was now done in co-operation with Mr. W. B. Davis, of Stroud, who has a unique knowledge of the district.

The first brood of *P. c-album* var. *hutchinsoni*, seldom seen in this district, was quite plentiful from now onwards, and before the end of July early specimens of the second brood were out, so that the two broods overlapped and flew together. On one occasion, after a storm, scores of *T. w-album* were seen resting upon a row of thistles, a truly beautiful sight. *A. corydon* was observed very early, and was well on the wing before the end of July. Two very interesting and scarce Eupœciliæ were found in a field that had gone out of cultivation for some years. *E. manniana*, of which I took a single specimen last year, was there in great numbers, and flew at dusk. In smaller numbers *E. flaviciliana* was to be had, and these two are, I think, new records for the county, and certainly amongst the prizes of my holiday. In the same field *C. fulvana* was very common, whilst *S. verticalis* was not rare, and *N. scabiosellus* waved its long antennæ from the flower heads of *Scabiosus arvensis*.

Near Nailsworth the scarce *T. semialbana* was to be beaten in one limited locality. It occurs on the edge of a beech wood, and I have taken it now for several years in succession. It is seldom easy to move, and where not one could be induced to fly, an hour later, and perhaps the next day an hour earlier, half a dozen might be had. My best bags were made after heavy rain, when possibly they had been compelled to descend from the tops of the beech trees, and on one occasion only I saw a considerable flight at dark.

Of *S. pallifrontana* one specimen before and one after my visit to Lewes were taken. On one occasion *T. cinnamomeana* occurred in extraordinary numbers amongst larch, from which *H. laricana* and *P. occultana* could also be beaten. In a beech wood, that had been carpeted with bluebells in the spring, *S. sinuana* could be beaten in great numbers, two or three coming from every tree in perfect condition. Neither Mr. Davis nor myself had ever taken more than an occasional specimen in the district before. Returning home the same evening with our pockets full of *S. sinuana*, we struck a colony *B. furfurana*, also a new thing to the district. On another day *O. ericetana* swarmed on the edge of a cornfield, whilst a few evenings later *E. fractifasciana* was flying in crowds on a hill slope, but amongst the many ♂♂ only one ♀ was netted.

P. verhuellella flew gently in an artificial grotto where earlier in the year the larvæ had been noted feeding on the seed-vessels of the heart's-tongue; and the cases of *L. ferchaultella* occurred on a paling by the canal and produced many ♀♀. *H. oppressana*, *H. neglectana*, and *H. aceriana* were all found on a row of poplars hard by. But I must cut the story short. The following were also taken in some numbers: *R. consociella*, *A. salicella*, *P. ochroleucana*, *O. ulmana*, *S. ianthiana*, *T. aurana*, *S. compositella*, *D. acuminatana* (2nd brood), *A. cuicana*, *A. badiana*, *E. ciliella* (2nd brood), *S. arcella*, *L. prælatella*, *L. luzella*, *O. lunaris*, *L. conterbatella*, *L. lacteella*, *L. miscella*, *L. raschiella*, *C. therinella*. and other Tineina not yet determined. Amongst the plumes *O. lithodactylus*, *H. pterodactylus*, *H. bipunctidactylus*, *A. baliodactyla*, *A. tetradactyla*, *O. teucarii*, were all common except the last named. Long series of *E. fœnella*, and *G. limoniella*, were bred from larvæ kindly sent from Essex by Mr. F. G. Whittle, and of *S. flexana*, from pupæ earlier supplied by Mr. Davis.

I have said nothing of *P. brachydactylus*, which after our last year's discovery, was naturally not neglected. Several visits at the end of June to its rather distant locality, proved in vain, and when at last it was found early in July it was going over and only four specimens were taken, not in the best condition. Something, however, of its habits was learned, and whilst it probably flies after dark, it certainly has a very brief flight about 7.30 p.m. Our experience leads us to conclude

that the insect can only occur in very small numbers in this restricted locality, its two supposed food-plants, though present, being by no means common. As, however, the larvæ probably feed up in the early spring it may have suffered from the prolonged cold.

My particular thanks are due to Mr. Davis for his able guidance to many choice spots, and I was only too pleased to help him turn up several species new to the district.

On August 1st I returned home to Devonshire, and the weather almost immediately broke up. Not much has been done since then save the capture of a few *C. splendana*, and *P. profundana*, together with a goodly number of larvæ of *A. cosmodactyla*, and *A. punctidactyla*.

NOTES ON THE LEPIDOPTERA OF THE BRITISH LINE IN FRANCE.

BY CAPT. H. D. SMART, M.C., R.A.M.C., F.E.S.

(Concluded from p. 253.)

I DID not spend many weeks of the season of the Pyralidæ in France, and consequently added only a few species to last year's list.

Aphomia sociella was taken at Heuchin and more commonly at Fruges.

Crambus falsellus I caught at Caestre.

In one camp near Locre *Ephestia elutella* was abundant.

My short visit to Nieppe Forest produced *Scoparia basistrigalis* and *S. ambigualis* var. *atomalis*.

Pionea prunalis was plentiful at Caestre and in the adjacent part of Belgium. *P. stachydalis* was quite common in one of the marshes near Kimmel.

In the early part of the year I found hibernated examples of *Acalla literana* in several of the woods between St. Pol and Arras.

Several forms of *A. schalleriana*, including ab. *latifasciana*, were common in the Kimmel area.

Capua favillaceana was common near Avesnes.

Cacœcia podana and *C. rosana* were abundant at Fruges, especially the latter. I found *C. xylostearia* in the Forêt de Nieppe.

Pandemis heparana was common on Mont Kimmel.

Eulia ministrana was very common at Avesnes.

I found *Tortrix læflingiana* on the Scherpenberg, in Belgium.

The comparative scarcity of *T. viridana* on the Somme in 1916 was by no means repeated further north in 1917. The

insect caused considerable damage to oak foliage in all woods visited in the Pas-de-Calais.

Cnephasia chrysantheana was quite common from Messines to Locre.

I renewed my search for *Cheimatophila tortricella* (*hyemana*) this spring in the Avesnes woods, but was successful only to the extent of one specimen. Allowing for the possibility of local and yearly fluctuations, I feel sure that this insect is less common in northern France than in any part of Britain I have visited at appropriate times.

Conchylis curvistrigana was taken at Arras.

Olethreutes betulatana was abundant everywhere; *O. variegana* at Fruges; *O. pruniana* at Fruges. *O. nigricostana* appeared less commonly at Fruges and Avesnes. *O. urticana* was very abundant throughout the Pas-de-Calais, and *O. lacunana* common at Kimmel. I took *O. ericetana* at Fruges.

I found *Steganoptycha corticana* on nearly every tree in the Forêt de Nieppe, all variations through black, grey and green being equally numerous. *S. trimaculana* was quite common at Fruges.

Bactra lanceolana abundant throughout the Pas-de-Calais.

Notocelia udmanniana was common at Locre; *N. roborana* very common at Avesnes and neighbourhood.

I took *Epiblemia cana* at Kimmel and *E. subocellana* at Fruges. *E. tripunctana* also occurred at Fruges.

Ancylis letana I took at Avesnes, *Dichrorampha alpinana* at Fruges, and *D. simpliciana* very commonly at Arras.

Glypteryx schœnicolella was taken at Fruges.

Swammerdamia lutarea (worn) at Kimmel.

Gelechia (*Teleia*) *lucullella* was abundant in Nieppe Forest.

Xystophora atrella, Fruges.

In reporting *Blabophanes fenestratella* as universally common last year, I was seriously misled by my ignorance and the absence of books. The insect I meant to indicate was *Endrosis lacteella* (= *fenestrella*, Scop.).

Semioscopis avellanella was very common in Beaufort Wood, Avesnes.

Alabonia geoffrella was very common, but local, near Fruges.

Borkhausenia tinctella, Avesnes and Heuchin.

Antispila pfeiferella (Hb.) was common at Avesnes.

Coleophora limosipinella, Forêt de Nieppe.

Elachista argentella, common at Arras.

Gracilaria syringella, at Avesnes.

Lithocolletis cramerella was abundant at Avesnes; *L. bremiella*, common at Arras; *L. tristrigella*, common at Avesnes.

Bucculatrix boyerella was taken at Arras and Avesnes.

Monopis (= *Blabophanes*) *fenestratella* was very common in some of the unused rooms of the château at Radinghem, Fruges.

This time I have Mr. Durrant's support for the identification. It is a curious coincidence that I should thus come across this rare insect after having already erroneously claimed its capture. *Trichophaga tapetzella* was very common in the same château.

Tinea corticella occurred in Nieppe Forest; *T. granella* at Arras.

Incurvaria œhlmanniella and *I. muscallella* were both taken at Avesnes.

Nemophora swammerdammella, at Avesnes.

Adela degeerella was taken at Avesnes, very commonly at Fruges, and in Belgium.

Eriocrania subpurpurella was abundant at Avesnes.

I am greatly indebted to Mr. Durrant and Mr. B. Morley, of Huddersfield, for great assistance in the identification of Tineidæ, and to the Army Post Office for conveying to England many boxes of insects with no loss and a minimum of damage.

CORRIGENDUM.—On p. 253, for *Epione apiciaria* read *E. advenaria*.—H. D. S.

NOTES AND OBSERVATIONS.

CHÆROCAMPA ELPENOR LARVÆ ON BALSAM.—Mr. A. G. Scorer, in the September number of the 'Entomologist,' mentions the wild balsam as a food-plant of the larva of *C. elpenor* hitherto unnoticed. I should like to say that when I lived at Weybridge I always found the larva of *elpenor* feeding on that plant, which grows abundantly on the banks of the Wey, and never found it on anything else.—(Rev.) J. E. TARBAT; Fareham, Hants.

APPLES ATTACKED BY THE LARVÆ OF PORTHESIA SIMILIS (AURIFLUA).—On September 29th I was looking round an apple-tree in my garden, to see if the fruit was ready for gathering, when I noticed that a small bunch of leaves at the end of a branch were skeletonised. On seeking the cause I found that an apple growing just below them had been denuded of a large portion of its skin, and on an adjacent one I discovered about a score of young larvæ of *Porthesia similis* busily engaged in devouring its skin also. There were plenty of leaves on the tree, and it would therefore appear that the larvæ had taken to the fruit from choice rather than from necessity.—ROBERT ADKIN; "Hodeslea," Eastbourne, October, 1917.

MACROGLOSSA STELLATARUM IN BEDFORDSHIRE.—On October 24th last I found in an empty house in Bedford a live specimen of *Macroglossa stellatarum*. It was somewhat rubbed on the thorax and at the wing tips and died the same evening.—H. F. STONEHAM, Capt., F.E.S., M.B.O.U.; "Stoneleigh," Reigate, Surrey.

TORTRIX PRONUBANA IN LONDON DISTRICT.—During the past week I have taken larvæ, pupæ, and imagines of *Tortrix pronubana* commonly on *Euonymus* and privet bushes at Chiswick.—

H. DOUGLAS SMART; A. Z. Ward, 4th London General Hospital, S.E. 5, October 13th, 1917.

NOTE ON EGG-LAYING OF *TORTRIX PRONUBANA*.—This species lays its eggs in flat patches on the upper surface of the euonymus leaf. I recently watched an unpaired ♀ laying on glass. She stood over the patch already laid, waving her abdomen from side to side rhythmically and slowly. The abdominal segments were extended and retracted as the extremity felt its way backwards and forwards along the edge of the patch. The orifice was dilated, but no external ovipositor was brought into use, being of course unnecessary. The eggs appeared at the orifice at intervals of one to two minutes, as bright green, flaccid spheres. At the moment of laying each egg was pushed under the edge of the patch and moulded into position under the still flaccid side of a previously laid egg. As the egg finally left the passage it was accompanied by a gush of bright green liquid. This liquid rapidly sets, though that covering each row of eggs remains sufficiently soft for the introduction of the next row. The final result is a roughly circular patch of eggs, each row overlapping the next further from the centre, the whole covered by a green varnish. The varnish is much thicker in recently laid masses than in older ones exposed to the weather, suggesting that it may be more or less dissolved by rain. The old egg-masses very easily become detached from the leaves, but retain their connection with each other and hatch out in due course.—H. DOUGLAS SMART; Eserick Park, York.

ACRONYCTA ALNI IN OXFORDSHIRE.—It may be of interest to record the capture of a single specimen of the larva of *Acronycta alni* near Milton in Oxfordshire during the last week of August, as I do not think this species is of regular occurrence in that locality. Its proper food plant is, of course, Alder, but this specimen was resting exposed on a hawthorn bush to which it had probably wandered in search of its rightful food which grew at some distance from the spot. Its bright warning coloration attracted my attention from a considerable distance.—COURTENAY LODGE; Sutton Courtenay, near Abingdon, Berks.

POLYGONIA C-ALBUM IN SHROPSHIRE.—*Polygonia c-album* has been plentiful in this part of Shropshire of late. Since about 1887, when I first remember seeing the species commonly, I have seen one or two specimens most years, though never taken or allowed any specimen to be taken in my garden; but this year, after one or two on July 16th and 22nd, I saw no more of it until September 4th, from which date the numbers increased daily on rotting plums, and on 9th and 10th eight were seen at one time; since then the weather cooled down and became changeable and I saw few until last week, when three or four re-appeared on Saturday and four yesterday. To-day at least seven were here, as I counted that number at one time, amid numerous *Pyrameis atalanta*, on rotten plums, *Vanessa io* and *A. urticae*, equally common, stick to the flowers. One of the specimens—a very light dull-coloured variety—has become very worn, but the others look bright and fresh still. A male and female were taken by a friend of mine near Shrewsbury on September 29th. I don't

know whether the increase is general this year, most likely it is. In 1900 Mr. F. B. Newnham writing in 'Church Stretton' (Ent. part) says: "Common some seasons, scarce some years." The latter, I hear, took *Agriades corydon* there this year, on the Longmynds, I fancy. Unless I am much mistaken *Euvanessa antiopa* passed close to me this morning as I was watching *c-album* etc., but it went straight on, when apparently making for the plums, on seeing me, and I only caught a sight of hind wings as it vanished over a hedge, except when it sailed overhead. I found a large larva on potato tops on July 8th which puzzled me and others; the imago came out from pupa on 20th ult., viz. *C. vetusta*. The spots on dorsal region were uniformly 2 on each side of a segment. It finished larval state on same food plant. Butterflies have been very plentiful this year, but I have unfortunately had no time to go far afield.—GEORGE POTTS; Benthall House, Broseley, Salop, October 1st, 1917.

POLYGONIA C-ALBUM IN SHROPSHIRE.—I can confirm Mr. Martin Harding's interesting note (*antea* p. 237) on the prevalence of this beautiful and local species in Shropshire this past summer and autumn. Mr. C. G. Barrett (vol. i of 'Brit Lep.,' p. 125) speaks of it as "one of the receding species we so greatly regret," and adds that "there is little doubt that at no very distant period it occurred all over the South, Middle, and East, as well as the West of England." Apparently up to 1893, the date at which this volume appeared, it had not been recorded from Salop, for Mr. Barrett uses the words "*probably* Shropshire" when referring to its range in the Western counties. Forty-six years ago, in 1871, I took it, but not plentifully, in Delamere Forest, Cheshire, and did not observe it again till September, 1915, when I saw one only in my garden at Meole Brace, near Shrewsbury. This year, however, it has been very abundant there indeed, settling, with *A. urticæ*, on flowers of various species of *Aster*, and other American Compositæ, e. g. *Helennium autumnale* and *bolanderi*, etc. Most of my specimens were caught between September 23rd and October 12th. On the 14th I noticed it in Bellevue, Shrewsbury. Mrs. Fielden, of Condover Hall, informs me it has been frequent there. Mr. George Potts, of Benthall House, Broseley, has captured many, and the Rev. W. S. Ingrams, of Shrewsbury School, reports it from Kingsland. It will be interesting to see if it will reappear in equal abundance next season.—J. COSMO MELVILL; Meole Brace Hall, Shrewsbury, November 9th, 1917.

PAPILIO MACHAON IN KENT.—On August 25th last I had the fortune to capture a specimen of *Papilio machaon* at Folkestone. It was flying in company with a few *Colias edusa* over an extensive field of mustard. When I first saw it it seemed just fluttering along, and practically it flew into my net. At that time, and for some days previously, there was, and had been, a very high wind from the south, and I have no doubt that France had been his home.—GEO. B. PEARSON; 5, Upper Bedford Place, Russell Square, W.C. 1.

PAPILIO MACHAON in 1917.—The stray specimens of *Papilio machaon* recorded in the 'Entomologist' (*antea*, pp. 231-232) no

doubt first saw the light in a breeding-cage or something equivalent; but, even so, it seems a pity to catch them, as at least three of them were females, and, if impregnated, might have deposited eggs in the neighbourhood. But this, of course, would depend upon whether any of their food-plants were available, a point which none of the captors seem to think worth mentioning. *P. machaon*, by the way, is not so much confined to actual fen in this country as many people imagine, I having taken larvæ in fields round Clayhytte, only a few miles up the river from Cambridge. This, certainly, was some years ago; but larvæ hunters (at Wicken, for instance) invariably do best in the open meadows surrounding the fen rather than in it, as this beautiful butterfly, when egg-laying (like *Apatura iris*) likes to have plenty of space at its disposal. The wonder is that it is so local.—HUGH PERCY JONES; 19, Tenison Avenue, Cambridge.

[*Machaon* affects numerous food-plants. Cp. my note, 'Entomologist,' vol. xlvi, 219.—H. R.-B.]

COLIAS EDUSA IN LONDON.—On September 29th I saw from the train-window an example of *Colias edusa* flying over a little patch of marigold flowers just outside Addison Road Station towards West Brompton.—H. ROWLAND-BROWN.

COLIAS EDUSA AND C. HYALE IN SUSSEX.—At Felpham, in Sussex, in the middle of September, I noticed, altogether, on several fine days, about a dozen specimens of *Colias edusa*, of which I captured six. Of these, only one was a female. On the 18th I also noticed one specimen of *Colias hyale*, but did not succeed in catching it. These were all found within 200 yards of the seashore. To Mr. W. S. Thomson's list of Highgate butterflies I can add *Vanessa io*, *Pyrameis cardui*, and *Ceronympha pamphilus*.—A. D. HOBSON; 16, Parliament Hill Mansions, Highgate Road, London, N.W. 5.

COLIAS EDUSA IN SUSSEX.—I have to record that I caught a very fresh specimen of *Colias edusa* var. *helice* (*pallida*) on September 25th on the Sussex Downs above Steyning. The species did not seem to be at all plentiful in this district, as I only saw three or four specimens of the ordinary form during three days spent on the Downs.—G. L. KEYNES, Capt. R.A.M.C.

COLIAS EDUSA IN SUSSEX.—Although records of the occurrence of *Colias edusa* during the present autumn, reported in the October number of this Journal, cover the majority of the southern counties, there is no mention of the species having occurred in Sussex among them (*ante*, pp. 232, 259). It would appear, however, that it has been at least as common in that county as elsewhere, and perhaps, as an illustration, what came under my notice on September 29th—the only fine day on which I had an opportunity of looking for the species—may not be out of place. The early morning was brilliant and with little wind, and having to go down the town, I returned by way of the parade between nine and ten o'clock, when I met with the first specimen. Having secured a net, I continued my ramble, seeing another flying about a potato-field before getting clear of the town, thence along under the cliff, where I met with two more, of which one was captured. Clouds had now come up and frequently

obscured the sun, so I returned, taking in some rough Down land, beloved by the species, on my way. Here during a spell of perhaps ten minutes' further sunshine, three more specimens were seen, of which two were captured. Of the three taken two were males and one a female, all being in quite good condition, suggesting that they had not been very long on the wing. Odd specimens have also been frequently seen about the parades and adjacent Downs, and reports of not infrequent occurrences have reached me from other places along the coast.—ROBERT ADKIN; Eastbourne, October, 1917.

COLIAS EDUSA IN HAMPSHIRE.—*Colias edusa* has appeared in this neighbourhood in fair numbers this autumn. During September on Portsdown I took forty specimens, the great majority being males, and saw about thirty others. I was fortunate, however, in taking two perfect and very fine var. *helice*; a third specimen, though the first actually caught, was so battered that I had to let it go. I have not, however, seen a single *C. hyale*.—REV. J. E. TARBAT; Fareham, Hants.

EUVANESSA ANTIOPA IN ESSEX.—In the 'Field' for September 15th Mr. J. W. Bertram-Jones records the capture of a specimen of *Euvanessa antiopa* in his garden at Brentwood on August 7th. Mr. Bertram-Jones informs me the butterfly was captured by his gardener in the conservatory. Except for a slight rubbing caused by the means of capture it is perfect. This is the fourth example of *E. antiopa* which has come under my notice during last August—viz. two seen in Yorkshire (one of these also on August 7th), and one in Surrey during the first week of the month.—F. W. FROHAWK.

EUVANESSA ANTIOPA IN 1917.—*Antiopa* is reported ('Field,' September 29th) at Middleton, near Pickering, N. Yorks, on August 7th, 1917, by Mr. J. W. Stancliffe. Mr. C. F. Johnson, writing to me on October 5th from Stockport, says that he has heard of two specimens of *antiopa* in Lancashire this year—one being seen just outside the outskirts of Manchester, the other near Bolton. I expect that the latter is the one reported in 'Country Life' of October 7th to have been taken near Bolton, and now in the museum of that town.—H. ROWLAND-BROWN.

POLYGONIA C-ALBUM, ETC., IN WALES.—I spent the afternoon of September 5th at Rhydymwyn, Wales, where I was struck by the enormous number of *Vanessa io* which were on the wing. I was in a ravine called "The Leet," the sides of which were swarming with them. I noticed two specimens of *Polygonia c-album*, one of which I captured. *Pieris brassicae* and *Pyrameis atalanta* were to be found in small numbers.—LEICESTER PAYNE; Sheffield.

SPHINX CONVULVULI IN YORKSHIRE AND CHESHIRE.—I beg to report the capture of a fine female specimen of *Sphinx convulvuli* by a friend of mine who took it at rest on a wall at Loxley, Sheffield, during the first week of September this year. About the beginning of September a specimen of *S. convulvuli* was taken by a gardener on the estate of the Duke of Westminster at Eaton, near Chester. This specimen was perfect when captured, but damaged itself in the box in which it was confined. I think it was a male. It may be of

interest to note that some time ago I came across two male specimens of *C. virgaureæ*, supposed to have been taken in 1785 in Norfolk. They have been re-set, and one can see that they are very old. One has the antennæ missing and the other has a slit along nervure 2 in the left hind wing.—LEICESTER PAYNE; "Delamere," Silver Hill, Sheffield.

SPHINX CONVULVULI IN KENT.—On September 2nd last I received by post a specimen of *S. convolvuli* from my sister at Margate, with a request for the name of the insect. It was badly worn, and had been found in the garden, she said, in an almost dead condition. A few nights later she visited a bed of tobacco-plants growing in the garden, and found three of the moths flying over it; her cat was also on the spot and had captured one, which she released, and rather suspected that the damage to the previous insect came from the same source. After this she improvised a net, and I have since been indebted to her for nine specimens, taken on various dates during the month, from the 8th to the 20th inclusive, five of which were in good condition. I might mention that her cat developed an extraordinary penchant for catching these moths, capturing four on different occasions, and in describing her *modus operandi* to me by letter my sister said she usually visited the bed at dusk, and kept quite still until the cat "got excited," when she would know a moth was on the way, and prepared to strike. On September 26th I had a specimen of this insect brought to me by a postman, which he had taken locally.—A. F. BOBBY; "St. Margaret's," Summerdown Road, Eastbourne.

SPHINX CONVULVULI AT CHICHESTER.—A specimen of *S. convolvuli* was taken here on August 30th and others were captured during September. All the specimens that I saw were much worn, one almost beyond recognition.—JOSEPH ANDERSON; Chichester.

ACHERONTIA ATROPOS IN HAMPSHIRE.—Two full-fed larvæ of *A. atropos* were brought to me in August which duly pupated. I am now endeavouring to force them.—(Rev.) J. E. TARBAT; Fareham, Hants.

NOTES ON SOME SPHINGIDÆ, ETC., IN 1917.—On July 15th, in one of my rambles after insects, I noticed the frass of large caterpillars on the guelder rose (*Viburnum opulus*). After closer examination I found a beautiful larva of *Sphinx ligustri* in attitude of repose; then I carefully examined all the bushes of the same species in the neighbourhood, and was fortunate enough to find two more nearly fully grown larvæ. All the three were found on very young bushes—indeed, one of the bushes with its single stem was not more than 2 ft. high, and all its leaves with the exception of two had been eaten away by this handsome sphinx larva. Wild privet (*Ligustrum vulgare*) was growing in abundance all round this particular spot; after a couple of hours' search I had obtained two more specimens of *S. ligustri*. The specimens were taken to the laboratory of the South-Eastern Agricultural College and pupated. When the larvæ were fully matured I noticed that those feeding on *V. opulus* were finer, being quite an inch longer than those feeding on privet. The

specimens feeding on privet refused the guelder rose as food for a couple of days and *vice versa*, after which time I gave them privet and guelder rose respectively. On August 20th a fully matured *Manduca atropos* larva was found at Wye by a woman; it was feeding on scarlet runner beans in her allotment. It measured over six inches, and it was by far the most beautiful specimen of a Death's Head larva I had ever seen. The same evening it began to pupate. Three more pupæ of *atropos* were brought to me during the latter part of September by different farm labourers from the College farm. They were picked up during the digging of potatoes, and others have been sent to Mr. Theobald from Gloucestershire. On August 10th six fully matured larvæ of *Smerinthus ocellatus* were found by me in the College orchard, where they had practically stripped most of the branches of the young apple-trees on which they were found. Many others also found on apples have been received at the laboratory from other parts of Kent and Worcestershire. On September 20th I had a most welcome visitor in the shape of *Sphinx convolvuli*—a perfect male specimen and evidently newly emerged—which flew into my room through the window. *Smerinthus populi* and *Charocampa elpenor* have also been obtained plentifully in the larval stage on poplar and the willow-herb respectively. A male specimen of *Metopsilus porcellus* was captured as well.—H. C. EFFLATOUN, F.E.S., M.R.A.C.; Wye, Kent.

VARIETIES OF *ABRAXAS GROSSULARIATA* AT CHICHESTER.—During the month of August many very pretty *Abraxas grossulariata* were taken in the Priory Park here by my brother, Mr. Frederick Anderson. Most of them were darker and more spotted and banded than the type. Amongst them is one closely resembling a specimen in my cabinet, labelled *lacticolor*, or *chalcocoma*, ab. (Raynor), except that all the wings are whiter than these. Another is a remarkably striking insect, unlike any that I have seen, the fore wings having a black, uneven band at the base, and a wide, black band in the middle of the wings, enclosing on each a still darker, circular spot. There is no trace of yellow about them, and the body is black. Another is like it, but the black is more suffused, and there are indications of the yellow band or line. The body of this example is black.—JOSEPH ANDERSON; Chichester.

POLIA CHI AB. *OLIVACEA* IN DERBYSHIRE.—At Baslow in Derbyshire *P. chi* was very abundant; ab. *olivacea*, Steph., was common; and I noted one specimen of ab. *suffusa*, Tutt.—LEICESTER PAYNE; Delamere, Silver Hill, Sheffield.

BUTTERFLIES IN THE STROUD DISTRICT.—Following my note on p. 208 I may say that I was down in the same district the first week of October and found *Aglaïs urticae* in profusion as I expected; Michaelmas daisies and single asters were alive with them in the gardens. Of *V. io* I saw none but there were a few *P. atalanta* about. I also saw a perfect *Polygonia c-album* on some ivy-flower. Mr. Grant (p. 256) does not say exactly when he saw the worn specimens of the latter species, but those I saw on my previous visit (last week in July) were in perfect condition.—C. NICHOLSON; 35, The Avenue, Hale End, Chingford, E. 4.

THE 1917 BUTTERFLY SEASON IN BUCKS.—As some species of butterflies have been more numerous than usual during the past summer a few remarks on some of the Lepidoptera met with in this district may prove of interest. I came to this town at the fall of last autumn, and when time and weather permitted during the winter and early spring I scoured the country for miles around in search of likely-looking collecting grounds. The first insect of note to attract attention was *Sesia andræniiformis*—or rather, the external signs of its presence. A remarkable coincidence about this Clearwing in Bucks, so far as my experience goes, is that it does not get stung. This applies to pupæ gathered near Wycombe and also to pupæ found a considerable way to the north-east. *P. egeria* var. *egerides* was seen during the middle of May in greater numbers than I have ever met with it before. They even flew in the town itself, and were frequently observed over my allotment. A single specimen of the spring brood of *P. negera* was noted on the Chilterns. *Nemeobius lucina* was another butterfly to show up plentifully in one wooded hollow. *Polyommatus astrarache* did not appear in any great quantity in the spring, while specimens of the autumn brood appeared to be positively scarce whenever I tried to find them. On June 13th amongst a crowd of *P. icarus* I was surprised to take a fresh male of *A. bellargus*. Although I searched this ground (on which the food-plant grew) on subsequent fine days and again in September I did not meet with the species again. *Cupido minimus*, in one sheltered hollow, was always to be found during its season. On one dull day I am certain that fully fifty specimens started up at once from some long grasses covering only three or four square yards. A few examples of the August brood were seen. *Adscita geryon* and *Parasemia plantaginis* were also much in evidence. Larvæ of *Vanessa io* and *A. urticae* were common enough about the allotments of Wycombe. I reared several broods of both species under ordinary outdoor conditions and was fortunate in getting out a few aberrations, both of ground colour and markings; the most striking, perhaps, being a male of *io* with deep black all along the costa of fore wings, and quite without the eyes to under wings; ab. *belisaria*, I believe, it is named. Of *Brenthis euphrosyne* I saw but three. After nearly a month's field inactivity, I got out to some of the remote parts of the Chilterns on July 11th, and observed great changes in the species on the wing. *Melanargia galatea* and *Argynnis aglaia* were about in fair numbers; also *Agriades corydon*, both sexes. This date seems particularly early for the last named, but doubtless it was due to the scorching weather we experienced during the latter part of May and early June which must have forced larvæ along at a great rate and probably accounts for the under side varieties met with amongst the earlier emergences of this interesting Blue. Striated and obsolete forms were taken, and I netted two males bearing a mixture of both forms. On one slope, which during the spring was rather devoid of butterflies I was pleased, after a deal of hard work, to take a nice little series of the var. *syngrapha*. So far as I can see, this variety is extremely local. I took *corydon* from five distinct localities but found *syngrapha* on this one ground only, and yet, on this ground the species, for *corydon* was far from

abundant. Another, ground about a couple of miles away, harboured *corydon* in four times the numbers, yet the var. was not there. *Syngrapha* formed an extremely small percentage of the females seen, and is likely to become scarcer, even if not extinct, as I noted a local farmer had started to turn a large flock of sheep out on the ground: a war-time measure, perhaps, but nevertheless disastrous from the collector's point of view. I met two or three other collectors, private and professional, on this ground at the time the *corydon* emergence was at its height. On September 21st in a field of lucerne I netted two males of *Colias edusa* and saw another on the 25th. Throughout the season I have only seen one *Pyrameis cardui* and very few *P. atalanta*; and the only skipper to turn up in any quantity was *Nisoniades tages*. *Augiades comma* I did not see at all. So against the abundance of some species must be set the scarcity of others.—G. B. OLIVER; High Wycombe.

CEROSTOMA SEQUELLA.—In reference to the notes on this species by Mr. A. Sich (*antea*, p. 256), I may say that the specimens of this pretty Tineid taken by me have in almost every case been taken off sycamore tree trunks. In 1912 I took about two dozen specimens between the middle of July and early August, and I should say, with possibly two exceptions—one on oak and the other on beech trees adjoining the sycamores—the whole of them were taken off sycamores, mostly off two or three trees in a restricted locality in this district. Odd specimens that I have taken in other localities in North Yorks. have been where sycamore was prevalent, and I remember clearly in two cases the insects were taken off sycamores. In Merrin's Calendar it states under July, "taken off trunks of sycamore and maple," and under May that the larvæ are taken off sycamore, but I have no experience of this. I have certainly never seen it on or about willow or lime.—T. ASHTON LOFTHOUSE; Linthorpe, Middlesbrough, November 10th, 1917.

SALE OF MR. THOMAS H. BRIGGS' COLLECTION.—The brothers Briggs, Charles A. and Thomas H., were active collectors of British Lepidoptera more than half a century ago, and both amassed very considerable collections, that of the former being the more extensive of the two. On their change of residence from Leatherhead, where they had resided for many years, to Lynmouth in 1896, Charles, fearful of the effect of the humid atmosphere of his new home, decided to part with his collection, and it was brought under the hammer at Stevens' Rooms in October and November of that year, the sale occupying four days and realising practically £1000. Thomas, however, decided to take the risk of retaining his collection, but does not appear to have added very materially to it in the meantime; consequently some of the series were somewhat aged, but in other respects it did not appear to have deteriorated for the extra twenty-one years' keeping, and it was this collection that was sold at Stevens' Auction Rooms on October 16th last. Among the butterflies were many interesting forms, and some of these brought remarkably high prices; indeed, the good things went well throughout the sale, but the more ordinary lots found buyers with difficulty. For instance, three lots of Noctuæ containing some 260 specimens, including one

Caradrina exigua, seven red forms of *Tæniocampa gracilis*, and a grey variety of *T. munda* had to be lumped together to bring 3s.; two lots containing 172, among them five *Lithophane semibrunnea* and one *Orrhodia rubiginea*, 4s.; and no less than six lots of Geometers, running to some 400 specimens, among which were a pair of unicolorous dark brown *Ennomos quercinaria* and two pairs of hybrid *E. autumnaria* × *E. quercinaria*, made only 5s., and so on. But the feature of the sale was lot 68, a remarkable variety of *Brenthis euphrosyne* of a tawny colour with metallic markings, taken by Mr. Briggs at Barnwell Wold on May 21st, 1864, for which two bidders appeared to have a particular fancy, and it was eventually secured by one of them for the remarkable figure of £17 17s. Among the other more important lots were a specimen of *Colias edusa* with left fore wing var. *helice*, £8; eleven *C. edusa*, including one with twin central spots on hind wings, 24s.; three authenticated specimens of *Pontia daphidice*, 18s., 17s. and 17s. each; a male and a female *Chrysophanus dispar*, both from the Standish Collection, fine perfect specimens, set to show their undersides, £7 10s. apiece; four other specimens of this species made from £3 3s. to 22s. each, and a pupa case 6s. An "hermaphrodite" *Polyommatus icarus* brought £1; a good rayed underside *Agrion corydon*, £4 5s.; a lot containing five *Nomiades semiargus (acis)* and eleven *L. arion*, £4 4s.; and four of the former from the Standish Collection, £3. It was probably the question of locality that sent the three lots containing respectively six, eight, and four specimens of *Apatura iris* up to £2 and over; the species is fast becoming extinct in many of its old haunts, or has already disappeared from them, as in the case of *Chattenden*. Five examples of *Euvanessa antiopa* with good data, sold separately, brought from 20s. to 28s. each; a specimen of *Brenthis dia* taken at Worcester Park in 1872, 65s.; an *I. lathonia* taken by Mr. Briggs at Folkestone in 1865, 60s., and several Dover specimens of the same species by various captors, sold in lots of two or three, at from 42s. 6d. down to about 7s. per specimen, according to condition and data. A lot of two *Epinephele jurtina (ianira)*, one with the disc of fore wings and the other with all the wings bleached, made 60s.; and a somewhat unusual variety of *Carterocephalus palæmon* with unicolorous dark fore wings, slightly rayed submarginally, 85s. The only specimen of *Hippotion celerio* in the collection sold for 24s.; two *Phryxus livornica* at 32s. 6d. and 37s. 6d. each; *Leucodonta bicoloria*, labelled as taken by Bouchard at Killarney, 50s.; *Lælia cænosa*, sold in lots of two or three, realised from 15s. to 6s. per specimen; two *Epinaptera ilicifolia*, 20s. and 28s. each respectively; and *Deiopeia pulchella*, from 50s. to 14s. apiece. A specimen of *Calophasia platyptera*, labelled as taken by J. T. Carrington near Brighton in 1896, was run up to £7 7s.; and one of *Acontia solaris*, "near Dover by Mr. Hamer," brought 32s. 6d.; while the two lots, in each of which one *Catocala fraxini* was included, realised 21s. each lot. Two specimens of *Venilia macularia* var. *quadrifasciata* in one lot sold for 24s., and three in another for 32s. 6d. per lot; a fine pair of *Cleora angularia (viduaria)* for 30s.; and the only example of *Sterrhia saccharia* in the collection, recorded as taken near Folkestone in 1865, for 40s. The total realised for the collection fell somewhat short of £250.—ROBERT ADKIN.

EXCHANGE

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Duplicates.—Machaon (and Pupæ); Edusa, Corydon, Bellargus, chiefly Chiltern, and Isle of Wight forms, including one or two Syngrapha; Geryon, Plantagnis, Moneta. *Desiderata.*—Irish and Scots forms of Icarus; Scandinavian Lycænids, and European Hesperidæ with full data.—*H. Rowland-Brown, Harrow Weald, Middlesex.*

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