









THE
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OF

GENERAL ENTOMOLOGY.

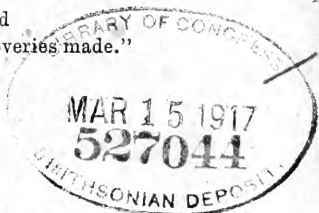
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WICKEN FEN: ITS PAST, ITS PRESENT CONDITION, AND ITS FUTURE.

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

IN vol. lxvii, p. 185, of this magazine, there is an article on Wicken Fen from the able pen of Mr. H. Rowland-Brown. Different people, however, view a subject from different standpoints, and thus a few jottings on certain impressions I formed during a visit in June last may not be without interest.

It was then about forty years since I commenced to take an active interest in matters entomological, but during the whole of that period I had never once visited the Wicken district; any impressions were, therefore, those of a stranger, and to pick up some local knowledge I spent a considerable time conversing with certain of the natives respecting the past and the present condition of the Fen.

It is, of course, known to everyone who is likely to read this article, that in consequence of the munificence of the late Mr. G. H. Verrall, the beginnings of the first British Nature Reserve came into being some few years ago; by a clause in his will bequeathing his property in Wicken Fen to the nation.

Since then the National Trust for places of Historic Interest or Natural Beauty, in which the Guardianship is vested, have, thanks to other generous gifts, been enabled to purchase various further small plots of the Fen as they came into the market, and I understand that it is their intention, if and when funds permit, to endeavour to purchase, as opportunity offers, the whole of the remaining portion.

This question of nature reserves is getting more pressing every year, if the rarer British plants and creatures are not to be exterminated.

Other nations are far in advance of us. The most magnificent nature reserve in the world is, of course, the Yellowstone Park in America, but nations nearer home are making great strides in protecting their flora and fauna. One of

these is Sweden, whose Government has within recent years set aside several large reservations, within the boundaries of which one may not kill or root up.

The cost of the upkeep of Wicken Fen in a condition to afford a secure refuge for all its dwellers is not inconsiderable, and the problem requires careful thought and experienced management. There is a watcher, of course, to provide, and there is the question of adapting a portion of the Fen to suit the habits and requirements of each of its various dwellers.

It is perhaps not generally understood by those who have not visited the locality, that Wicken Fen, as we know it, is a product of a certain kind of cultivation, and not merely a swamp; in other words it is a series of sedge meadows; and large areas of it must be kept as such if the majority of its most interesting species of Lepidoptera are to be preserved.

In what might, I suppose, be called recent geological time, the whole district was thickly covered with oak forest, the trees of which still remain buried, as they fell ages ago, a few feet deep in the peat. Then occurred a subsidence, and it became covered by a shallow arm of the sea, and later, as the entrance silted up, a quagmire, overgrown with reeds and waterplants, and with great stretches of open water. It was in this condition when history opens, and we get the first authentic glimpse of it at the time of the Norman Conquest, when the gallant Hereward, who had his stronghold at Ely, some few miles away, held the invaders at bay for a no less period than seven years; and no doubt, the ground which is now known as Wicken Fen formed a portion of his defences.

The next step was to construct dykes and erect pumps to partially drain the surface, and to render it fit for the growth of sedge; and within the last century nearly all the surrounding fens were further drained and converted into rich cornland.

Wicken Fen fortunately escaped this fate, but it had a narrow squeak for its existence, for a prosperous local agriculturist some years ago saw money in it, and set to work to get all the owners into line with a view of turning it into country for wheat and barley and oats; Mr. Verrall heard of the scheme, and managed to purchase a large portion, and it is perhaps needless to say this effectually smashed the infamous scheme.

In addition to sedge the principal crop under present conditions is a growth of alder, buckthorn, and willow, and unfortunately these trees, with others to a less extent, if left to themselves would, in the course of a generation, convert the whole area into a vast impenetrable thicket which would strangle all other growth. To avoid this it is customary for each owner to clear his portion every few years, cutting the sedge at the same time and grubbing up the roots of the bushes. This is a somewhat expensive process, and as several hundreds of

acres have to be dealt with it will be seen that a considerable sum of money must be spent in clearance each year.

In the old days there was a fair market for the sedge in thatching the picturesque old houses of the district, but, alas, these are being rapidly done away with in favour of brick and slated houses of a particularly hideous design. It is still used to a certain extent as forage, but the cost of clearance considerably exceeds the value of the crops.

It being the object of the National Trust to gradually secure the whole of the Fen, it is to be hoped that all entomologists and naturalists who at the present time own plots, of which I understand there are several, will, when they decide to dispose of their holdings, at least give the Trust the first opportunity of purchasing them.

Something more than this, however, is necessary. The present income is raised annually by subscription, which is rather a hand to mouth method, and a permanent endowment is desirable. No doubt this will eventually come into existence by some public-spirited naturalist bequeathing a portion of his worldly goods for this purpose, for can anything be more delightful to a nature lover than to devote his means to endow a nature reserve when he can no longer enjoy them himself.

The present management does not interfere with the legitimate collecting naturalist, at any rate if he is an entomologist; of course, killing birds or taking their eggs is not allowed. It is, however, necessary to obtain a permit, which is readily granted by the Secretary at 9, Harvey Road, Cambridge. Without this permit the visitor is likely to have serious trouble with the watcher.

Persons who make money by the sale of natural history specimens are not allowed on the portion of the Fen belonging to the National Trust, but a concession is made to the local professionals who may accompany amateurs as guides.

I do not think any of the Lepidoptera are in danger at present; their safety lies, however, far more in their food plants being preserved by proper management than by preventing over collecting.

Papilio machaon was abundant at the time of my visit, far more so than I have ever seen it abroad. It was so common that a local professional informed me that he had just obtained 120 larvæ in a two hours search on a patch to which he had right of access, and that had he so desired he could have obtained almost any number.

The only threatened species, so far as I am aware, are one or two of the rarer raptores, which at any rate until recently bred at Wicken pretty regularly. One hopes they will continue to do so, but the chief danger to them arises from the sportsmen who own the adjoining land.

On the other side of the large dyke is the very similar Burwell

Fen, it is to be hoped that this will in due course be transformed into a nature reserve also. There would then be a sanctuary of several miles square which would probably be sufficiently large to give the rarer birds, and probably some that have gone, but which might under such conditions return, security.

One does not often hear of the successful planting of a Lepidopteron in a new locality, but there is at least one instance at Wicken, for the late Solomon Bailey some years ago introduced from Chippenham Fen, where it is abundant, the pretty little *Bankia argentula*, which is now abundant and widely distributed at Wicken. No doubt it would be possible to introduce other fen-species also.

ADDITIONS TO THE LIST OF BRITISH PLANT GALLS.

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

IN 1912 Mr. E. W. Swanton, of Haslemere, published a book on 'British Plant Galls' containing a list of about eight hundred and twenty species which had come under his notice. This list, compiled apparently from various sources, is, I believe, the fullest that has been published for Great Britain, and it makes an admirable basis for additional work by other observers. As the records of galls are sometimes published in the reports of local societies, it is possible that some have been overlooked in the compilation of the list, and in putting forward the following list of species my object is chiefly to find out whether they have been observed by other workers in different parts of the country. They are all those that have come under my own notice, and they do not appear to have been recorded by Mr. Swanton. The determinations have been chiefly made from Dr. Houard's 'Les Zoocécidies des Plantes d'Europe et du Bassin de la Méditerranée.' Some of the galls, however, are not to be identified with any in this work, and may be new to science. Others, again, are apparently new records of the flies or other causers for Britain, or merely fresh host plants of gall insects previously recorded.

The greater number are from Derbyshire and Staffordshire, as I spent the autumn of 1914 in the Dovedale district. The records for Yorkshire and Devon are the results of occasional holiday visits during the past twelve years. Other records are from the London districts. I have not given the precise localities, but have indicated the counties, and have used the following abbreviations:—Dy.=Derbyshire, Dev.=Devon, E.=Essex, Mx.=Middlesex, St.=Staffordshire, Sy.=Surrey, and Y.=York-

shire. Where the figure 2 appears it signifies that the gall has been found in two localities some distance apart. Otherwise no attempt is made to show whether the gall is plentiful or not.

Some members of the London Natural History Society have been collecting records during the past year, and I am indebted to two of them—Messrs. E. B. Bishop and L. J. Tremayne—for many interesting specimens. A list of those which are new to Britain is appended with the counties from which the galls came.

It is hoped, if sufficient members take up the subject, to form another year a special section of the Society for the study of plant galls, their development and distribution.

Radicula amphibia, Druce—*Dasyneura sisymbrii*, Schrank. Mx.
Lychnis dioica, Linn.—*Perrisia*, sp. Dy. Flower heads enlarged, petals undeveloped or aborted. Several white larvæ at base of petals.

Stellaria graminea, Linn.—*Eriophyes atrichus*, Nal. Dy.

Hypericum montanum, Linn.—(i) *Perrisia hyperici*, Bremi. Dy.

(ii) *P. serotina*, Winn. Dy.

H. elodes, Linn.—*Perrisia*, sp. Y. Terminal leaves thickened at the base, folded over and crinkled, turning brown at the tips. Larvæ yellow, several in each gall.

Tilia platyphyllos, Scop. — (i) *Eriophyes tiliæ*, Pagenst. Dy.

(ii) *E. tiliarius*, Con. Dy.

T. vulgaris, Hayne.—*E. tiliæ* var. *exilis*, Nal. St.

T. parvifolia, Ehrh.—*E. tiliæ* var. *liosoma*, Nal. Dy.

Geranium sanguineum, Linn.—*E. geranii*, Can. Y. [I believe this gall has been previously recorded by Prof. Trail from the valley of the Dee.]

Medicago lupulina, Linn.—(i) *Perrisia*, sp. Y. Seeds swollen and enlarged, each containing a pale yellow midge larva. (ii) . . . ? St. Flower buds aborted, swollen, coalescing, brown and hairy, enclosing a central cavity.

Trifolium pratense, Linn.—*Perrisia*, sp. Dy. Leaflets folded into a pod resembling the gall caused by *P. trifolii*, but each pod is occupied by a white larva.

T. repens, Linn.—*Perrisia*, sp. Sy. Leaves thickened and forming a firm fleshy gall, with aborted buds inside, among which live several larvæ of a midge.

Lotus corniculatus, Linn.—*Perrisia loticola*, Rübs. Dy.

L. uliginosus, Schkuhr.—*Contarinia loti*, De Geer. Y., Sy., St.

Vicia cracca, Linn.—*Perrisia viciæ*, Kieff. Y., Sy., St.

Lathyrus pratensis, Linn.—*Perrisia*, sp. Y., Dy., St.

Prunus spinosa, Linn.—(i) . . . Y 2. Pillar galls $\frac{1}{8}$ -inch high, $\frac{1}{16}$ -inch diameter, smooth, shining, green, red or crimson in colour, rounded at the top, on the upper surface of the leaf, on or near midrib. They may be close together and coalescing. Open on under side of leaf, where they cause a slight concavity. (ii) *Perrisia tortrix*, F. Löw. Dev. 2.

P. domestica, Linn.—*Aphis*, sp. St.

Spiræa Ulmaria, Linn.—(i) *Perrisia pustulans*, Rübs. Dy. (ii)

Eriophyes. Y. Veins of the leaves thickened at the base, and elsewhere forming hollow cylinders.

Rubus fruticosus, Linn.—*Perrisia plicatrix*, H. Löw. Dy., St.

Rubus, sp.—*P. plicatrix*, H. Löw. St.

Rosa tomentosa, Sm.—*P. rosarum*, Hardy. St.

Cratægus monogyna, Jacq.—*Myzus oxyacanthæ*, Koch. Y.

Epilobium angustifolium, Linn.—*Perrisia kiefferiana*, Rübs. Y., Sy.

E. hirsutum, Linn.—(i) A white fungus causing swelling and twisting of the stem. Dy. (ii) *Eriophyes*. Dy. Buds aborted, covered with white hairs.

E. montanum, Linn.—Galled by fungus similar to that on the last species. Dy.

E. palustre, Linn.—*Eriophyes*. Dy. Similar to the buds of *E. hirsutum*.

Pimpinella Saxifraga, Linn.—An abnormal plant found August, 1913, which resembled Dr. Houard's description of this species when galled by *Aphis anthrisci*, Kalt., infested with green aphides with black cornicles. St.

Galium verum, Linn.—(i) *Perrisia gallicola*, H. Löw. St. (ii) *Eriophyes galii*, Karp. Dy. (iii) Flower heads in a dense mass, twisted and aborted, caused by . . . ? Dy.

G. saxatile, Linn.—*Eriophyes galii*, Karp. St., Sy.

G. palustre, Linn.—*Perrisia hygrophila*, Mik. Y., Dy., St., Sy.

Valeriana officinalis, Linn.—Stem much swollen and twisted into a spiral, sometimes at right-angles to its original direction, forming a large cavity. Causar not discovered. Dy.

Achillea Millefolium, Linn.—Flower head aborted, covered with a dense mass of white hairs resembling those caused on various plants by *Eriophyes*. St.

A. Ptarmica, Linn.—(i) Flower head aborted; resembles Dr. Houard's description of the gall caused by *Clinorhyncha millefolii*, Wachtl. St. (ii) Terminal leaves massed together into a dense rosette. ? *Tephritis*. St.

Senecio Jacobæa, Linn.—(i) Stems and leaves swollen by a dark crimson fungus. St. (ii) *Tephritis marginata*. St.

Centaurea nigra, Linn.—Fleshy swelling on midrib of leaf $\frac{1}{4}$ -inch long, $\frac{1}{8}$ -inch wide, probably due to the presence of eelworms. Y.

C. scabiosa, Linn.—*Loëwiola centaureæ*, F. Löw. Sy.

Hieracium PilloSELLA, Linn.—(i) *Tylenchus*. A firm fleshy swelling on midrib of leaf. Y., Dy. (ii) *Eriophyes pillosellæ*, Nal. Y. 2.

H. murorum, Linn.—Leaf thickened and somewhat fleshy, rolled up to form a hollow cone. Caused by . . . ? Dy.

H. radicata, Linn.—*Perrisia*, sp. Flower heads aborted and hardened. Petals do not develop on the side where the larvæ are. Seven or more yellow larvæ in each galled head. Dy.

Leontodon hispidum, Linn.—*Tylenchus*, sp. Bright red fleshy swellings on midrib and blade of the leaf. Sy.

Veronica Chamædrys, Linn.—Brown swelling $\frac{1}{2}$ -inch in length

and $\frac{1}{8}$ -inch in diameter on stem. Hollow. Terminal leaves not affected. Caused by . . . ? St.

Stachys palustris, Linn.—(i) *Perrisia*, sp. Buds galled by white larvæ. Dy. (ii) *Perrisia stachydis*, Bremi. Sy.

Ulmus glabra, Huds.—*Tetraneura ulmi*, De Geer. St.

Salix triandra, Linn.—(i) *Pontania proxima*, Lepel. Dy. (ii) *Cryptocampus saliceti*, Fall. Dy. (iii) *Oligotrophus capreae*, Winn. Dy. (iv) *Perrisia marginem-torquens*, Winn. Dy., St. (v) *Rhabdophaga heterobia*, H. Löw. Dy., St. (vi) *R. rosaria*, H. Löw. Dy., St. Two other kinds of midge larvæ cause bud galls. Dy.

S. fragilis, Linn.—(i) ? *Cryptocampus testaceipes*, Zadd. St., Sy. Sawfly larva, dove-grey in colour, forming gall on petiole or midrib of leaf. It is figured in Connold's 'Plant Galls of Great Britain,' fig. 314, without a name. (ii) Sawfly gall on petiole or midrib of leaf. Larva pale green with black head. Dy. (iii) *Rhabdophaga heterobia*, H. Löw. Dy. (iv) *R. rosaria*, H. Löw. Dy. (v) *Eriophyes* . . . Marginal rolls. Dy. (vi) *Eriophyes*. Dr. Houard's fig. 147. Sy., Mx., E. This gall was described in the 'Journal of Botany' early last year by Mr. Miller Christy. Since then it seems to have spread very much along the towpath between Hammersmith and Kew, and has also appeared on the north-west side of London.

S. alba, Linn.—(i) Petiole gall, same species as no. (ii) on *S. fragilis*. Dy. (ii) *Rhabdophaga nervorum*, Kieff. Dy. (iii) Twig galls with midge larvæ, resembling Dr. Houard's description of *R. karschi*, Kieff. Dy.

S. purpurea, Linn.—(i) *Cryptocampus saliceti*, Fall. Dy. (ii) *Rhabdophaga heterobia*, H. Löw. Dy.

S. viminalis, Linn.—*Pontania proxima*, Lepel. Dy.

S. caprea, Linn.—(i) *Rhabdophaga albipennis*, Winn. Dy. (ii) *R. heterobia*, H. Löw. St. (iii) *R. nervorum*, Kieff. Y., Sy.

S. caprea × *cinerea*.—(i) *Pontania Bridgmani*, Cam. Dy. (ii) *Cryptocampus saliceti*, Fall. Dy.

S. aurita, Linn.—(i) *Pontania proxima*, Lepel. St. (ii) *Oligotrophus capreae*, Winn. St. (iii) Female catkins persisting, aborted, galled by midge larvæ. Dy.

S. aurita × *cinerea*.—(i) *Pontania proxima*, Lepel. Dy. (ii) Same as no. (iii) on *S. aurita*. Dy.

S. cinerea, Linn.—(i) *Pontania Bridgmani*, Cam. Dy., St. (ii) *P. pedunculii*, Hartig. Y., Dy., Sy. (iii) *P. salicis*, Christy. St. (iv) *Cryptocampus ater*, Jurine. Dy. (v) *C. saliceti*, Fall. Dy., St. (vi) *C. venustus*, Zadd. Dy. (vii) *Oligotrophus capreae*, Winn. Dy., St. (viii) *Rhabdophaga albipennis*, Winn. Dy. (ix) *R. nervorum*, Kieff. Dy. (x) *R. saliciperda*, Dufour. Dy., St. (xi) *Eriophyes tetanothrix*, Nal. Dy. There are three other kinds of galls on the twigs, and one on the petiole occupied by midge larvæ which I have not been able to identify. Dy., St.

S. repens, Linn.—(i) *Pontania salicis*, Christy. Y. 2. (ii) *Rhabdophaga rosariella*, Kieff. Sy. (iii) *R. salicis*, Schrank. Y., Sy.

S. alba, *S. cinerea*, *S. fragilis*, and *S. purpurea* leaves are all rolled by sawfly larvæ, but the species of insect has not been determined.

Populus tremula, Linn.—Leaves aborted and curled, thickly inhabited by aphides. St.

P. nigra, Linn.—*Pemphigus marsupialis*, Courchet. Mx., Sy.

From Messrs. E. B. Bishop and L. J. Tremayne :—

Malva moschata, Linn.—*Eriophyes gymnoproctus*, Nal. Bucks.

Euonymus europæus, Linn.—*E. convolvens*, Nal. Sy.

Ononis repens, Linn.—*E. ononidis*, Can. Wales and Hants.

Potentilla procumbens, Sibth. — *Xestophanes potentillæ*, Retz. Kent.

Pyrus torminalis, Ehrh.—*Eriophyes pyri*, Pagnst. Mx.

Lythrum salicaria, Linn.—*Perrisia salicariæ*, Kieff. Kent.

Achillea Millefolium, Linn.—(i) Leaves covered with silky white hairs. *Eriophyes*. Sy. (ii) Yellow or red fleshy galls rising from the upper surface of the leaf, and also showing less markedly below. Each contains one midge larva, pale yellow in colour. Sussex.

Artemisia vulgaris, Linn.—*Eriophyes artemisiæ*, Can. Sy.

Centaurea Scabiosa, Linn.—*Loëviola centaureæ*, F. Löw. Sy.

Fraxinus excelsior, Linn.—*Eriophyes* (Houard no. 4646). Bucks.

Solanum Dulcamara, Linn.—*E. cladophthirus*, Nal. Hants.

Quercus cerris, Linn.—*Andricus testaceipes*, Hartig. Sy.

Salix fragilis × *pentandra*.—*Rhabdophaga heterobia*, H. Löw. Sy.

Populus pyramidalis, Rozier.—*Pemphigus bursarius*, Linn. Kent.

MORE NOTES ON THE LEPIDOPTERA OF LA SAINTE BAUME, VAR, SOUTH FRANCE, 1914.

By F. E. LOWE, M.A., F.E.S.

WE started for the Continent as light-heartedly as other holiday makers, little anticipating the altered conditions under which we should return. Even when we left Ste. Baume for Corsica no hint had reached us of the disturbed state of Europe. On Thursday, July 30th, I got a letter saying it would be as well to return to the mainland as uncomfortable rumours of war were in the air. This of course had been written some three days before. We started the next day for Bastia and Nice, and by a *very* slow train were carried to Marseilles. There we found ourselves the sport of circumstances. The French mobilisation had begun. To get to Paris and thence to England took just a week, and was a work requiring both endurance and diplomacy. By abandoning our "grand baggage" to the care of the hotel in Paris, we were able to make up hand packages containing a few necessaries, and all our *captures*! We felt on arrival in London something of the pride and content of a battery which, in a harassed retreat, has saved the guns.

The only connection of our adventures with these "Notes" is that they account for my long delay in offering them to the

editor. Entomology was forgotten in the tremendous and overpowering interest and duties of the succeeding months. As, however, I have received several enquiries for an account of my further investigation of the wealth of Lepidoptera at Ste. Baume : and as the chances of paying the place another visit seem at present very remote, I have set down these "Notes" before they are lost and details faded from memory.

We arrived at the Hôtel de Lorges, at the foot of the road which ascends through the woods to Ste. Baume, on the evening of June 25th. This we made our headquarters, working often up to Ste. Baume on foot, and going for a short visit to the Hôtellerie on July 11th.

This being my third visit at nearly the same time for three successive years, it was not to be expected that I should largely add to the number of *butterflies* noted. It was for moths that I had especially come. Nevertheless there were found a few new things. The very first day I came across a specimen of *Hesperia sidæ* by the roadside, in good condition. Though I hunted diligently I never found another. But June 26th is, I believe, a very late date for this insect. *Melitea deione* is another which I had not taken here before ; the males were very worn, but one or two females were in good condition. Insects did not seem to me as abundant as in former visits, and their times of emergence must in several species have been delayed. Looking for this *M. deione* called my attention to the number of species of the genus *Melitea* present at one time and place. In a piece of rough ground between the high road and wood, a little more than an acre in extent, all the following were to be taken on that day :—*M. deione*, *M. athalia*, *M. parthenie*, *M. phæbe*, *M. cinxia*, and *M. didyma* ; of course in very different conditions—some last survivals, some first appearances. And of other "Fritillaries" were *Argynnis niobe*, *Brenthis hecate*, and *B. dia*. This I am sure was a record in my experience. Other butterflies not recorded in my former "Notes" ('Entomologist,' vol. xlvii. 19.) which in 1914 I was able to add to my list are *Epinephele lycaon*, July 2nd, one male ; I never saw another ; *Cupido sebrus*, June 27th, much worn ; several *Agriades thetis* var. *ceronus* ; and again I took a fine male hybrid *polonus* ; and *Erynnis althææ*.

General Observations.—The following dates of appearances, &c., may be interesting. *Polyommatus dolus* seemed to have left its old quarters ; elsewhere, especially in a field between Ste. Baume and the Col de Bretagne, it was abundant. First male, July 2nd ; female, July 8th. *Libythea celtis* was commoner, or came more in my way than in former years ; *Læosopis roboris* and *Zephyrus quercus* less so. And these "Hair-streaks" remind me that there is an extraordinary statement on p. 16 of my former "Notes" to the effect that I did not find *Thecla ilicis* var. *cerri*. I cannot think what this means. It is far commoner

than the type. Also in this connection, seeing that *T. æsculi* has been under discussion lately, I have two examples from Ste. Baume, which in dark colour almost agree with the Swiss form I have called *pseudæsculi*, and might be taken for this, but that the arrangements of the markings and the shorter, squarer tails betray *T. æsculi*. First females of *Dryas paphia* and *G. cleopatra*, July 2nd; first *Argynnis adippe*, July 5th; first *A. aglaia*, July 15th; *Agriades corydon*, first male, July 5th—no more till 9th—first female, 11th.

Of varieties, only one good thing fell in my way. On July 8th I took a very good male *Melanargia galathea*, with much suffused wings. The fore wings very dark, the upper half having all the white marks rendered almost invisible. It seems to be practically var. *turcica*, Boisd. And in the way of a freak I took an exquisite little *Pyrameis cardui*, which measures just one and a half inches in wing expanse. This is even smaller than some dwarf specimens of *P. atalanta* reported in the 'Entomologist,' *antea*, p. 124, and p. 150.

To turn to the moths. Of course, I went after my old attraction *Acidalia determinata*, and had good success. I found that this species is to be had best at dusk, except for the trouble of distinguishing it in the net from one or two of its congeners. Light as usual produced some nice things. *Dendrolimus pini*, two males. This was interesting, as I found that *D. pini* here is the *type*, and those which I have bred from larvæ taken in the Swiss Pfywald are var. *montana*. The difference is striking. In the type the whole of the upper wings are practically *grey*, with a subterminal band marked out with zigzag lines, with a suggestion only of rust suffusion. In var. *montana* the base of the fore wings is strongly stained with rust colour, and the band entirely filled with the same; the hind wings are also more ruddy. Another night I got a lovely *Spatalia argentina*, and on June 30th three grand *Smerinthus quercûs* literally forced their way through the muslin curtains into the bedroom. The next day another came in the same way. After that we saw no more. On July 1st I made my first trial of "sugaring"—more strictly speaking of "honeying," for the material I employed was coarse honey, which, by the way, was none too cheap or easy to obtain. It proved very efficient. The first night produced only *Mania maura* and *Grammodes algira*, but as both were new to my Ste. Baume list, they were welcome. July 2nd brought many *Catocala conversa*; this I had taken the year before at light, but among the 1914 captures are two having the fore wings nearly uniformly dark, and under wings somewhat suffused, apparently var. *carbonaria* or approaching it. July 3rd was cold, but I took the first *Dicycla oo*, which afterwards became pretty common. July 4th, *Toxocampa craccæ* began his visits, and on the 5th *Catocala sponsa* and *C. promissa*, after which they were very

abundant. July 10th gave me one specimen each of *Pseudophia tirrhaca*, a magnificent *Catephia alchymista*, and *Agrotis fimbria*. Certain of the smaller Geometers were very regular in their attendance at "sugar," especially some of the commoner "Waves" and the pretty little *Tephronia sepiaria*, with *Eromene bella*. On July 11th we left Nans-les-Pins, as they like to call the hotel neighbourhood, for four days at Ste. Baume. I had no more honey, and so could do no more "sugaring." After which we made our way to Corsica.

The following list will, I think, provide a complete account of Lepidoptera observed in this district which I have not recorded in my former "Notes":—

Melitæa deione, *Epinephele lycaon*, *Cupido sebrus*, *Agriades thetis* var. *ceronus*, *Erynnis althææ*, *Hesperia sidæ*.

HETEROCERA.

SPHINGIDÆ.—*Smerinthus quercûs*, *Dilina tilia*.

LIMANTRIIDÆ.—*Porthesia similis*, *Lymantria dispar*.

NOTODONTIDÆ.—*Spatalia argentina*.

LASIOCAMPIDÆ.—*Dendrolimus pini*.

DREPANIDÆ.—*Cilix glaucata*.

NOCTUIDÆ.—*Acronycta aceris*, *A. psi*, *Agrotis saucia*, *A. pronuba*, *A. subsequa*, Hb. (*obona*, Huf.), *A. comes*, Hb., *A. ianthina*, *A. fimbria*, *A. triangulum*, *A. exclamationis*, *Mamestra brassicæ*, *M. contigua*, *M. serena*, *Dianthœcia luteago* (type), *Miana strigilis*, *M. secalis* (*didyma*), *M. lithoxylia*, *Polyphænis sericata*, *Mania maura*, *Tapinostola musculosa*, *Leucania l-album*, *L. vitell na*, *L lithargyria* (very grey form), *Caradrina ambigua*, *C. aspersa*, *C. gilva*, *Amphipyra tragoponis*, *Dicycla oo*, *Cleophana antirrhini*, *Eutelia adulatrix*, *Heliothis dipsacea*, *H. peltigera*, *Pyrrha umbra*, *Acontia lucida*, *A. luctuosa*, *Eublemma suavis*, *E. jucunda*, *Thalpochares candidana*, *Erastia fasciana*, *Metoptria monogramma*, *Grammodes algira*, *Pseudophia tirrhaca*, *Catephia alchymista*, *Catocala nupta* (one), *C. sponsa*, *C. promissa*, *C. conversa* var. *carbonaria*, *Toxocampa craccæ*, *Zanclognatha tarsicristalis*.

CYMATOPHORIDÆ.—*Cymatophora octogesima*.

GEOMETRIDÆ.—*Euchloris pustulata*, *Eucrostes herbaria*, *E. beryllaria*, *Nemoria viridata* var. *insignata*, *Acidalia ostrinaria* (fond of sugar), *A. herbariata*, *A. ornata*, *Ortholitha bipunctata*, *Anaitis plagiata*, *Phibalapteryx vitalbata*, *Hemerophila nyctemeraria*.

SYNTOMIDÆ.—*Naclia (Dysauxes) ancilla*.

ARCTIIDÆ.—*Rhyparia purpurata*.

ZYGÆNIDÆ.—*Zygæna carniolica* (one).

PYRALIDÆ.—*Endrotricha flammealis*, *Mecyna polygonalis*.

THE INTERMITTENT SCARCITY OF SOME SPECIES OF THE GENUS *MELITÆA* IN FRANCE.

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

WRITING to me from Le Cannet, near Cannes, Mr. Charles Morris says: "1912 was a marvellous year at Fontainebleau for *Melitæas* of all species occurring in that locality, *e.g.* *Melitæa cinxia*, *M. didyma*, *M. phœbe*, *M. parthenie* and *M. athalia*; but, although in September the ground was covered with thick webs of young larvæ hibernating in thousands, the following season (1913), when we visited the spot, there was no trace of any *Melitæas* at all. What had happened, no doubt, was this, they had all perished for want of sufficient food to bring them to maturity, and I had a striking proof the same year with *cinxia* in the garden on the lawn of the small house where we take rooms. Some larvæ having been brought to me for identification, on hearing where they had been found, I discovered black masses of half-fed *cinxia* larvæ in little heaps every few feet, the whole of the plantain having been consumed to the root, stalks and all, and the larvæ reduced to starvation. I placed some hundreds of them in my cage, and planted a large tray full of the food plant, rearing about half the number, the rest being liberated before pupation. About fifty imagines emerged. Had the larvæ been left to themselves, almost all must have perished. I find they are cannibals, and also devour their pupæ. Evidently the parent emergence was too prolific—hence a famine."*

Mr. Morris then cites as a parallel instance the case of *Thais polyxena* var. *cassandra* in a little valley near Le Cannet where the growth of *Aristolochia* is scanty. "Every few years, when otherwise *polyxena* would increase enormously, there is insufficient food for the larvæ, and next season scarcely an imago of the species on the wing. I have noticed this to happen about once in four years; numbers of larvæ, and hardly a single perfect insect when the season for them arrives."

Mr. Wheeler, in his very interesting paper on "The Genus *Melitæa*" where he speculates on the liability of *cinxia* to become extinct, does not weigh as a contributory cause to disappearance, the possibilities set up by Mr. Morris's observations. Yet a species once locally common, as we may suppose *cinxia* to have been in England, would be more affected by this seasonal over production than in countries where it is widespread and, therefore, to be replenished from near neighbourhoods where the same disastrous failure of the food plant has not occurred. There

* Mr. Morris does not mention the presence of ichneumons, and judging from the high percentage of emergences, his experience in this respect confirms Mr. Wheeler's observations on the comparative immunity of the species (*cp.* 'Proc. South London Ent. and Nat. Hist. Soc.,' 1914-15, p. 11).

is no scarcity of plantain in the south of England; all the same, it is not unreasonable to suggest that the colonies of *cinxia* which survived into what we may call the entomological-historical period may have been wiped out finally by starvation in an abnormally dry and prolific season. The disappearance of *M. athalia* in Bucks, for example, at least seems to be coincident with the growing up of the underwood in the Chiltern forests, and the extinction of the food plant *Melampyrum pratense*. Outside the Isle of Wight, *cinxia* is known to have inhabited within the first half of the nineteenth century, the New Forest at Brockenhurst (J. C. Dale); the cliffs of St. Margaret's Bay (W. O. Hammond); and, according to the quotation in Stainton (vol. i, p. 44), Peterborough and Stowmarket, though, already in Samouelle's time ('Useful Compendium,' 1824) it is recorded "very rare in Britain." Assuming the identification to be correct, these localities would represent the last strongholds on the mainland of a butterfly, once perhaps as widely spread in the South of England, at all events, as it is to-day in the North of France. The Rev. J. F. Dawson, writing of his discovery of *cinxia* in Loudoun's Magazine—the passage is transferred bodily both by Stainton and Newman—mentions that the larva is specially subject to attack from *Silpha obscura* and *S. tristis*, and the imago from "a large spider." As *cinxia* has held its own in or near the locality visited by Mr. Dawson in May, 1844, alone of all its habitats, and also in view of Mr. Wheeler's definite conclusion that the species has few parasitic enemies, it cannot be supposed that the shrinkage of this Fritillary in England is due to the onslaughts of hostile insects. I may repeat here, however, that I have found quite the contrary to be the case with British reared *M. aurinia*, taken wild in the larval state; while I have found *M. didyma* in one, at least, of its localities a constant prey to ichneumons. When I was last at Bérissal in July, 1907, I frequently came across pupæ suspended from the overhanging ledges of rocks by the wayside between the *Lycidas*-haunted Second Refuge and the Ganter Bridge. Quite 50 per cent. of the pupæ observed bore unmistakable signs of ichneumon attack; which fact, however, did not prevent the butterfly from being extremely common as the month proceeded.

Harrow Weald. December 7th, 1915.

CRABRO PUBESCENS, SHUCK., AND INERMIS, THOMS.,
WITH NOTES ON OTHER BRITISH CRABRONIDÆ.

By R. C. L. PERKINS, M.A., D.Sc., F.Z.S.

THROUGH the kindness of the Rev. F. D. Morice and Messrs. E. B. Nevinson and A. H. Hamm I have been able to examine a

number of these two supposed species, in addition to the small series that have been captured at various times and places by myself.

In my paper on British Crabronidæ (Trans. Ent. Soc. 1913, p. 383) I overlooked the fact that *C. inermis*, Thoms., had been introduced into our list by Mr. Morice, and I adopted the name *Blepharipus nigrita*, Lep. for *C. pubescens*, Shuck. After a careful examination of the material available, I believe that *pubescens* and *inermis*, as determined from British examples, are not specifically distinct, and that both are to be referred to *nigrita*, Lep.

Thomson's characters for the separation of the two forms are very feeble. *C. pubescens*, he says, only differs from *inermis* in being a little larger, with the scape of the antennæ beneath, and the base of the hind tibiæ outwardly, pale yellowish white, the front of the head more hairy and subopaque.

I have seen no specimen in which the scape is entirely black, for this on the posterior surface, which in the resting position lies against the head and is entirely concealed, is always largely and often entirely yellow. In the brightest female examples this colour extends as a complete line over the adjoining outer surface, and this, I suppose, is the form which should be referred to *pubescens*, but there are intermediates between these conditions. The colour of the hind tibiæ is equally variable, and while in the brightest specimens (*pubescens*) these may be pale yellow for nearly one-third of their length, or entirely black (*inermis*), most of the females examined are intermediate between these, with the pale colour often obscure (brownish or testaceous) and in various stages of reduction. The male sometimes has the colour of the hind tibiæ as extensive as in the brightest females, but more often, apparently, they are only obscurely pale in this sex, and sometimes quite black. The sculpture of the front of the head in the female varies much. Following Thomson, the brightly coloured examples should have the front part of the head more hairy and dull. But one of the brightest-coloured examples that I have seen (Cobham, coll. Nevinson) has the front particularly smooth and shining, whereas the black-legged female, referred by Kohl to *inermis* (coll. Morice), has this part much duller, partly from the rather stronger punctuation, but chiefly from the evident minute sculpture of the surface between the punctures. Particularly interesting are a male and female taken at Tubney (Berks) by Mr. A. H. Hamm, on the very early date May 19th. The male has the hind tibiæ whitish for nearly a third of their length from the base, but in the female there is only an obscurely yellowish spot inwardly.

As the special male characters, *viz.* the fringe of curved hairs on the anterior tibiæ and the shorter ones on the metatarsus,

are exactly alike in all our males, and I can find nothing else distinctive of this nature, although the male characters of allied species of *Crabro* are generally most distinctive, I do not think it possible to retain the name *inermis*.

The following notes in connection with my paper in Trans. Ent. Soc., above referred to, may be useful, as I have now been able to examine many more specimens.

Metacrabro lituratus, Pz. There is a very small but sufficiently distinct tooth on the upper edge of the mandibles of the female before the middle, and therefore this sex should have been placed (as was the male) under the same heading as *M. 4-cinctus (interruptus)*, Saund., and not associated with the species of *Clytochrysus* in any respect whatever.

In *Thyreopus cribrarius* and *scutellatus*, male, the spinose appearance of the base of the mandibles is best seen when the face is viewed obliquely from behind the clypeus; in *peltarius* the mandibles appear merely bent or geniculate towards the base in this aspect. *T. scutellatus*, male, has only subfusiform antennæ, and lacks the conspicuous clothing of hair on the flagellum beneath basally. Its clothing is unusually short for the group Thyreopinae. *T. cribrarius* alone has spots without lines on the dilated tibiæ. In *scutellatus*, female, the anterior lateral angles of the pronotum are sometimes faintly prominent, but not acutely so as in *peltarius*, whilst its unspotted black basal segment is characteristic.

In my table of the male sex I referred *Crossocerus ovalis*, Lep. (*anxius*, Wesm.), to the group of *C. varius*, which was defined by the tubercles of the mesopectus. *C. ovalis*, male, however, varies in this respect, for in some specimens I have not been able to detect the minute tubercles or spines even with a compound microscope, while in others I can see them with a lens. In the case of other species these tubercles are better developed in the female than in the male, so it is not surprising that, being very small in female *ovalis*, they should be absent in the male. The males therefore of the *varius* group would have been better characterized by the form of the seventh dorsal abdominal segment. This has a pygidial area defined by fine raised lines, which is not the case in *C. wesmeli* and *elongatulus*. A variety of the latter with entirely black hind tibiæ is found in the North of England, and corresponds to the *inermis* variety of *pubescens*.

In *C. ovalis*, female, and probably in some other of the species with bidentate mandibles, the teeth may be obsolete and the mandibles simply blunt at the apex, and this is also sometimes the case with some of the tridentate species, but in the latter case the true nature of the mandibles is generally easily determined by the presence of the grooves, which run back from the teeth, so that no great difficulty arises in separating the

bidentate and tridentate species should the mandibles be worn down at the tips.

In *Cuphopterus*, male, the two upright spines which appear at the base of the seventh ventral segment are processes of the pleural region of the seventh dorsal; the spines which truly belong to the seventh ventral are very small and only visible when the segment is fully extended.

In *Hoplocrabro*, female, there is often a very minute tooth on the lower edge near the apex of the mandibles, and the actual apex in some aspects may appear truncate rather than rounded, but as the genus is well defined by other characters, the mandibular structure is of less importance.

It should be understood that in my paper on the Crabronidæ it was my object, so far as possible, to supplement the excellent descriptions of Edward Saunders, and consequently no allusion is made to many good specific characters (*e. g.* those of the front legs of *Thyreopus*) which have been detailed by him.

Park Hill House, Paignton.

BRITISH ORTHOPTERA IN 1914.

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

LITTLE information of interest has come to hand concerning the British Orthoptera in 1914; but the following new locality-records and short field-notes should no doubt be published for the benefit of students of the Order.

Forficulodea.—On March 15th earwigs and eggs were found more than once in stumps from which Scotch firs had been cut down on Esher Common, Surrey. A batch of the latter was brought home, together with a female imago found at the same time, one of whose cerci was broken. In captivity she did not seem to take any notice of the eggs, which possibly were then dead. On April 20th Dr. T. A. Chapman gave me a living nymph of *Forficula auricularia*, Linn., with the following history:—“Early in January I brought into the house a plant in a pot that had up till then been out-of-doors. One day early in February I found on a leaf of the plant a young earwig. I expected others to shew themselves, but none did. It was so small that I was rather surprised it was out of the ‘nest.’ I have since kept it and fed it. It has moulted three times when it ate the cast skins, and has regenerated two joints that were missing from an antenna. The problem was, how did it happen that there was a solitary earwig that ought not to have left its mother at such a date? It must have been still younger when brought in, as it was several weeks later when I found it.”

I saw no evidence of its moulting again till May 10th, when

some time that day (after the morning) it changed its skin, and about 6 p.m. was pure pellucid white except the eyes, which were black. It was then a small mature male. It had eaten very little I fancy since I received it. I think I did not give it what it liked. It did not eat the skin cast on May 10th.

Mr. A. Sich gave me a male *F. auricularia* with callipers somewhat pronounced in the direction of var. *forcipata*, Steph. It was taken at Chiswick on October 17th. On August 30th Mr. D. Sharp gave me a large male *Labia minor*, Linn., with well-developed callipers, which he caught in Brockenhurst.

Blattodea.—Females of *Ectobius lapponicus*, Linn., were taken in the New Forest on June 21st and 22nd. On January 12th in the warm tortoise-house in the Zoological Gardens some imagines of *Periplaneta australasiæ*, Fabr., were seen. One, apparently hurt, wriggled down to the water on its back. After a time a painted terrapin (*Chrysemys picta*) of North America caught and ate it. Writing from the British Museum (Natural History) on June 19th, Mr. F. W. Edwards said:—"Recently some specimens of *Periplaneta americana*, Linn., were sent me, which were found in a coal-mine at Pontnewydd, Monmouthshire; they are known to have been there for some years." Mr. G. T. Porritt tells me that Mr. J. Gardner sent him a specimen of *Fanchlora exoleta*, Klug., found at Hartlepool on February 19th; Mr. Roase Butterfield sent him specimens for examination of *Periplaneta australasiæ* and *P. americana* from Keighly in West Yorkshire; and Mr. D. H. H. Corbett sent a specimen of *Blattella germanica*, Linn., which species was swarming in a house in Doncaster.

Gryllodea.—On March 1st a short search was made in a known locality near Rhinefield in the New Forest for *Nemobius sylvestris*, Fabr. Though one nymph at least was found, no imagines could be seen. Later in the year, on April 10th, Mr. G. T. Lyle and myself, in a spot amongst dead leaves near Lady Cross, found a number of young specimens of this cricket, and with them one male much larger than the rest, but still not an imago. It would be interesting to discover for certain how this insect passes the winter in the New Forest.

Locustodea.—On August 16th, within Brick-kiln Inclosure in the New Forest, several examples, both male and female, of *Leptophyes punctatissima*, Bosc., were found on and near bramble-leaves. There were some half-a-dozen in possession of about a square yard or so of brambles. Resting thus on bramble-leaves seems to be a habit of the species. In captivity some of these insects fed well on leaves of mountain ash (*Pyrus aucuparia*, Gærtn.) and rose-leaves from the garden. On the morning of August 22nd one of three put alive in a glass-topped box had disappeared, with the exception of two small portions of legs; so evidently the species may turn cannibal on occasion.

On September 4th a female seemed unwell, but nevertheless ate a good amount of rose-leaf; the next day, however, it was dead. The remaining example, a male, was "killed" in the cyanide-bottle on September 20th and sent to Mr. G. T. Lyle, together with a hymenopteron which appeared to have been bred from it. Mr. Lyle said:—"On its arrival I noticed that its antennæ were moving, and to-day (the 22nd) on opening the box I was surprised to see it jump out; this evening it seems quite well." The hymenopteron was a Braconid of the genus *Aphidius*, probably *A. rosæ*, a particularly common insect. No doubt it was bred from an *Aphis* accidentally introduced with the rose-leaves, on which the grasshopper was fed; the *Aphis*, however, was not noticed. *Phasgonura viridissima*, Linn., a female, was captured by one of the Norfolk Yeomanry in a hayfield near Felixstowe in Suffolk, about September 24th, and was given to me by Mr. G. H. Gurney.

Acridiodea.—*Gomphocerus maculatus*, Thunb., was mature in the New Forest on June 20th, and on the same day there was much chirping of grasshoppers in Wilverley Inclosure. On June 22nd I took a mature *Tetrix bipunctatus*, Linn. Writing on July 29th, Mr. C. W. Bracken said:—"Tetrix subulatus, Linn., seems very uncommon near Plymouth; I could not get one, even at Widemouth, last summer. I can get *T. bipunctatus* in woods near Plymouth at any time." At a spot not far from Holmsley in the New Forest I found *T. subulatus* plentiful on August 20th. *T. bipunctatus* was also present. There were also many nymphs (some quite small) probably belonging to both species. I took most of the specimens of *T. subulatus* by sweeping in marshy spots. The males are very small, and seem to be in general dark and uniformly coloured. The females are larger and more robust, and have more conspicuous markings. There is a well-marked form of the female with a circular whitish patch on the anterior broad part of the pronotum. A specimen of this form was kept alive. I gave it no special food, but perhaps it fed on some damp *Sphagnum* with it in the box. It was very lively when examined on December 22nd, but was dead when I looked at it on January 3rd, 1915. *T. subulatus* and *T. bipunctatus* were again taken by sweeping in this locality on September 7th.

Mecostethus grossus, Linn., was taken several times in the New Forest towards the end of August and at the beginning of September. Many were small, and females were seldom, if ever, seen. One that flew near me had its legs stretched out behind it, like those of a heron on the wing. *Stenobothrus lineatus*, Panz., *Gomphocerus rufus*, Linn., and *G. maculatus* were sent to me by Dr. T. A. Chapman, having been taken at Buckland Hill near Reigate during the first week in October. The first two are amongst our less common grasshoppers.

In the New Forest, from July 31st to September 12th, the following species of Orthoptera were observed.—*Mecostethus grossus*, *Ectobius panzeri*, Steph., *Gomphocerus maculatus*, *Chorthippus parallelus*, Zett., *Pholidoptera griseoaptera*, De Geer, *Metroptera brachyptera*, Linn., *Stauroderus bicolor*, Charp., *Leptophyes punctatissima*, *Forficula auricularia*, *Tetrix bipunctatus*, *Nemobius sylvestris*, *Meconema thalassinum*, De Geer, *Omocestus rufipes*, Zett., *T. subulatus*, *O. viridulus*, Linn., and *Labia minor*.

Kingston-on-Thames: 1915.

NOTES AND OBSERVATIONS.

STIGMONOTA LEGUMINANA IN THE WICKEN DISTRICT.—I was so fortunate as to discover a locality in which this very rare British Tortrix was not uncommon in June last. It frequented hedges of very mixed growth, in which, however, I did not see any leguminous plant, which, from the habits of its near relations, *S. orobana* and *S. dorsana*, one would expect it to feed upon. The imago flew freely in the sunshine in the afternoon from about three until six o'clock. There are very few records of the occurrence of this species in Britain. Barrett says, vol. xi, p. 229: "An exceedingly rare species, of which very little is known here. The original specimen in the late Mr. H. Doubleday's collection was said to have been taken in Devon; more recently a few were taken by London collectors in the Epping Forest division of Essex; these were of small size, and their locality was kept a secret. About the year 1878 Lord Walsingham took several specimens of larger size and more striking appearance near Wicken Fen, Cambridgeshire. I know of no more recent captures of this species in these islands." The late E. G. Meek writes, 'E. M. M.', vol. iii, p. 163: "I captured several specimens of this hitherto undetermined species last June (1866) in Epping Forest." The late John T. Carrington writes, 'Entomologist,' vol. iii, p. 234, in an article on Loughton: "Keeping up this stream brings us to a piece of nice flat marshy ground. This is Debden Slade; on the sloping bank to the south is the headquarters, and I believe the only known locality for *Stigmonota leguminana* generally to be taken as a unit in a day's collecting, though odd lucky catches have been made by those who have carefully studied its habits." These are the only records of the species in Britain that I am aware of, but it would be interesting to know if it is still to be taken in Epping Forest. The majority of specimens I have seen in collections seem to have come from that exceedingly capable field entomologist, the late William Machin. The only reference to the larva that I am aware of is in Hofmann (1908 edition), who states that according to Schmidt it feeds upon alder, and according to Disqué it is found in November under the bark of beech. From certain of its habits that I noticed I suspect that it will prove to be an arboreal feeder. It is to be noted that beech is, or was, an abundant tree in its

Epping Forest locality, though it is not found at Wicken.—W. G. SHELDON, F.E.S.; Youlgrave, South Croydon, October 22nd, 1915.

EUPÆCILIA FLAVICILIANA IN SURREY.—The original locality for this species, which is not known to occur outside Britain, and which is found in only a very few localities in it, was Sanderstead, a mile or two from this house. The larva was discovered some twenty years ago by the late William Warren, who states that he found it feeding in the flowers of the field scabious *Knautia arvensis*, in a hollow in the Sanderstead Downs. I have hunted these downs, every yard of them, over and over again, but could never find the food plant, except for odd examples; but last August I did discover it abundantly in a small hollow several miles away from Sanderstead. The larva of an *Eupæcilia*, which from the plant it affected, could hardly be anything other than this species, the description of the larva of which by Warren it exactly agreed with, was not uncommon here. The locality was a very small one, extending over perhaps half an acre, and from certain circumstances I am inclined to think it might have been the spot where Warren discovered the larva; but it could hardly be called a part of the Sanderstead Downs. I subsequently searched the hills around, but although I found other places where *K. arvensis* was not infrequent the plants did not show any signs of having been affected by larvæ of *E. flaviciliana*.—W. G. SHELDON, F.E.S.; Youlgrave, South Croydon, October 22nd, 1915.

ORGYIA ANTIQUA FEEDING ON HEATHER.—Mr. Frohawk's note ('Entomologist,' vol. xlviii, p. 287) on the food-plants of *Orgyia antiqua* in Scotland, reminds me of a record of my own which he has evidently overlooked. In the 'Entomologists' Record,' vol. xii, 1900, p. 283, I noted the larvæ as being (in Aberdeenshire) "in countless thousands feeding on the ling."—LOUIS B. PROUT; December 8th, 1915.

I AM interested to read Mr. F. W. Frohawk's note in the 'Entomologist,' vol. xlviii, p. 287, about the food-plants of *O. antiqua*. In Cumberland we find this species only on the moors among heather, which the larvæ feed on; occasionally a few will be found on the birch trees; we also find the eggs laid on the heather. The insect is most common at Bolton Fell in the north of the county, but is uncommon at Orton, Kirkbampton, and Thurstonfield in the Carlisle district; it also occurs at Wan Fell, Great Salkeld, and Barron Wood in Mid Cumberland.—GEORGE B. ROUTLEDGE; Tarn Lodge, Headsnook, Carlisle, December 8th, 1915.

MR. F. W. FROHAWK will be interested to hear that colonies of *Orgyia antiqua* have been observed for years feeding on heather on Minera Mountain, North Wales. How these colonies have been established is a puzzle to me, and the theories I have seen from scientists do not, in my opinion, account for them. Another puzzle is the sudden, and total, disappearance of a colony. Light, however, seems to show here in Mr. Frohawk's reference to the "minute ichneumon flies."—J. ARKLE; Chester.

DRYADAULA PACTOLIA, MEYR., IN GLOUCESTER.—On July 14th, 1915, I found a *Tinea* at rest on a curtain in my house, which I mistook for *argentimaculella*, but upon submitting it to Mr. Edward Meyrick, F.R.S., he has identified it as the above. He says *in litt.* it is a "species new to Britain, but is only an accidental importation, doubtless being a New Zealand insect, not found elsewhere, lava unknown, but probably feeding in dry vegetable fibre, such as bark of ferns, etc., and I should be glad to know whether you can account conjecturally for its occurrence." It is just possible that the larva or pupa may have come into my house in the packing round some hyacinth bulbs, or the moth may have flown across this road from a nurseryman's premises opposite.—C. GRANVILLE CLUTTERBUCK, F.E.S.; 23, Heathville Road, Gloucester, December 9th, 1915.

Since writing the above note I have found another specimen of this species in my series of *Tinea argentimaculella*. I took it on July 12th, 1911, whilst collecting *Oinophila v-flavum*, Hw., in the mediæval wine cellars in Blackfriars in this City, by the kind permission of Messrs. Clark Bros., Wine Merchants, who now occupy the cellars of the old Dominicans' or Black Friars' Priory. The summer of 1911 will long be remembered for the great heat experienced in this country, and the day mentioned was one of the hottest. I shall not readily forget the contrast between the broiling sunshine outside and the cool atmosphere of the cellars. The cellarman who assisted me assured me that although he had worked in and about these cellars for twenty-seven years he had never before seen any moths there! I submitted the specimen to Mr. Meyrick, and he confirmed its identity. He says *in litt.*: "Its capture puts the occurrence on a totally different footing, as the insect is apparently established; you will doubtless keep a look out for it in future. Larva would probably feed on any dry vegetable refuse."—C. GRANVILLE CLUTTERBUCK, F.E.S.; 23, Heathville Road, Gloucester, December 16th, 1915.

ACIDALIA ORNATA VAR. IN GLOUCESTERSHIRE.—A curious variety of the male of this usually constant species was taken on our hills by Mr. Alfred Thomas, Taxidermist, of Gloucester, on June 11th, 1911, and very kindly given to me. The usual thick subterminal line is replaced by a fine line without any ochreous blotches. I sent a drawing of it to Mr. L. B. Prout, F.E.S., who says *in litt.*: "I have never seen a form of *ornata* like this, and have no knowledge of such. It would be well worth figuring." An attempt to obtain a good photograph of the specimen has failed owing to its being slightly rubbed.—C. GRANVILLE CLUTTERBUCK, F.E.S.; 23, Heathville Road, Gloucester, December 9th, 1915.

SATURINA PAVONIA (CARPINI), AB.—Amongst a number of male *S. carpini* that I have recently received from a friend in Yorkshire is a variety which I think might possibly be of some interest. The ground colour of all the wings is uniform dark slaty brown approaching to black, the usual orange of the hind wings being absent, with the exception of an orange ring which encircles the eye-like marks, and the border on the hind margin. The zig-zag yellow line present

as a rule on the fore-wings, and extending from the costa, near the apex, to the inner margin, is faintly discernible, but terminates abruptly half way across. The subapical blotch in my specimen is black instead of the usual red.—E. C. HARDING; 45, Courtland Avenue, Ilford, Essex.

[Possibly referable to *ab. infumata*, Newnham.—ED.]

ACRONYCTA ACERIS ON BIRCH IN ABERDEENSHIRE.—On September 4th, 1915, whilst in search of larvæ of *N. dictæoides* and *N. dromedarius*, I was rather surprised to fall in with an almost full-grown larvæ of *A. aceris* (an addition to the Aberdeenshire List of Lepidoptera). I made diligent search for other members, but the weather breaking down, and being some distance from home, had to clear out. A further visit proved more successful, and brought the number up to three, which duly changed to pupæ. It may not be out of place to mention that, on the same ground, the birch and sallows were almost denuded of all foliage by the ravages of *Orgyia antiqua*, the larvæ of which I have never before seen in such considerable numbers, although I have collected around Aberdeen for many years.—G. E. HARTLEY; 12, Union Grove, Aberdeen, N.B.

LYCÆNA ARTAXERXES AND ZYGÆNA FILIPENDULÆ, ETC., IN KINCARDINESHIRE.—Possibly the outstanding feature of season 1915 has been the abundance of *L. artaxerxes* and *Z. filipendula* on the Kincardineshire coast-line—both species literally swarmed on the sea braes in their favourite habitat (Muchalls), accompanied by *Argynnis aglaia* and *Lycæna icarus*, etc., to lend variety. From a long and fine series of *L. artaxerxes* I think the following worthy of note: an *ab. quadripuncta* (female) with the discal spot on the right fore-wing duplicated, an ordinary form (male) with discal spots duplicated, but small, a fine specimen (female) with a dull red spot almost midway between the discal spot and marginal red markings, apart from many interesting underside aberrations.—G. E. HARTLEY; 12, Union Grove, Aberdeen, N.B.

A FEW FURTHER NOTES FROM SOUTH-EAST ESSEX.—*Nephotyryx hostilis*. Larvæ of this species, together with those of *Gracilaria stigmatella*, were not uncommon on aspen at Hadleigh in late August and September. *Gelechia atriplicella* was met with at Great Wakering on August 31st. In beating mugwort at Thorpe Bay on September 2nd, in the hope of getting larvæ of *Tephrochlystis innotata* the only result was the taking of several ♀♀ of *Hemimene simpliciana*. At Benfleet, a small thatch, close to which is a fine poplar, harboured *Phyllocnistis suffusella*. A tap with a stick was sufficient to bring them out in dozens. I had not seen *Epiblema ophthalmicana* for quite a number of years, but on September 25th, when at Thundersley, I netted a moth which had flown across the path and settled on an aspen. When I took it out of the net I found that the net contained another, and three others were afterwards shaken out of the tree to which the first moth had flown. I visited the spot on the following day and took four more examples of this fine Tortrix. Although there are scores of aspens in the district apparently quite as suitable as the two trees growing within a couple

of feet of each other, which provided me with nine moths, I was quite unable to dislodge a single further example; I found larvæ of *Bedellia somnulnella* in a convolvulus leaf at Great Wakering on October 1st, and a visit to Laindon on the 5th yielded plenty of larvæ of *Epiblema trigeminana* and a few larvæ of *Euzanthis ceneana* in root stocks of ragwort. Larvæ of *Laspeyresia roseticolana* occurred near Benfleet in hips. October 14th: Sunny, with *Tortrix prou-bana* dashing about, suggesting *Orgyia antiqua*, although, quite apart from the matter of size, its flight is much less erratic than that of the latter. October 15th: By beating at Eastwood, *Acalla sponsana* and *Epermenia chærophyllella* were put up. October 22nd: Large numbers of grit-studded cases of *Coleophora laripennella* on fences at Southchurch. October 23rd: *Gracilaria elongella* and *Lyonetia clerkella* on fences at Westcliff. *Cerura bifida* is so scarce here that the discovery of a pupa on poplar on October 30th was regarded as quite a satisfactory find with which to wind up the collecting season of 1915.—F. G. WHITTLE; 7, Marine Avenue, Southend-on-Sea, November 17th, 1915.

CUCULLIA VERBASCI.—Larvæ of this species were in abundance in this district last year. I had a number of plants of *Verbascum thapsus* growing in the garden, and these supported numerous larvæ all the summer. Almost every wild specimen of the food plant I noted was covered with the larvæ. Except very rarely *thapsus* is the only species of *Verbascum* found in the district. When full grown these larvæ prefer the unripe seed vessels and stems, making long tunnels in the latter. I also found a few larvæ on *Scrophularia aquatica*.—RONALD D. GOOD; 48, High West Street, Dorchester.

SPHINX CONVOLVULI AT CANTERBURY IN 1915.—Two specimens of *S. convolvuli* were found at rest here on September 29th, one on a paling, the other on the road. A specimen had been seen on September 26th hovering over *Nicotiana affinis*.—W. R. TAYLOR; St. Edmund's School, Canterbury.

ACHERONTIA ATROPOS IN DORSET, 1915.—Towards the end of August, 1915, two full-grown larvæ of *A. atropos* were found on a bush of jessamine in the summer-house here. Considering that the garden is but a very small one, and that the summer-house was in constant use, I think that the occurrence of these larvæ was rather remarkable.—RONALD D. GOOD; 48, High West Street, Dorchester.

SIREX GIGAS IN DORSET.—Two specimens of *S. gigas* were captured here a year or so ago. One was found on the window of the house.—RONALD D. GOOD; 48, High West Street, Dorchester.

OBITUARY.

RAPHAEL MELDOLA.

R. MELDOLA was born in Islington on July 19th, 1849, and was the only son of the late Samuel Meldola, who belonged to an ancient

Sephardic family of Spanish and Portuguese Jews. In all probability he largely derived his interest in entomology from his early friend, Dr. A. G. Butler, the well-known lepidopterist, which may also account for the lepidoptera being his favourite study. It was through the introduction of Butler that the present writer first made his acquaintance in the early seventies, and as we had both recently visited the Nicobar Islands—he during the transit of Venus Expedition—we had much interest in common. In the days of his youth there were few promising careers in life for young entomologists, and it may have been owing to this cause that he did not pursue the study of Insecta with the zeal that he subsequently devoted to other branches of science—chemistry in particular. He would, however, have never joined the ranks of classificatory or faunistic entomologists, with whom he had little affinity, and I well remember him once telling me that in his opinion a great faunistic work, then in course of publication, was only an illustrated catalogue. He early inclined towards the evolutionary study of insects, and was especially attracted by the theory of Mimicry, to which he rendered yeoman service, and in the earlier days of both may have considerably influenced his friend, now Prof. Poulton, the recognised protagonist and authority on that subject. In 1881 Meldola commenced his translation, with notes, of Wiesmann's 'Studies in the Theory of Descent,' which was completed in 1882, and then appeared with a "Prefatory notice" by Charles Darwin. This work was a very considerable strain on his leisure at that time, and I know him to have carried parts of his MS. with him on week-end visits. He acted as one of the Secretaries of our Entomological Society 1876-80, and was President of the same 1895-6. He held the Chair of Chemistry in the Technical College, Finsbury, for a considerable period, and was also President of the Chemical Society 1905-7; twice President of the "Essex Field Club" 1880-83 and 1901-2; President of the Maccabæan Society, 1911, Fellow of the Royal Society, and Member of the Athenæum Club. In the sixty-six years of his life, which terminated in November last, he may well be said to have run the course of a long and varied scientific career.

In long past days, when he resided with his parents in John Street, Bedford Row, one remembers many happy evenings; we recall the memory of his venerable father, of many discussions on subjects other than entomological, and of a certain symposium promoted by the subject of this obituary notice in those rooms in which the late Charles Voysey and the present writer were the only Gentiles present. Of late years we did not meet so frequently, and on the last occasion when we sat together at the banquet of a City Livery Company, he told me that he still collected *Tinæinæ*, especially on his summer vacations in Scotland and elsewhere. In discussing Bergson I remember him quietly remarking, with justifiable racial interest, that "Bergson is one of us."

Raphael Meldola will be much missed in many circles; he was eminently a "man of affairs," and with his keen intellect was especially good at a council meeting. He has also left many personal friends.

W. L. D.

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III

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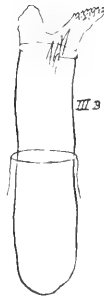
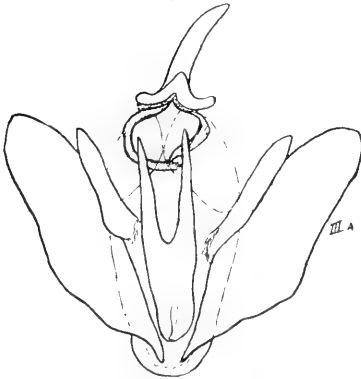
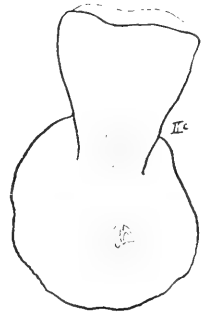
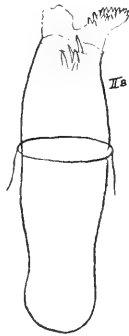
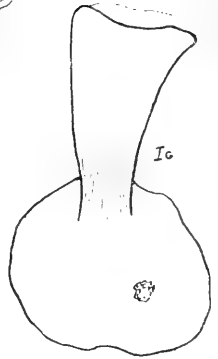
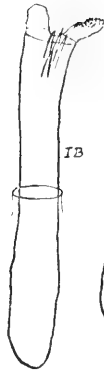
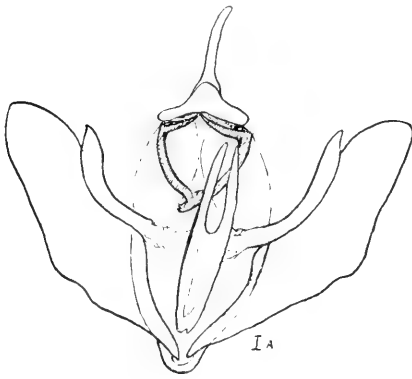
L. W. NEWMAN, F.E.S., BEXLEY, KENT.

PUPÆ: *Agriolus*, 1s. 3d. *Lucina*, 2s. 3d. *Lagustri*, *Ocellatus*, 2s. 9d. *Carpani*, *Vinula*, 1s. 9d. *Versicolor*, 3s. 6d. *Zonaria*, 1s. 4d. *Subulvian* v. *Oxydata*, 1s. 3d. *Prasmana*, *Lanestræ*, 1s. 6d. per doz. Postage extra.

Lang's Butterflies of Europe, 2 vols., 45 ; another, 40 . Stainton's Natural History of *Lucina*, 13 vols., a new 75 . Morris's British Moths, 1 vols., 30 . (Many others.)

LISTS: A. FORD, 33, IRVING ROAD, BOURNEMOUTH.





THE GENUS ENNOMOS.



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THE ENTOMOLOGIST

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THE GENUS *ENNOMOS* (SENS. STR.), WITH AN ACCOUNT OF SOME OF ITS HYBRIDS.

By J. W. H. HARRISON, B.Sc.

THE genus *Ennomos*, as usually understood, contains within its limits two totally distinct genera, differing practically in everything more or less, but bearing a general superficial resemblance in the perfect condition which was strong enough, in the early days of Entomology, to cause the two groups to be assigned to the same genus. With the subgenus *Deuteronomos*, exemplified by the species *D. alniaria* (= *tiliaria*), I do not propose to deal in the present paper. It is the subgenus *Ennomos* (*sens. strict.*) with which I am immediately concerned.

ITS HISTORY AND GEOGRAPHY.

This subgenus contains but three species—two, *E. autumnaria* (Wern.) and *E. quercinaria* (Hufn.), characteristic of the European region, and one, *E. subsignaria* (Hubn.), found in Eastern North America, between Colorado and the coast, but more southern than northern in its tendencies, only keeping its hold on its northern outposts by more or less intense migrations. This recalls the spread of *E. autumnaria* to the British Isles by recent immigration. This latter species has been recorded by Staudinger and others as existing in North America and in Eastern Asia. As regards the North American region, this statement is absolutely incorrect, and is based on superficial similarities in size and colour. I have bred the so-called *autumnaria* from Canada, and found that the insect belonged to the subgenus *Deuteronomos*, as was proved by ova, larvæ, and pupæ, and by the structure of the imago, and, in particular, its specialised genitalia and the lack of spurs on its posterior tibiæ. Very probably the detached Japanese and East Siberian records are of the same insect, as it stretches right across the more Northern parts of the Nearctic area, thus conforming in its distribution with those typical American insects which range into the Eastern limits of the Palearctic region. This North American form was

very properly separated from *autumnaria*, years ago, by Guenée under the name *magnaria*.

We have thus the history of a small group of three insects to unravel, two of which—*E. autumnaria* and *E. quercinaria*—present but little trouble, for one is most certainly derived from the other. Which is the original form and which the derived matters little. What is of importance is the history of the connection between the American *subsignaria* and the European *quercinaria*, which, of the two European forms, seems the most primitive. Where have these two forms come into contact? And when? We are not here dealing with the usual circum-polar or Holarctic distribution of the bulk of insects and plants peculiar to both areas, as we have one species restricted to Eastern America and the other to West-Central Europe. In the case of the majority of Holarctic forms, there is abundant evidence that the passage was from Siberia eastward across the Behring Straits to America and westward to Europe. And to emphasise this, one may point to the closer resemblance of forms found in America west of the Rocky Mountains to Palæarctic species than of those found in Eastern America. Thus we have here a connection that definitely implies that, when the two species originated, either from one another or from a common parent, there existed a land-bridge between North America and Europe. Granting this, there are three possibilities open—either the group is American, and passed thence to Europe, or it is European, and passed to America; or the third course is possible—that it originated in high Arctic latitudes in Miocene or Pliocene times, whence it was driven, subsequent to the fall in the average annual temperature of the Northern Hemisphere during the latter epoch, one stream passing southward in America, and the other passing in a similar direction to Europe. The last hypothesis seems the most likely, and in this case we have before us two forms which have diverged and become genuine species because of long geographical isolation. This would place the origin of the group long anterior to the advent of the Glacial epoch, so that there is no need to utilise the presence of a land-bridge during early Pleistocene times to explain the present case, even were it possible for insects so constitutionally southern in character as the present pair to avail themselves of such a connection. Not that I disbelieve the existence of such a passage; I am of opinion that there was a constant stream of forms along this bridge during the vaunted rigours of the Ice Age, and some of these forms reached our islands, and, with others resulting from previous American immigration, existed there during the whole of Pleistocene times. No other explanation than that of survival will account for the presence of *Pæcilopsis lapponaria* in Scotland, of the North American spider, *Hypselistes florens*, in Cleveland, and of the

plants *Sisyrinchium bermudiana*, *S. californicum*, and *Spiranthes romanzoffiana* in Ireland, not to mention certain fresh-water sponges, crustacea, and other forms.

As a further proof of the antiquity of *E. quercinaria* in Europe, its British distribution can be adduced. Its range is mainly English, as (except for a very dubious Lanark record) it only reaches Yorkshire, but, what is very significant, it reaches Ireland. From this it is clear that it is one of the forms which entered England from the south and succeeded in reaching Ireland by means of the South Wales land connection—a connection that broke long before Ireland became an island, for the iron barrier joining up Scotland and Ireland *via* Islay and Donegal existed for a very much longer period than the other passage, as one can prove, independently of geological considerations, by considering such facts as the presence of the Arctic hare and the absence of the common English species in Ireland. All of these facts prove that, even at that remote period, *E. quercinaria* had a southern distribution in Europe, and this fact in turn thrusts back the origin of the species in our continent to a very remote epoch indeed. No matter what theory we adopt about the origin of the two species, it is certain that the American *subsignaria* is nearer the original stock, as is apparent from its colour, wing-shape, larva, etc., but the change in *quercinaria* is not great, simply displaying itself in minor and less important details.

LIFE HISTORY OF THE TWO FORMS.

The biology of the two species in question is very similar (although perfectly distinct in all their stages). *Subsignaria* lays its eggs in the same semi-imbricated fashion as *quercinaria* on the bark of trees, but they are less barrel-shaped, flatter, and a little browner.

The larvæ, too, bear a general resemblance to each other, but those of the Canadian insect are, on close examination, found to be less specialised, for they are smooth and less rugged, and, whilst they possess some of the characteristic humps of *quercinaria* on the last abdominal segments, those found on the anterior parts of *quercinaria* larvæ are not represented. Further, in colour the larva is a deep black, with a rich brown head, thus contrasting greatly with the clay-coloured *quercinaria* larva.

The pupæ of the two species are very close, as one might expect, and are spun up in leaves in both cases. The pupæ of *subsignaria* are a little deader in tone and more stone-like in colour.

The imago of *E. subsignaria* is a particularly featureless creature, being, with the exception of the yellow-brown discoidal spots (only shown below), of a uniform glistening, snowy white.

Further, the angular prominences and curved excisions, so strikingly evident in *quercinaria*, are merely represented by a very gentle projection of vein four and a consequent tendency to a single excision above. The coloration, etc., of *quercinaria* are too well known to permit of their being described here.

CROSS-PAIRING.

These two species very early attracted my attention as possible subjects for hybridity experiments, and I therefore obtained a small supply of *E. subsignaria* ova from Montreal during the big migration some years ago. From these I reared a fair number of imagines, and thus secured a goodly supply of ova for the following year, and these I reared with *E. quercinaria*. Both insects fed on hawthorn and at equal rates; they thus emerged and were in my cages at the same time. The insects paired just after dusk, and the pairings only lasted for a short time. Two days after emergence ova, which, to judge from their regularity in laying and their non-glossy appearance, seemed to be fertile, appeared in the *subsignaria* ♂ × *quercinaria* ♀ cage. In the case of the reciprocal pairing, small batches of ova laid irregularly were deposited by the *subsignaria* female; this irregularity in hybridity work is a sure sign of infertility, and the opinion, formed then, was justified, for, whilst the ova obtained from the first-mentioned pairing overwintered safely and duly yielded their larvæ, not a single larva resulted from the reciprocal cross. Experiments, repeated hundreds of times, have had the same result; the *subsignaria* ♂ × *quercinaria* ♀ cross is always fertile, whilst the reverse is always sterile. I do not think that the cause is due to any lack of ability of *quercinaria* spermatozoa to fertilise *subsignaria* ova; on the contrary, the cause of the failure is mechanical and depends on the size of that peculiar guiding organ called the *Furca* (vide figs. 1a, 2a, and 3a) developed in the *Ennomids* and their allies for introducing the penis through the *ostium* into the *Ductus bursæ*. The organ in *subsignaria* (fig. 2a) is broad and stout, and is able to open the *Ductus* to allow of the correct placing of the spermatozoa in the *Bursa copulatrix*. On the contrary, the *Furca* in *quercinaria* (fig. 1a) is long and narrow, and is unable, owing to its length and narrowness, to displace the thick chitinous *Ductus bursæ* sufficiently well to allow of the act of fertilisation.

Little need be said of the hybrid larvæ; they were practically the mean of those of the parents, except that they leaned in the colour, both of head and body and possibly in the general structure of the warts and tubercles, to the male parent *subsignaria*, a result to be expected if, as I argued, that species is phylogenetically the older form. The pupæ were quite normal and very like those of *subsignaria*, and yielded the imagines about the usual time of the parents; if anything,

the insects showed a slight tendency to anticipate the emergence of the parent forms.

DESCRIPTION OF PRIMARY HYBRID.

Ennomos hybrid winni = *E. subsignaria* ♂ × *E. quercinaria* ♀.

Wing expanse, 43–50 mm.

(a) *The Male*.—The face is provided with a cone of projecting scales, whitish at the base and becoming yellowish toward the apex, just as in *quercinaria*, although the influence of *subsignaria* is seen in the neatness and smoothness of the bristly scales. The antennæ are practically as long as and as stout as those of *quercinaria*, a rather curious feature, as those of *subsignaria* are rather short for a species belonging to this group.

The ground colour of the wings is a dirty white, more or less freckled with fuscous scales. It becomes more definitely ochreous toward the termen, this being due to the presence of similar suffusions in *quercinaria*, which become more orange outward.

Both the first and second line of *quercinaria* are present, and practically to the same degree of intensity. When the female of *quercinaria* used has belonged to the form known as var. *equestraria* (F.), then the banded state of the wings peculiar to that form is transferred to the hybrid.

Below, except for the paleness of the ground colour and an exaggerated discoidal point, the wings bear, in a somewhat diluted form, the usual suffusions of *quercinaria*. In shape the wings, to a very great extent, follow *quercinaria*, and exhibit to a somewhat less degree the notches and excisions of that form.

The thorax and abdomen, save for an ochreous suffusion at the bases of the wings, are almost as white as in pure *subsignaria*.

The male genitalia likewise show the great influence of this parent, although perhaps the valves show more *quercinaria* characters than any other part of the genitalia—*i. e.* instead of an outline smooth and somewhat rounded, we have one rugged and thumb-like, and in place of a thin band of somewhat attenuated spines on the “ball” of the “thumb,” we have a dense band of stoutish spines.

The *penis* (*i. e.* the whole organ, *Ædœagus*, *anellus*, etc.) is broad and short, as in *subsignaria*, and the crescent of small spines at the orifice is more decided than in *quercinaria*, to which species, however, there is a closer resemblance in the *cornuti* on the *vesica*. The influence of *subsignaria*, too, is very evident when one examines the *furca*. The arms of this structure diverge just as in that form; but naturally the tendency, inherited in part from *quercinaria*, for the arms to converge and for the whole organ to be narrow and long, is not without its effect, as one can judge from fig. 3a.

(To be continued.)

A NEW SPECIES OF PONERINE ANT CAPTURED BY AN ASILUS.

BY W. C. CRAWLEY, B.A.

IN an interesting and extensive collection of African Asilids and their prey, made by Mr. S. A. Neave in Nyasaland in 1913 and 1914, is a number of ants. As might be expected, the majority of these are males and females, probably captured by the fly during their marriage flight, but there are also a few worker forms, all of tree-climbing species, notably *Polyrhachis* and *Camponotus*.

Many of the males that are unaccompanied by workers are almost impossible to identify, and some of the females are also difficult for the same reason; consequently I have thought it



Upper wing of ♀ of *Promyopias asili*.

better to publish first the description of the most interesting specimen, as it belongs to a rare and little-known genus.

Promyopias asili sp. nov.

♀. L. 7.1 mm. Mandibles linear, as long as the head, with 3 teeth at the apex, the apical tooth blunt, the intermediate very small and acute, and the inner one acute, larger than the intermediate, but smaller than the apical; strongly curved from the inner tooth for more than half their length, where they form a blunt tooth, and from this point to the base they are considerably thickened. The clypeus forms a narrow border along the mouth, is raised in the middle, and slightly produced in an angle between the frontal carinae. The latter are short, hardly, if at all, overhanging the clypeus. Head without the mandibles rectangular, slightly broader than long, the occipital margin almost straight, with rounded angles. The frontal groove reaches the anterior ocellus. Eyes placed in the fore part of the sides of head, occupying the second quarter. The scapes do not quite reach the occipital margin, just passing the posterior fifth. The first joint of the funiculus only slightly longer than the second, and joints 3-9 are as broad or broader than long; the last 5 gradually thicken to the apex, the apical equalling the two preceding joints taken together. Thorax narrower than the head, with unbroken dorsal

profile, very slightly curved, the pronotum feebly bordered. The basal surface of the epinotum is slightly broader than long, the declivous surface as long as the basal, the angle joining them slightly larger than a right angle. Node of petiole viewed from above broader than long, wider and convex in front, concave behind; viewed in profile, straight in front and convex behind; underneath with a small tooth. Gaster slightly broader than the head, hardly constricted after the post-petiole.

Mandibles smooth and shining, with a few scattered punctures. Clypeus in centre with a small shining space, bordered by a few striæ. Head longitudinally rugose, with a few punctures on the occiput. Antennal scapes finely punctured. Pronotum with a central longitudinal strip smooth and shining, the rest and the mesonotum finely punctured. Epinotum, pedicel and gaster smooth and shining. Sides of thorax finely striate. Anterior femora and tibiæ finely punctured.

The whole body covered with a golden pubescence; a double row of long stiff hairs on the inner margin of mandibles, along the curve from the apex to the tooth beyond the halfway line; several long stiff hairs on the clypeus, and a few scattered hairs on the epinotum, node, and gaster, and rings of stiff hairs on the apical segments of the latter. Dorsal surface of middle tarsi with a row of stiff hairs.

Chestnut; head and antennæ slightly darker. Wings iridescent; neuration as in figure.

The genus *Myopias* Roger contains two species, from Ceylon and New Guinea. In 1914 Santschi described a ♂ from French Guinea, placing it in a new subgenus *Promyopias*. I thought at first that *P. asili* might be the ♀ of Santschi's *silvestrii*, but the shape of the epinotum and especially of the node, together with a few other differences, induced me to consider it a different species.

Both these species would appear to be hypogæic.

The other ants in the Asilid collection comprise the following genera: *Centromyrmex* (1 ♀); *Euponera* (*Mesoponera*) (♀ ♀); *Paltothyreus* (1 ♀); *Sima* (2 ♀ ♀); *Carebara* (♂ ♂); *Myrmecaria* (♀ ♀ and ♂ ♂); *Cataulacus* (1 ♀); *Crematogaster* (1 ♀); *Monomorium* (*Mitara*) (2 ♀ ♀); *Ecophylla* (♀ ♀); *Plagiolepis* (♂ ♂ and ♀ ♀); *Camponotus* (♂ ♂ and ♀ ♀); *Polyrhachis* (♂ ♂, ♀ ♀ and ♂ ♂); and a number of male *Ponerinæ*.

Note.—Since the above was in the press, I have received Prof. Emery's opinion, viz. that *Promyopias* is more nearly allied to *Pseudoponera* than to *Myopias*, and therefore cannot be a subgenus of *Myopias* as Santschi had thought. I have followed Emery in considering it a separate genus.

29, Holland Park Road, W.

GARDEN NOTES.

BY CLAUDE MORLEY, F.Z.S.

(Continued from *Entom.* xlviii, p. 191.)

11. *A Viscid Gall*.—Several specimens of the cosmopolitan Ichneumonid, *Bassus lætatorius*, were investigating a half-grown gall of *Rhodites rosæ* upon a young bush of *Rosa canina* at 6 p.m. on August 8th, and drew my attention to another insect lying motionless upon the red spicules. This was a dead beetle, *Cryptocephalus pusillus*, Fab., and subsequent examination showed that, in some way which I do not understand, what appears to be its larva-skin had become attached to one (only) branch of the gall in such a manner that the beetle was unable to entirely throw it off. The attachment certainly seems to have been effected by some viscid excretion of the gall: hardly to be included in Darwin's 'Insectivorous Plants'! The beetle was upon the top of the gall, and this exposed situation rendered it a conspicuous object to marauders, for the antennæ with one eye and parts of the legs are missing, and were, perhaps, assimilated by some of the above *Bassus*, though none were observed close to it.

12. *Batophila ærata*, Marsh.—The shortage of sugar has caused the almost total abandonment of the blackberries by cottagers around here during the past autumn, but has had no appreciable effect upon the consumption of the plant by other individuals, more appreciative. Here one hardly ever sees a lepidopterous larva upon *Rubus fruticosus*, though *Thyatira derasa* occurs sparingly in the perfect state. Quite different is the case with Coleoptera, for that pretty little Halticid, *Batophila ærata*, may usually be seen exploring the leaves in sparse numbers; but on October 20th last every leaf had fully half-a-dozen tenants. I was strolling through a plantation and kept on hearing a slight rustling noise, like fine and gentle rain, for which I could not account; but upon tracing it to the surrounding brambles, its cause became evident, for here the tiny beetles could be seen skipping away in such numbers as to render their "kick off" perfectly audible. I have been in the habit of regarding this as a somewhat local species, but the same afternoon it was almost equally abundant in other parts of the parish.

13. *Blackberry Tumours*.—I have no idea of the British frequency of the spindle-shaped, strumous excrescences, more usually expansions, upon the stems of *Rubus* (*R. fruticosus* and *R. idæus* are also recorded, but all mine were, I believe, upon *R. cæsius*, the dewberry), and I should like readers' experiences upon the subject. They would appear to be overlooked or scarce, though "local with wide a range," for Marshall knew one

specimen only, Bignell told me shortly before his decease that he possessed but a single example, and I have received it from no correspondent. Nor have I noticed them anywhere but in this district, upon the Boulder Clay. Here it is by no means rare, though the imagines are difficult to rear if collected in the autumn, since the temperature and humidity must be very approximately normal; a gall gathered on October 7th yielded but a single imago on the 9th of the following May, and this lived till the 15th. But if left till the spring the imagines and their parasites emerge freely; three or four galls brought in from a garden hut on April 22nd produced fifteen of their makers, *Diastrophus rubi*, Bouché, on the 17th of the following month, when they crawled sluggishly about, making no attempt at flight and feigning death upon the slightest provocation, though several died by the 20th. On 22nd a female *Eurytoma appendigaster*, Swed., emerged and flew about in a lively manner; a second had appeared by the 23rd, and two more by the 24th, with a further half-dozen on the 27th. Two cupreous *Torymi* (which I suppose to be Schrank's *T. rubi*; they are not *T. macropterus*, Walk.) also appeared upon the last date, and six more—apparently co-specific, though bright green—were subsequently bred, along with a further *Eurytomus*. At Genera Ins. 1902, Bouché (Naturg. 1834, p. 163) is quoted as author—*olim*, Htg.—and the range of *D. rubi* extended to nearly all Europe.

14. *Flies eat Spiders*.—Thirty years ago it would have caused surprise to learn that flies eat spiders; and the popular mind is still sceptical, when shown such in the cabinet. About that time, however, Fitch published in this magazine a collection of facts upon the subject which finally settled the question, and we nowadays have ample material of a like sort; but familiarity has not bred contempt. One instance is of particular interest as confirming a somewhat vague statement made so long ago as 1874 (Ent. Annual, p. 124). In May I noticed a spider's nest close to the front door and boxed it, because interwoven upon its strands were six ichneumonidous cocoons, and all the spider's eggs were disappeared. From these six subsequently emerged four female and one male *Hemiteles fulvipes*, a species most often raised from cocoon-clusters of the braconidous genus *Apanteles*. With specimens so derived I have carefully compared the present specimens and find them identical in every detail, in spite of so different a diet. Moral: Do not extirpate spiders!

15. *An Egg-Sac*.—For the last twenty years (ever since I first noticed such a "common object of the country" in Ipswich in 1894) I have been eager to discover the maker of an ochreous and finely woolly, circular or subpyriform envelope of 3 mm. attached to some firm fulcrum—usually the stout wood of an outhouse or paling—by a slender hair-like foot-stalk fully half

an inch long. My speculations had ranged from the pedunculated eggs of *Chrysopæ* to the pedicelled cocoons of *Apanteles formosus*, figured in this magazine (I think; at least it is so in Marshall's Brit. Braconidæ). I have kept a great many of these objects, but invariably failed to obtain aught from them till the present year, in the spring of which I brought in another. Through its thin shell four eggs were distinctly visible on May 27th; spiders' legs became apparent within these eggs on July 1st; and between 10th and 17th of that month I had the satisfaction of breeding thence four spotted-legged young spiders. Mr. Hirst informs me that the spider is *Ero thoracica*, Wid. There are similar sacs, from Wimbledon, in the British Museum.

(To be continued.)

NEW SPECIES OF GEOMETRIDÆ FROM FORMOSA.

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

(Continued from 1915, p. 283.)

Triphosa rantaizanensis, sp. n.

♂. Head, thorax, and abdomen pale brown mixed with darker; anal tuft of abdomen pale. Fore wings pale brown, powdered with darker brown and marked on the costa with blackish-brown; sub-basal line blackish-brown, double, wavy; antemedial base blackish-brown; only distinct on the costa, median nervule, and dorsum; discoidal spot black; postmedial band blackish-brown, inner edge wavy, outer edge highly sinuous, contracted between veins 4-5, and narrowed before dorsum; the costal portion of postmedial band outwardly bordered by a slender pale brown line, and traversed near outer edge by a pale brown wavy line; veins on terminal area marked with black and pale brown; a blackish-brown square spot on costa before apex; terminal line blackish, crenulate; fringes dark brown, paler at bases and tips. Hind wings pale brown powdered with darker; veins dark, dotted with pale brown; terminal line blackish, crenulate, indistinct; fringes dark brown, inclining to reddish in certain lights, paler at base and tips. Under side pale fuscous brown; all the wings have a black discoidal dot, and the veins on terminal area are dotted with pale brown; the postmedial band of fore wings faintly reproduced, but the edges more even in contour; the hind wings have two dusky wavy lines beyond the middle.

Expanse, 42 millim.

Collection number, 182

A male specimen from Rantaizan, May 10th, 1909 (7500 ft.). In the British Museum there is a specimen, also from Rantaizan (Wileman).

Collix griseipalpis, sp. n.

♂. Palpi grey brown, third joint darker tipped with white; head and thorax light brown, collar and patagia paler edged;

abdomen light brown, paler beneath. Fore wings light brown, shaded with darker brown between the transverse lines; subbasal line black, sinuous; antemedial line black, incurved before the conspicuous black discoidal mark, oblique and interrupted below the cell; postmedial line darker brown, black marked on the veins, angled below costa, curved round end of cell, thence oblique to dorsum; subterminal line formed of white dots, almost parallel with termen; terminal line black, dotted with white at ends of the veins; fringes dark brown. Hind wings light brown shaded with darker between the transverse lines, venation dotted with pale brown on the darker shading; antemedial line black, sinuous; postmedial line darker brown, marked with black on the veins; subterminal line composed of white dots between the veins; terminal line black, crenulate, dotted with white at ends of the veins, fringes dark brown. Under side of fore wings whitish, fuscous on margins; discoidal spot black, of large size, followed by a transverse series of seven black spots, of which 1-3 and 5-6 are confluent; subterminal band dusky, interrupted by the veins, especially 3 and 4: hind wings whitish, markings similar to those on the fore wings.

♀. Similar, but rather paler in colour, and the black transverse markings are indistinct.

Expanse, 38 millim. ♂; 33 millim. ♀.

Collection number, 815.

An example of each sex from Kanshirei, May, 1906.

Allied to *C. rufivalpis*, Hampson.

Trichopterigia rubripuncta, sp. n.

♀. Head and thorax greyish white, tinged with olive, the thorax marked with crimson; abdomen whitish with dark grey, except on the apical segments, which have four blackish spots on them. Fore wings whitish sprinkled and striated with olive, costa and veins minutely dotted with black; subbasal line black, excurved, indented above dorsum; antemedial line olive, spotted with crimson above dorsum and the median nervure; postmedial line crimson, wavy and irregular, not reaching the costa, inwardly edged by patches of scattered crimson scales above and below end of cell; subterminal line olive, wavy, outwardly bordered by crimson spots at costa, end of cell, and dorsum; terminal line represented by black dots—one on either side of each vein; fringes greyish, white towards tips. Hind wings silky white, terminal line blackish, minutely dotted with black. Under side white; fore wings freckled with fuscous, subbasal and subterminal lines indicated in fuscous.

Expanse, 36 millim.

Collection number, 1891.

A female specimen from Arizan, August, 1908.

Allied to *T. costipunctaria*, Leech.

Venusia lineata, sp. n.

♂. Head whitish grey, face pale brown, antennæ bipectinated; thorax whitish grey, brownish tinged above; abdomen whitish grey, tinged with brownish on middle of each segment. Fore wings

whitish with several brownish wavy transverse lines; subbasal and medial lines dotted with darker, the medial bluntly angled below costa; postmedial line only distinct towards the costa where it is black, and the space between it and the brown line beyond is tinged with brown; discoidal mark black, linear, outwardly oblique. Hind wings whitish. Under side whitish, showing the stronger markings of the upper side.

Expanse, 33 millim.

Collection number, 1699.

A male specimen from Rantaizan, May, 1909.

Calletera basipuncta, sp. n.

♂. Head and thorax whitish brown; abdomen paler. Fore wings whitish sprinkled, and on basal and terminal areas clouded with fuscous brown, costa pale brown; a black dot at base and one below it on the dorsum; antemedial line brownish, indistinct, angled and dotted with blackish near costa; medial line brown, nearly straight; postmedial line brown, interrupted, almost parallel with medial, black on dorsum, followed by two black dots; subterminal line pale, wavy; terminal line black, slender, with black dots on it. Hind wings whitish sprinkled and clouded with fuscous brown; antemedial and postmedial lines brown, almost parallel; terminal dots black. Under side whitish: fore wings freckled with brown, discoidal spot and two transverse lines brown, the first line bent about middle, the second line straight, preceded by brown dots on the veins and shaded with brown towards dorsum: hind wings have two brown transverse lines, the first indented above middle; the second line undulated, preceded by an interrupted line, and outwardly shaded with brown; terminal area brown.

Expanse, 28 millim.

Collection number, 1634.

Two male specimens from Kanshirei, May, 1908.

In the cotype the postmedial of fore wings is not black or followed by black dots on dorsum; the transverse lines on hind wings are obscured by fuscous shading. On the under side the postmedial line on all wings is black and outwardly shaded with black brown; this shading on hind wings extends almost to termen, inclosing five spots of the ground colour.

This species comes near *C. subexpressa*, Walk.

Hydrelia (?) *apicata*, sp. n.

♂. Head and thorax black brown, face browner; abdomen paler brown. Fore wings pale ochreous brown, finely sprinkled with darker; basal patch purplish brown, outer edge straight; postmedial line purplish brown, double, outwardly angled about middle, inwardly shaded with purplish brown; an oblique dark purplish brown line from costa one-fourth from apex to termen above middle, the line bifurcate on costa; terminal line purplish brown, inwardly angled before tornus. Hind wings pale ochreous brown, sprinkled with darker, discoidal dot black; termen narrowly edged with purplish brown, enclosing spots of ground colour. Fringes pale ochreous

brown mixed with darker brown. Under side ochreous brown with traces of the upper side markings.

Expanse, 25 millim.

Collection number, 646.

A male specimen from Kanshirei, August 20th, 1905.

Somewhat resembles *H. angularia*, Leech, but smaller.

Gelasma rantaizanensis, sp. n.

♀. All wings whitish with greenish suffusion, especially on the medial area up to the postmedial line; costa and termen ochreous; postmedial line white, serrated, almost straight and parallel with the termen; discoidal mark dusky, linear; fringes greenish white.

Expanse, 32 millim.

Collection number, 847 c.

A female specimen from Rantaizan, May 7th, 1909.

Allied to *G. glaucaria*, Walk., from which it differs in being paler in general colour; the antemedial line of fore wings is indistinct, and the postmedial line is straighter and nearer the termen; the termen itself is paler. On the hind wings the postmedial line is also nearer the termen, and is rather more sharply serrated.

Geometra argentilineata, sp. n.

♀. Head white, face and palpi ochreous, collar greenish brown; thorax and abdomen greenish. Fore wings green, costa narrowly ochreous; antemedial line silvery white, dentate teeth set inwards; postmedial line silvery white, crenulate; discoidal bar dusky; space between the transverse lines rather darker. Hind wings green, discoidal bar dusky, enclosing a silvery white streak; antemedial line silvery white, dentate teeth set inwards; postmedial line silvery white, crenulate, following contour of the termen. Fringes of all the wings greyish, preceded by silvery white points at ends of the veins. Under side whitish, faintly tinged with green, transverse lines traceable.

Expanse, 30 millim.

Collection number, 1620.

A female specimen from Arizan, August 16th, 1908.

Near *G. argutaria*, Walk.

I have a male specimen from Kanshirei, taken in August, 1908, which may be referable to *G. argentilineata*, but it is in such poor condition that its identity must remain doubtful.

NOTES AND OBSERVATIONS.

BANKIA ARGENTULA IN WICKEN FEN.—In reference to Mr. W. G. Sheldon's concluding paragraph on "Wicken Fen" (*antea*, p. 4), I may state that I had taken *B. argentula* in Wicken Fen before it had been turned up at Chippenham Fen. So that it was not into a "new

locality" that it was introduced by the late Solomon Bailey.—A. B. FARN; Doward Cottage, Ganarew, Monmouth, January 1st, 1916.

BANKIA ARGENTULA IN WICKEN FEN.—In the article in the January number of this magazine on Wicken Fen the writer states that this moth was introduced into a "new" locality—*i.e.* Wicken Fen—by the late Mr. Bailey. I think *re-introduced* would be more correct. Bailey brought his specimens from Chippenham Fen, where it was discovered by the late Messrs. Warren and Cross in the summer of 1882. Now Mr. Farn records the capture, amongst other desirable species, of two specimens in Wicken Fen in 1877 ('Entomologist,' x, p. 211); this would be five years before its discovery at Chippenham. I was collecting in the fen at the time Mr. Farn took his two specimens. In 1879 I took a single specimen there, but unfortunately spoiled it in boxing it from the net. I think this insect was really a native of Wicken Fen, but, until Bailey replenished the stock, a very scarce insect indeed there.—A. THURNALL; Wanstead.

CURIOUS HABIT OF EUDAMUS RETRACTA.—I have frequently noticed this insect (and, I believe, also the commoner allied *E. proteus*) sucking bird droppings and splashes; but it was only yesterday that I observed one (which I watched closely) repeatedly curve round the extremity of the abdomen and eject a large bead of moisture on the dropping and apply its proboscis to the part so moistened. I called a young friend to witness the proceeding, which continued for some time. *E. retracta* has short curved tails, which remind one of a *Thecla*. Though a common insect, the larva is seldom found and is difficult to rear owing to the leaves of its food-plants, *Desmodium incanum tortuosum* and *triflorum*, so quickly withering. This year, for the first time, I have succeeded in rearing it from the egg and describing it. The food-plants are commonly known as "sweet-hearts," owing to the flat heart-shaped seeds sticking to the clothes of the passer-by. I should like to learn whether the habit I have recorded is well known, and, if so, whether it has been observed in other species. The object of the ejection was apparently to render the substance, which probably was somewhat dry, sufficiently liquid to be imbibed.—F. J. BRIGGS; Quintyne's, St. John's, Barbados, November 23rd, 1915.;

MEANS OF EXPANSION OF WINGS OF LEPIDOPTERA.—I should be glad to learn what part is played by the proboscis in expanding the wings of a newly emerged insect. In watching the development of wings of the beautiful *Pholus fasciatus* five years ago and yesterday of two female *Hypolimnas misippus* I noticed the repeated partial uncoiling and recoiling of the proboscis. In the case of *P. fasciatus* I noticed what appeared like the heaving of respiration on each side near the base of the abdomen. In the case of one specimen development did not commence for some ten minutes, but as soon as that began "respiration" began also. I observed two or three beads of moisture near the base of the proboscis. Some friends witnessed with me the case of *H. misippus* and were much struck by the rapid development (about three or four minutes); and one of them remarked on the great diminution in the size of the body (abdomen) which, on first

emergence, resembled an unwieldy bag, and I wondered whether the proboscis had been used in pumping fluid thence through the wing nervures. These inquiries may betray great ignorance of recent writing on the subject, yet I hope indulgence will be extended to one desirous not only to be enlightened but to enlighten others.—F. J. BRIGGS; St. John's, Barbados.

SPHINX CONVULVULI IN LINCOLNSHIRE.—A specimen was taken in the first week in August last at Sutton-on-Sea by Master P. D. Farrell. Although fairly perfect it had evidently been on the wing for some time.—G. HANSON-SALE.

TOBACCO SMOKE, AN ATTRACTION TO APATURIDS.—In a recent letter from Mr. C. Morris, of Le Cannet, Alpes Maritimes, the writer mentions the fascination exercised by the fumes of strong cigarettes—"caporals," I assume—upon the Apaturidæ. "They fly, and settle all over one, if one stands still and smokes; the ladies of the genus do not seem to have taken to the vice at present! Otherwise, I take all at horse droppings; yet in all the years I have been collecting I have only seen but one single example of *Limenitis populi* thereon, a female, at about five o'clock of a July afternoon." This affection for tobacco smoke is certainly a novel experience to me, but those of us who have had the good fortune to work the great Apaturid woods at Éclépens* in north-west Switzerland, or the even more prolific Röhrwald† at Spillern, near Vienna, will remember the assemblages of male *Apatura iris* and *A. ilia* on the paths and in the rides, where I have seen them again and again return to the same bait, quite regardless of nets and pursuing humanity. I do not recall, however, a female of either species of the crowd, though they will come down from the trees late in the day to moisture. Some of the Satyrids evince similar tastes, in particular *S. alcyone*, while *Hipparchia semele* and *S. circe* love to settle on grey flannels, and even on the hand, in common with *Erebia athiops* and *E. neoridas*, drawn, I think, by the human flavour! Smoke, on the contrary, seems to repel most butterflies just as it certainly obtains for the entomologist a respite from the attack of mosquitoes and biting flies. In Lapland, all the same, I found the strongest tobacco impotent against the enemy. Only by lighting birch-bark fires and sitting in the reek was it possible to ward off the myriad hordes which haunt the forests and arctic moorlands.—H. ROWLAND-BROWN; Harrow Weald, January 12th, 1916.

STIGMONOTA LEGUMINANA.—I was very pleased to see (*antea*, p. 19) that this rarity had turned up again. Since the days of Machin and Meek very few specimens seem to have been captured. The "several" specimens recorded by Meek in 'Ent. Mo. Mag.,' vol. iii, were really rather a large number I believe. Machin also took a good many at various times, more than once a dozen in an afternoon, and always by beating a mixed growth of beech and hornbeam. All the above were taken at Loughton. As years rolled on it seemed to get more

* 'Entom.,' vol. xl, pp. 242-243.

† 'Entom.,' vol. xxxi, p. 283; vol. xlvi, p. 150.

and more uncommon until it appeared to die out in its Loughton locality. Probably few, if any, collectors have spent so much time in searching for this moth as the writer. I beat out a single specimen from hornbeam on June 28th, 1885, another June 8th, 1886, and two more June 21st, 1890, one of them very worn. For twenty successive years I looked in vain for it. When living at Croydon (1901-9) I came across here every June to search for but always returned without *leguminana*! I feel pretty sure that it is a tree feeder. The only likely leguminous plant growing in its Loughton locality is *Lathyrus macrorrhizus*, and that in very small quantity. I gathered all the seed pods I could find, but never found a trace of any larva therein. The late Mr. W. Warren, with whom I was in constant correspondence at that period, suggested the fruit of the hornbeam; so a large quantity was gathered, and one *Chimabacche fagella* came out next season. This little moth has been burdened with four names: *interruptana*, Wilk., *deflexana*, H-S., *leguminana*, Zell., and *lathyrana*, Hub.; the last should be really used, being the oldest. The last two names are very suggestive of a pod feeder, but as no one seems to have bred it therefrom, I suspect that the authors, seeing a superficial resemblance to *dorsana* and *orobana*, jumped to the conclusion that it was also a pod feeder! I am strongly of opinion that it is not so nearly related to the above-named as entomologists imagine. Perhaps Mr. Pierce may have an opportunity of examining the ♂ genitalia one of these days.—A. THURNALL; Wanstead, January 7th, 1916.

PHALONIA FLAVICILIANA.—Another good, and, I may add, very beautiful little tortrix. It is much more than "twenty years ago" since the late Mr. Warren first found it "in a valley in the downs near Sanderstead." He first took the moth in July, 1886, and the next year, after having watched a worn ♀ depositing her eggs in the *Knautia* heads in July ('Ent. Mo. Mag.', vol. xxiv, p. 88) found the larvæ freely the next month. Some of these larvæ he very kindly sent to me, together with a few of the almost equally beautiful *Lithocolletis scabiosella*, which came out end of September. Others went, through me, to Machin. I was not very successful with mine, only breeding ten specimens in 1888; these came straggling out between July 19th and August 16th. Machin did better, breeding seventeen. When living in the district I had many a hunt for both larva and imago, but never with any success. I found a fine bed of the food plant in a valley beyond Sanderstead (in Coulsden parish), but not a trace of the insect could I find in either stage. I think it is more widely distributed in the south and south-east than is imagined, occurring in several counties, but is always apparently very local and confined to the chalk or nearly so.—A. THURNALL; Wanstead.

PLUSIA MONETA, ETC., IN NORFOLK.—In 1912 this moth was recorded at Downham Market, twelve miles south of this town. In June last a number of cocoons were found in a garden here spun up in leaves of monkshood, from which most of the moths duly emerged; one or two moths were also captured on the wing. *Cyaniris argiolus*, occasionally seen here, was numerous in the spring; the

second brood, however, was scarcely noticeable.—A. HITCHCOCK; Leyton House, Gaywood Road, King's Lynn.

WINTER EMERGENCE OF *XANTHORHOË MONTANATA*.—Last June I obtained a batch of ova of *Xanthorhoë montanata* which hatched out in due course. The larvæ are now from a half to two-thirds grown. One, however, pupated in November and emerged to-day, December 17th. I find, on looking at the larvæ, that one other has also pupated.—REV. J. E. TARBAT; Fareham, Hants.

UNRECORDED FOOD-PLANTS OF THE LARVA OF *ORGYIA ANTIQUA*.—With reference to Mr. F. W. Frohawk's interesting note in 'Entom.,' vol. xlviii, p. 287, the Derbyshire Entomological Society had a field-day on July 31st last on the Moors near Darley Dale. Most of the afternoon was devoted to larvæ hunting. *Saturnia carpinii*, *Orgyia antiqua*, *Acronycta menyanthidis*, *Anarta myrtilli*, *Lygris testata*, *Eupithecia nanata*, *Ematurga atomaria* were taken, but by far the commonest larva feeding on the heather was *O. antiqua*. Several members were much surprised at the occurrence. Stirling N.B. and Darley Dale are widely separated.—G. HANSON SALE; Coxbench, Derby.

ORGYIA ANTIQUA LARVÆ EATING HEATH AND SEDGE OR RUSH.—Referring to Mr. F. W. Frohawk's record in 'Entomologist,' vol. xlviii, p. 287, of larvæ of the Vapourer moth found on rushes and heather in Stirlingshire, it may interest some of your readers to know that in June last I found a brood in Northumberland on a patch of the common heath (*Erica cinerea*). They had already consumed a considerable portion of the heath, and a few of them had strayed to, and were eating, the leaves of a sedge or rush growing up through it. I had made a note of the circumstance at the time, but unfortunately did not particularly identify the species of rush or sedge. From memory, I should say it was probably *Luzula campestris*, but several kinds of *Carices* are common in the locality, and it might equally well have been a sedge.—GEORGE BOLAM; Alston, December 15th, 1915.

ABNORMAL PAIRING OF *EPINEPHELE TITHONUS* AND *PARARGE MEGÆRA*.—In view of the notes on abnormal pairings which have recently appeared in the 'Entomologist,' vol. xlviii, pp. 244 and 264, the following may be of interest: During August, 1914, at Wootton, in the New Forest, I captured a male *Epinephele* (*Hipparchia*) *tithonus* paired with a female *Pararge megæra*. Both insects were in fairly good condition, and the female *megæra* was kept alive. A few days after, however, it died, and no ova were obtained. A hybrid *E. (H.) tithonus* × *P. megæra* would surely be of unusual occurrence.—A. S. CORBET; Bournemouth.

AUSTRALIAN HYMENOPTERA.—In vol. iii of 'Memoirs of the Queensland Museum' are published six supplementary papers on "Chalcidoidea" by Mr. A. A. Girault. The same author in vol. iv of the 'Memoirs' treats of the families Encyrtidæ, Miscogasteridæ, Cleonymidæ, Eucharidæ, Eurytomidæ, Callimomidæ, Agaonidæ, and Chalcididæ (1915).

THE CHIRONOMIDÆ, OR MIDGES OF ILLINOIS.—Dr. John R. Malloch deals with this subject in Article VI of the 'Bulletin of the Illinois State Laboratory of Natural History,' vol. x, pp. 275-539, Plates XVII-XL (1915).

ERRATA.—Page 1 line 1, for vol. lxvii read xlvii. Page 19 line 17 from bottom, for vol. iii read vol. xii.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 25th, 1915.—Mr. A. E. Gibbs, F.L.S., Vice-President, in the chair.—The Annual Exhibition of Varieties. Mr. Tonge exhibited aberrations of *Pyrameis atalanta*, orange on hind-wings; *Polyommatus icarus*, blueness of females and underside spotting; *Agriades thetis*, blue females, *A. coridon*, blue females and a leaden coloured male; and confluent *Anthrocera filipendulæ*.—Mr. Leeds, a long series of aberrations, of *A. coridon*, ♂ wide border, ♂ near ab. *fowleri*, ♂ completely ringed spots on hind-wings, var. *semisyngrapha* ♀, with discoidal spots elongated, much coalescence on underside, spots lanceolate on underside, very light and very dark ground on underside, ab. *melanotoxa*, much enlarged spots and much reduced spots on underside; *P. icarus*, a similar range of aberration with ab. *cærulea* ♂; *Cænonympha pamphilus*, ab. *lyllus*, ab. *pallida*, with bright ochreous patches, with smoky undersides, with large spotting on underside; *A. thetis*, smoky suffused ♂, extra and coalescent spotting on underside; *Chattendenia w-album* without the **W**; and *Epinephele jurtina* with large extra spots on fore-wing below.—Dr. Cockayne, series of *Dysstroma concinnata* from Argyleshire, Arran Island, Achil Island, with *D. truncata* and *D. citrata* (*immanata*) var. *pythonissata*.—Mr. Percy Bright, very striking aberrations of *Rumiccia phleas*, hind-wing with fore-wing markings, striated markings below; *Arctia caia*, a graduated series of aberrations from almost white to completely brownish-black, a form melanic on one side only, another with colours on fore-wing reversed; *A. coridon*, a silvery-white form; *P. brassicæ*, a ♂ pinkish-drab colour, an almost perfectly banded ♀; *Euchloë cardamines*, with pale orange apex, clear yellow apex, six gynandromorphs, very dark hind-wing below; *Leptosia sinapis*, cream-coloured, underside dark brown, underside deep green; *Gonepteryx rhamni*, with irregular scarlet markings, three gynandromorphs; *Chrysophanus dispar*, a series of fourteen.—Mr. Bright, for Mr. Tatchell, *Saturnia pavonia*, very dark ♂; *Eriogaster lanestris*, discoidal spots dark brown; *A. coridon* ab. *fowleri*, a very perfect example.—Mr. L. W. Newman, *Pieris napi* ♂s, spotless to large-spotted forms, ♀ heavily spotted and yellowish; *Aplecta nebulosa* ab. *robsoni*, pairing result 50 per cent. *robsoni*, 26 per cent. type, and 24 per cent. *thompsoni*; *Anthrocera filipendulæ*, from ova from yellow ♂ × orange ♀, all pink, orange, and yellow, no red; *A. grosulariata* ab. *varleyata*, from strain after five years' suppression;

Ennomos quercinaria, banded, and unicolorous chocolate.—Mr. Hy. J. Turner, *A. coridon*, ab. *semisyngrapha*, incomplete *semisyngrapha*, conspicuous discoidal spots, underside aberrations; *Parnassius delius* from the Engadine, a varied series.—Mrs. R. E. Page, for Mr. Muschamp, many gynandromorphs of a cross between *Lymantria dispar* and its var. *japonica*.—Mr. A. W. Mera, *Lampropteryx suffumata*, with three divergent examples much resembling *Eustroma silaceata*.—Mr. Curwen, aberrations of *P. icarus*, ab. *cærulescens*, ab. *cærulea*, ab. *angulata*, ab. *striata*, ab. *arcuata*, ab. *iphis*, ab. *icarinus*, ab. *semipersica*.—Mr. R. T. Bowman bred *Geometra vernaria*, with much converging transverse lines, with lines united by suffusion of white; *Hydriomena impluviata*, melanic forms bred.—Rev. G. Wheeler, *P. icarus*, large and brilliant, including ab. *icarinus*; *Plebeius ægon*, var. *masseyi*, the blue hind-wing ♀; *Aricia medon*, var. *salmacis*, ab. *albiannuata*, ab. *vedræ*, ab. *obsoleta*, ab. *semivedræ*, ab. *inclara*, and ab. *artaxerxes*; *Pieris napi*, grey suffusion of margins and veins in ♀s, extension of black in ♂s.—Mr. Fryer, *P. icarus* with striated underside.—Rev. A. T. Stiff, *Epinephele tithonus*, Tavistock, 1915, lemon-yellow ♀s, golden-yellow ♀s, borders a mouse-grey, extra spots on fore-wings, anal spots of hind-wings very large, ♀ with five spots on hind-wing, white streaks on underside of hind-wings; *Cænonympha pamphilus*, with double apical spot on underside; *Catocala nupta*, a submarginal series of long black streaks on fore-wings.—Rev. J. E. Tarbat, *Epinephele hyperantus*, very light underside with conspicuous eye-spots; *A. grossulariata* ab. *varleyata*; *Luperina testacea*, dark melanic forms; *A. nigricans*, a melanic form.—Mr. W. West (Lewisham), on behalf of the Society, ten cabinet drawers of the Canadian Lepidoptera, presented by Mr. Lachlan Gibb.—Mr. W. J. Kaye, two drawers of Morphos, *Morpho cacia*; *M. adonis*, the very rare ♀; *M. cypris*, yellow ♀s, and the rare blue ♀; *M. sulkowski*; *M. eros*; *M. aurora* ♂; *M. aureola* ♂; *M. uraneis*, probably the rarest species; *M. cytheris*; *M. godarti*; *M. ega*, ♀s graduated from yellow to extreme blue; *M. menelaus*, geographical forms *amathonte*, *melacheilus*, *nestira*, and *didius*.—Mr. Dunster, *A. thetis*, ♀ suffused blue, with large red spots on hind-wing.—Mr. G. Talbot, for Mr. J. J. Joicey, many new brilliant lepidoptera from New Guinea, etc., the genus *Delias*, fifty-two varied forms, seven from the Schouten Isles, four new species from Wandammen Mountains, Dutch New Guinea; the genera *Milionia*, *Callhistia*, *Lobocraspeda*, *Subordeta*, *Craspedopsis*, and *Bordeta*, thirty-seven species of brilliant Geometers; a local race of *Papilio paradisea*; a new *Diacrisia*; the largest New Guinea Pyrale, *Ethopia roseilinea*, etc.—Mr. Stallmann, *Amorpha populi*, bred series ♂s, three typical, three coppery tint, two grey with olive markings, ♀s, one rich copper, three very pale olive markings indistinct; *Boarmia abietaria*, bred series ♂s type to completely black, ♀s no typical, dark to black; *B. gemmaria*, greyish and ochreous forms, and two var. *perfumaria*, one banded ♂; sixteen species of *Eupithecia* bred this year.—Mr. Schmassmann, Exotic Rhopalocera, *Papilio memnon*, series of ♀ local forms; *P. memnon* ♀ f. *achates*, and *P. coon* of similar pattern, Java; *P. mayo* and *P. rhodifer*, of similar pattern, Andamans; *Cethosia leschenault*, showing resemblance to *Euvanessa antiopa*; *Argyrophorus argenteus*,

a silver coloured Satyrid; brilliant South American *Nymphalidæ* of the genus *Callithea*.—Mr. C. B. Williams, ab. *olivacea* of *Lasiocampa quercus*, with its dark coloured cocoon, and a very dark coloured larva of the same form; under the microscope, species of Thrips, including *Kakothrips pisivora* and British species of *Protura*.—Mr. A. E. Gibbs, *A. coridon* from Herts, ab. *semisyngrapha*, blue spots inside hind-wing margin ♀s, white fringe ♀, rayed ♀s, many undersides spotting aberrations, coffee-coloured underside, white ringed discoidals, asymmetrical forms, ♂ with orange on the submargin, hind-wings, etc.—Mr. Bacot, living yellow-fever mosquito, *Stegomyia fasciata*, in all stages.—Mr. Edwards, the *paris* group of *Papilio*, *P. ganesa*, *P. arjuna*, *P. brama*, *P. arcturus*, *P. peranthus*, *P. montanus*, *P. bianor*, and *P. paris* var. *karna* and var. *vernalis*.—Mr. R. Adkin, eight representative series of families of *Boarmia gemmaria* reared through successive years from captured females of the black form: (1) Black × black, result, all black, 39 per cent. ♂, 61 per cent. ♀; (2) black ♂ × type ♀, result, 44 per cent. typical, 56 per cent. black; (3) black × black, result, 22 per cent. typical, 78 per cent. black; (4) black × black, result, 50 per cent. typical, 50 per cent. black; (5) black × black, result, 29 per cent. typical, 71 per cent. black; (6) type ♂ × black ♀, result, 63 per cent. typical, 38 per cent. black; (7) black × black, result, all black; (8) black × black, result, 29 per cent. typical, 71 per cent. black.—Mr. F. W. Frohawk, *Lycæna arion*, long series Cornish, spotless to heavily spotted ♂s, ♀s with spots like ♂s to large club-shape and spotted ♀s, dwarf examples, dull coloured forms; *Gonepteryx rhamni*, a specimen similarly coloured to *G. cleopatra*.—Mr. C. P. Pickett, *A. coridon* from Herts, 1915, sixty-six asymmetrical gynandromorphic ♀s, ab. *roystonensis*, fourteen ♀s with asymmetrical splashes of ♂ colour, ab. *inequalis*, light golden-brown ♀s, ♀s with golden-brown patches, black, white rayed, ab. *semisyngrapha*, ab. *obsoleta*, ab. *minor*, blackish-grey undersides, whitish to sky-blue ♂s, ab. *suffusa*, and ab. *pallida* ♂s, near ab. *fowleri*; *A. grossulariata*, dark Aberdeen forms and ab. *varleyata*; *Angerona prunaria*, results of eighteen years' interbreeding, and latterly exposed to colour environment; under orange produced deeper orange, under green became lighter, and orange absent, under red produced deep reddish-orange ♂s and deep chocolate banded ♀s, ab. *pickettaria*, a half-banded form.—HY. J. TURNER.

THE DERBYSHIRE ENTOMOLOGICAL SOCIETY.—November 20th, 1915.—Annual Exhibition Meeting held by the invitation of the Treasurer at Derwent House, Daffield Road, Derby. In the absence of Mr. John Hill, President, through illness, the chair was taken by Mr. H. C. Hayward. Mr. J. Douglas exhibited a box of moths obtained by him during the past season principally at Witherslack, including short series of the undermentioned species, in each case showing a considerable range of variation. *Lycæna (Plebeius) ægon* with var. *masseyi*, *Cænonympha davus (typhon)* var. *rothleibii*, including a female with male coloration, *Hyria muricata*, *Acidalia fumata*, *Perconia (Aspilates) strigillaria*, *Bupalus piniaria*, and *Diacrisia sanio*. Also specimens of *Zygæna hippocrepidis*, *Zygæna purpuralis*, from North Ireland, *Plusia moneta*, Derbyshire, and a

pair of *Lygris reticulata* now probably extinct in its Westmorland habitat.—Mr. H. C. Hayward, a number of *Eurois prasina* bred this autumn from ova laid by a ♀ in July, many of them extremely dark; a long series of *Cabera pusaria* bred from local larvæ containing a number of ab. *rotundaria*, and some very extreme forms, one specimen with four distinct transverse lines, one pure white, and one completely melanic. A few *Aplecta nebulosa* including vars. *robsoni* and *thompsoni* from Delamere Forest, var. *pallida* from the New Forest, and typical dark grey local forms. A short series of *Triphæna fimbria* bred from local larvæ including vars. *rufa* and *brunnea*. A long series of local forms of *Boarmia repandata*, including melanics and a short series of ab. *conversaria* from North Cornwall, specimens of *Geometra papilionaria*, *Euchloris pustulata*, *Pseudoterpna pruinata* bred from local larvæ, and a series of *Lampropteryx suffumata* and *Semiothisa liturata* bred from females taken on a field day of the Society in 1914. In connection with this exhibit Mr. Douglas also showed a picked series of *Cabera pusaria* bred by himself from Epping larvæ some years ago. These showed a similar range of variation from four lines to ab. *rotundaria*. It would seem from Mr. Hayward's experiment that, given the necessary conditions of feeding, ab. *rotundaria* is not confined to the southern specimens but can be produced from larvæ from other parts of England.—Mr. John Hill, by favour of Mr J. Douglas, a series of *Lasiocampa quercus* var. *callunæ*, showing the gradual disappearance of the pale basal spot on the fore-wing and one melanic specimen almost destitute of the pale band on both wings, a series of *Thecla rubi* showing the gradation of the marginal white spots on the underside.—Messrs. W. and G. Sankey, a specimen of *Sphinx convolvuli* from Thanet, *Amathes lychnidis* var. *sphærolatina* taken at Colwyn Bay in 1913, and *Ennomos autumnaria* from Thanet.—Mr. A. Simmons, a long series of bred female *Euchlōe cardamines*, *Psilura monacha*, *Selenia lunaria*, *Melanthia albicillata*, also a pupa of *Acronycta alni*, three empty pupa cases of *Thecla pruni* on a single spray of the food plant, and several pupa cases of *Cossus cossus* from which the imagines had emerged.—Dr. Winstan St. A. St. John, unusually large *Lycæna (Plebeius) ægon* from West Somerset, *Lycæna (Polyommatus) icarus* var. *cærulea* from West Somerset, *Lymantria (Liparis) monacha*, a long series graduated from light to dark from one pair of parents. *Spilosoma (Arctia) lubricepeda*, a series of wild specimens from Yorkshire grading up to var. *fasciata*. *Diaphora (Arctia) mendica*, a series leading up to var. *rustica*. *Hyria muricata* from Witherslack and from West Somerset, showing the difference in type. *Zygæna trifolii*, confluent series from North Dorset. Mr. G. Hanson Sale, a number of local captures, including a short series of *Triphæna fimbria*, a specimen of *Polia flavicincta* not common in Derbyshire, and a pair of *Geometra papilionaria*,—G. HANSON SALE, Hon. Sec., Coxbench, Derby.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at Royal Institution, Liverpool, November 15th, 1915.—Professor R. Newstead, President, in the chair.—Mr. Hugh Main, B.Sc., F.E.S., sent a set of lantern slides illustrating "A Naturalist's Holiday in Switzerland," with copious notes in explanation. The slides dealt

with the imposing scenery in the neighbourhood of Meiningen and with the life-histories of *Cicendela campestris*, the tiger-beetle, *Myrmelion formicarius*, the ant-lion, and *Lampyrus noctiluca*, the glow-worm; there were also a number of slides showing various Lepidoptera in their natural resting-places.—Mr. F. N. Pierce exhibited long series of the tortrices *Ephippiphora pflugiana*, *E. circiana*, and a probable new species allied to the latter.—Mr. W. Mansbridge showed a series of variations of *Peronea ferrugana* from Delamere Forest, where this season it had been commoner than usual; also a series of *Ematurga atomaria* bred from a female captured in Delamere Forest, showing a wide range of variation.—WM. MANSBRIDGE, *Hon. Sec.*

December 20th.—At the Annual Meeting held at Liverpool Dr. John Cotton, Vice-President, in the chair, the following were elected as officers and Council of the Society for the ensuing year, viz.: President, J. Cotton, M.R.C.S., etc.; Vice-Presidents, Prof. R. Newstead, M.Sc., F.R.S., Leonard West, R. Adkin, F.E.S.; Hon. Treasurer, J. Cotton; Librarian, F. N. Pierce, F.E.S.; Hon. Secretary, Wm. Mansbridge, F.E.S.; Council, Wm. Webster, R. S. Bagnall, F.L.S., F.E.S., Charles Frederick Burne, J. W. Ellis, M.B., Ch.B., F.E.S., Arnold W. Hughes, J. Collins, R. Wilding, P. F. Tinne, M.A., S. P. Doudney, E. A. Cockayne, M.A., M.B., F.L.S.—Exhibits were as follows: By Mr. F. N. Pierce, an army biscuit completely riddled by a small beetle (*Ptinus*, sp. ?).—Mr. R. Wilding, series of the very local sand-hill beetles, *Anisotoma ciliaris* and *A. furva*; he also contributed notes upon the habits of these insects.—Mr. W. Mansbridge, a long series of *Lycæna icarus* from Delamere and the Crosby sand-hills, including var. *icarinus* and under-side variations, with large and confluent spots.—The recently acquired collection of Lepidoptera was on view, and it is expected to be of great usefulness to the members of the Society.—W. MANSBRIDGE, *Hon. Sec.*

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—*Annual Meeting, January 5th, 1916.*—Election of officers for the year 1916: President, Mr. Wm. Mansbridge, F.E.S.; Vice-President, Mr. A. Binns; Hon. Treasurer, Mr. W. Buckley; Hon. Librarian, Mr. B. H. Crabtree, F.E.S.; Hon. Secretary, Mr. A. W. Boyd, M.A., F.E.S.; Hon. Secretary (*pro tem.*), Mr. J. E. Cope.—The President, Mr. Mansbridge, gave the Presidential address, "Recent Results in Breeding *Aplecta nebulosa*," illustrated with appropriate specimens. Dealing first with the distribution and varieties of this moth, he passed on to the Mendelian relation existing between *thompsoni* and *robsoni*, and gave the interesting results of interbreeding these varieties and the type.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 20th, 1915.*—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—Mr. Charles Ernest Stott, Woodcroft, Eglington Road, Chingford, Essex, was elected a Fellow of the Society.—The Hon. N. Charles Rothschild exhibited some examples of an *Anthrocera* (*Zygæna*) bred from cocoons found in a marsh near Camberley. The

specimens, though found in a marshy situation, apparently resembled in all respects the dry, chalk-down form of *A. trifolii*.—Prof. Poulton gave an account, written by Dr. Carpenter, of the life-history of *Papilio hesperus*, Westw., and the resemblance of its larva to that of *P. nobilis*, Rog. Prof. Poulton also brought forward some observations, recorded in a letter dated September 1st, 1915, by Mrs. D. R. Fyson, on the proportions of the female forms of *Papilio polytes*, L., in the neighbourhood of Madras City.—The Rev. G. Wheeler exhibited some British Lycænids, taken in July and early August this year: (1) *Polyommatus icarus*, Rott., from the Durham coast, remarkable for their large size and the brilliant tint of the ♂♂. (2) *Plebeius ægon* var. *masseyi*, Tutt, the form from the northern moorlands, the ♂♂ bright blue, with very narrow black border and conspicuous black marginal spots on the hind-wing, the ♀♀ strongly suffused with blue. (3) *Aricia medon*, Hüfn., from the Durham coast, including almost typical specimens; also var. *salmacis*, as described by Stephens, the ♂ with a black discoidal spot on the upper side of the fore-wing, the ♀ with a white one; ab. *similis*, Tutt., the ♂ with a white discoidal spot; ab. *albimaculata*, Harr., with black discoidal ringed with white, so frequently described as var. *salmacis*, the original description of which excludes this form; ab. *vedræ*, Harr., with its extreme form ab. *obsoleta*, Obth., in which the spots of the fore-wing are missing on the underside, as well as those of the hind-wing; ab. *semivedræ*, Harr.; and ab. *inclara*, Harr., with its silvery-white ground-colour on the underside, this specimen being also somewhat striated. To these were added a few var. *artaxerxes*, F., from Kinghorn.—Mr. E. E. Green exhibited a specimen of a *Mantis* from Ceylon, together with a *Gordius* worm that had emerged from it. Also specimens of the rediscovered British Coccid *Gossyparia ulmi*, Geoff. (or *spuria* of Moeber—according to the American authorities), collected by Mr. J. C. F. Fryer, on a Cornish elm at Farnham, Surrey.—Mr. Donisthorpe exhibited two remarkable mixed gynandromorphs of *Myrmica scabrinodis* taken in the same colony at Weybridge, July 30th, 1915.—Dr. F. A. Dixey exhibited specimens of *Nychitona* and *Leuceronia*, remarking that the minute resemblance between them extended to flight and habits.—Mr. R. Adkin a 5-spotted specimen of *Anthrocera filipendulæ*, collected from a field at the top of the downs near Otford, Kent.—Mr. E. A. Butler a series of *Brachyarthrum limitatum*, Fieb., a Capsid new to the British list, taken in Epping Forest, July 3rd, 1915, on aspen. Also a specimen of *Timarcha violaceo-nigra*, De G., with the left intermediate leg furnished with two tarsi, placed upon a much-broadened tibia.

RECENT LITERATURE.

Catalogue of the Lepidoptera Phalænæ in the British Museum. Supplement Volume i. By Sir GEORGE F. HAMPSON, Bart. Pp. i–xxviii and 1–858. London: Printed by Order of the Trustees.

As a considerable number of species belonging to the families Amatidæ (Syntomidæ) and Arctiadæ have been described since the

publication of volumes i and ii (1898-1900) of the Catalogue, the present supplementary volume became a distinct necessity.

No less than 945 species and 16 genera are added to the Amatidæ, whilst the genera and species of Arctiadæ are increased by 74 and 996 respectively. The bulk of the Arctiad increment belongs to the subfamily Lithosianæ, as only 1 genus and 116 species are referred to the Nolinæ.

In the atlas of 41 plates in colour, 1381 figures drawn by Horace Knight are admirably reproduced.

Proceedings of the South London Entomological and Natural History Society, 1914-15. With Ten Plates and a Map. Published at the Society's Rooms, Hibernia Chambers, London Bridge, S.E. 1915.

AMONG the entomological matter in this excellent publication is an important paper "On the genus *Melitæa*," by the Rev. G. Wheeler (pp. 1-16). Mr. Robert Adkin contributes an exceedingly interesting chronicle entitled "*Colias edusa* in Britain" (pp. 22-30, with a chart showing suggested lines of migration); also an admirable paper on "Some Lepidopterous Pupal Habitations and some Reminiscences" (pp. 59-69, Plates IV-VIII). In the latter paper the subject-matter is presented in a form that is highly instructive and very attractive, and should secure wider attention to these important phases in the life cycle of Lepidoptera.

Mr. W. J. Lucas has a paper on "British Locustodea or Long-horned Grasshoppers" (pp. 49-58, Plates I-III). This, together with his previous contributions on "British Acridiodea and Forficulodea" (Proc. 1912 and 1913), will greatly assist students of Orthoptera and also awaken more general interest in this order of British insects.

Another exceedingly useful contribution is the paper on "Luminous Insects," by Mr. K. G. Blair (pp. 31-45).

In addition to the papers adverted to above there are matters of considerable interest recorded in the "Abstract" (pp. 75-146). The finely executed plates are from photographs by Messrs. Dennis, Lucas, and Noad Clark.

Transactions of the London Natural History Society for the Year 1914.

Published by the Society, Hall 20, Salisbury House, Finsbury Circus, E.C., 1915.

As an aid and guide to the field-worker Mr. L. W. Newman's "Notes on Breeding and Collecting the Sesiidæ" is a most useful contribution. Dr. E. A. Cockayne's elaborate paper on "Gynandromorphism" elucidates some difficult points connected with the study of this subject.

Mr. L. B. Prout, in the Presidential Address, discourses on generic classification, using Pierce's "Genitalia of the Geometridæ" as his "text." He holds that any generic grouping founded on a single character cannot rank as of permanent value.

[We regret that no reference was made to the above publications in our volume for 1915.—ED.]

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MARCH, 1916.

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NOTES ON APHIDIDÆ FOUND IN ANTS' NESTS.

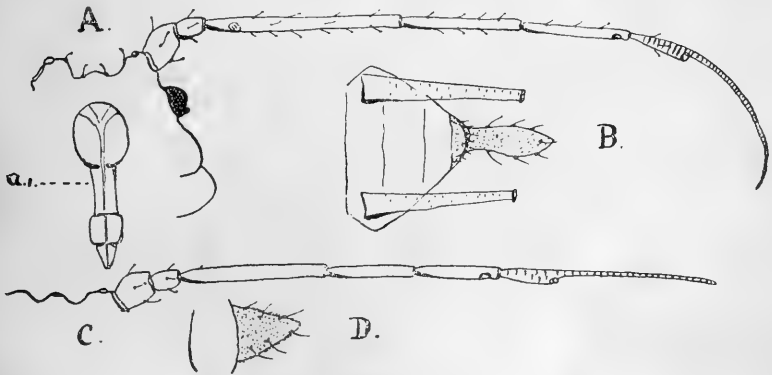
By FRED. V. THEOBALD, M.A.

A SMALL collection of Aphididæ, sent me by Mr. W. C. Crawley, found in ants' nests in and around Porlock, Somerset, in 1915, is of special interest on account of containing a *Macrosiphum* which has not been described, and another Aphid approaching, on the one hand, the genus *Hyalopterus*, Koch, and, on the other, Van der Goot's genus *Longicaudus*, but which cannot be placed in either. For this I propose the generic name *Hyalopteroides*.

The species of *Tycheoides* is so close to Passerini's *T. eragrostidis* that I have included it under that species.

Macrosiphum myrmecophilum, nov. sp.

Apterous Viviparous Female.—Bright green, antennæ not quite as long as the body, arising from large frontal tubercles; basal



Macrosiphum myrmecophilum, nov. sp.

A. Head and antenna; a^l. Rostrum; B. Cornicles and cauda of apterous female; C. Head of nymph; D. Cauda of larva.

segment much larger than the second; third longer than the fourth, with one sensorium near the base; fourth a very little longer than the fifth, the latter with a sub-apical sensorium; sixth a little longer than the fourth and fifth, its basal area about one-fourth the length of the flagellum; on the first to fifth a few short, pale hairs,

slightly swollen at their apices. Proboscis rather short and broad, not quite reaching to the second pair of legs, apex dark; penultimate segment broader than the apical, about the same length. Eyes large, black. Two incurved, slightly capitate hairs on the head in front. Legs green, the tarsi faintly dusky; hairs short and pale. Cauda green, more than half as long as the cornicles, prominent, finely spinose, and with three pairs of lateral hairs, and one median sub-apical one. Cornicles green, cylindrical, somewhat expanding basally, very faintly imbricated, about one-fifth the length of the body. Anal plate green. Skin slightly rugose.

Length, 2 mm.

The nymph is all bright green, except the tarsi and the fourth to sixth segments of the antennæ, which are brown; the third segment is much longer than the fourth; the fourth a little longer than the fifth; the sixth much longer than four and five, its basal area about one-third the length of the flagellum. Proboscis not reaching the second pair of legs; dark at the tip. The frontal lobes not nearly as marked as in the apterous female.

The larva is dull green; tarsi, apices of antennæ, and cornicles dusky. Antennæ shorter than the body; frontal tubercles not as large as in the adult; segments relatively shorter. Cauda triangular. Eyes black.

Localities.—Hurlstone Point, Porlock, Somerset, May 8th, 1915, with *Lasius niger* (W. C. Crawley); Rossbeigh, Co. Kerry, June, 1902, in nest of *Lasius niger* (Donisthorpe).

Notes.—Mr. Donisthorpe sent me a single, much damaged apterous viviparous female *Macrosiphum* from a nest of *Lasius niger* a few years ago, which I could not describe owing to the damaged condition. Recently Mr. W. C. Crawley sent me a perfect ♀, nymph, and mature larva, also found in the same ants' nests at Porlock. The marked single sensorium on the third segment of the antennæ, the caudal structure, and the rugose skin place these together, the only difference being that Mr. Donisthorpe's specimen had the proboscis reaching past the second coxæ.

I do not think that there can be any connection between these apterous viviparous females and the *Macrosiphum formicarium* I described from an alate viviparous female taken by Mr. Donisthorpe on Lundy Island in a nest of *Lasius flavus* on June 9th, 1913 ('The Entomologists' Record,' vol. xxvii, No. 3, p. 55, 'New Myrmecophilous Aphides'). Koch ('Die Pflanzenläuse Aphidien,' p. 155, fig. 210, 1857) describes a subterranean *Macrosiphum* (*Siphonophora subterranea*) from the roots of *Senecio jacobæa*, the apterous female—which is "Ziegelroth, durchaus weiss gepudert," a very distinct species not so far found in Britain or since the original record.

Another *Macrosiphum* was sent me by Mr. Britten, taken in ants' nests at Great Lalkeld, Penrith, Cumberland, too damaged to identify, but it is clearly distinct.

It thus appears that this group of Aphides occurs under-

ground in ants' nests and become winged, but where the alate females go to we do not at present know.

Genus *Hyalopteroides*, nov. gen.

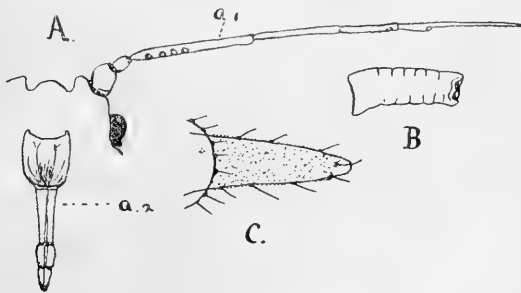
Body elongate oval. Antennæ about half the length of the body. Head with marked frontal tubercles and a median enlargement. Proboscis rather short, not reaching the second coxæ. Cauda large and bluntly acuminate. Cornicles small, about one-fourth the length of the cauda, and with corrugations. A marked space between the base of the antennæ and the large compound eyes.

This genus is founded on the apterous viviparous female taken in an ant's nest. It comes very near *Hyalopterus*, and differs from that genus in having the processes on the head.

P. van der Goot ('Overgedrukt nit het Tijdschrift voor Entomologie,' deel lvi, 1913, p. 107) forms a genus *Longicaudus* for Koch's *Hyalopterus sphondylii* and Walker's *Hyalopterus trichodus*; but in both of these species the head is as in Koch's *Hyalopterus*, so that this subterranean species cannot be included in it.

Hyalopteroides pallida, nov. sp.

Apterous Viviparous Female.—Pale green; apices of antennæ, proboscis, and the tarsi smoky. Antennæ about half the length of the body, thin, arising from small but prominent frontal tubercles. Basal segment large and irregular in outline; second small, barrel-shaped; third longer than the fourth, with three to four rounded



Hyalopteroides pallida, nov. sp.

A. Head and antenna; a¹. Sensoria of segment 3; a². Proboscis.
B. Cornicle; C. Cauda.

sensoria near the base; fourth a little longer than the fifth, which has the usual subapical sensorium; sixth about as long as the fourth and fifth, its basal area not quite half as long as the flagellum. A median projection in front of the head. Eyes large, black, situated some little distance behind the base of the antennæ. Proboscis pale, dusky at the apex, not reaching to the base of the second pair of legs. Cauda very large, at least four times as long as the cornicles, pallid, finely spinose, with four bristles one side, three on the other, and a curved subapical dorsal one. Cornicles pale, very small, not one-

fourth the length of the cauda, cylindrical but irregular, and corrugated at the edges. Legs pallid, moderately long and thick; tibiæ with many short, pale hairs; tarsi smoky. The whole body is elongated and rather narrow.

Length, 2.2 mm.

Locality.—Porlock Weir, Somerset, May 14th, 1915.

Taken by Mr. W. C. Crawley in a nest of *Lasius niger*. Described from a perfect apterous viviparous female, which I have placed in a new genus which comes near *Hyalopterus*. The most marked characters are the sensoria on the third antennal segment, the long, large cauda, and the short, somewhat corrugated cornicles.

Tycheoides eragrostidis, Passerini.—Five apterous females and six nymphs taken in a *Lasius alienus* nest at Seaton, Devon, June 23rd, 1912. The proboscis, however, only reaches just past the second pair of legs; in others I have seen it reaching past the third pair; whilst in the young it is longer than the body.

Tycheoides setulosa, Passerini.—Three apterous viviparous females taken by Crawley at Porlock with *Lasius flavus*, May 1st, 1915.

Trama troglodytes, Heyden.—One apterous female taken at Porlock (April 28th, 1915) by Mr. Crawley with *Lasius niger*. To some extent this answers to Del Guercio's *Trama horvathi*, which I do not think is a valid species.

Trama radialis, Kaltenbach.—Seven apterous females, Porlock, with *Lasius flavus* and *niger*, April 18th, 1915, May 14th, 1915.

Other aphides received in tubes from Porlock and elsewhere from ants' nests:

Tycheoides setariae, Pass.—In nests of *Tetramorium cæspitum*, *Lasius niger* and *flavus*, Porlock, 1915, at Woking (May 24th, 1913) and Weybridge (April 14th, 1914) with *Lasius umbratus*.

Forda formicaria, Heyden.—In nests of *Lasius niger*, dark green, and *L. flavus*, apterous females and nymphs, Porlock, 1915, at Weybridge, in ants' nests, April 14th, 1914.

Trama radialis, Kaltenbach.—In nests of *Lasius niger*, Porlock Weir, April 28th, 1915; apterous ♀♀ and nymphæ, and with *L. flavus*, April 18th, 1915.

Tetraneura ulmi, Linn.—With *Lasius flavus*, Porlock, May 1st, 1915. With *Myrmica scabrinodis*, Oddington, Oxford, August, 1900, and with *Myrmica ruginodis*, Porlock, April, 1911.

Aphis plantaginis, Schrank.—With *Lasius flavus*, Porlock Weir, April 28th, 1915. Apterous ♀♀.

Lachnus (sp. ?).—Immature forms bred from eggs found in nest of *Lasius flavus*, Porlock, April 21st, 1915.

Geoica carnosa, Buck.—With *Tetramorium cæspitum*, Hurlstone Point, May 8, 1915; with *Lasius flavus*, Porlock Weir, May 14th, 1915, and Porlock, May 1st, 1915. Apterous ♀♀.

Forda viridana, Buck.—With *Lasius flavus*, Porlock Weir, May 1st, 1915. Apterous ♀♀.

THE GENUS *ENNOMOS* (SENS. STR.), WITH AN ACCOUNT OF SOME OF ITS HYBRIDS.

BY J. W. H. HARRISON, B.Sc.

(PLATES I. AND II.)

(Continued from Entom. xlix., p. 29.)

(b) The female bears much the same relation to the hybrid male as the female *quercinaria* does to its male—that is, we have the same difference in secondary sexual characters. When this is said there is little else to add, except that the female genitalia, in all respects, *Ostium*, *Ductus bursæ*, *Bursa copulatrix*, are exactly intermediate to the two species, as can be seen by reference to fig. 3c. Possibly, however, the chitinous signum on the *Bursa* is nearer the almost obsolete signum of *subsignaria* than to the thicker spiculated one of *quercinaria*.

In the above descriptions it will be seen that, in spite of what was said above to the effect that the hybrid larva was nearer *subsignaria*, there has been a constant emphasis on *quercinaria* characters. This is simply because upon a featureless, snowy-white ground very minute differences are accentuated. Wherever the two forms show definite characters, then the characters derived from *subsignarius* preponderate. The same phenomenon has been discussed* in the case of *Ithysia* hybrid *merana* (= *I. zonaria* × *P. lapponaria*). To a casual glance the insect is wholly under *zonaria* influence; but when its characters are analysed it is found to be nearer *lapponaria*.

(c) *Gynandromorphic Specimen*.—This specimen is a very peculiar one, and the significance of its peculiarities is discussed at the end. At first sight it is merely a male specimen with the left antenna female. Dissection and close examination betray much more interesting characters than that. The genitalia (fig. 4), although nearly so, are not quite purely male; the right lobe of the uncus is replaced by a fully developed right ovipositor lobe, whilst the gnathos on the same side is greatly distorted, and acts as if it were homologous to the female directing rods. In addition, whilst the coloration of both sides of the body is male, the shape of the right wings is female!

(d) *Asymmetrical Specimen*.—This individual, too, is an extraordinary individual, the right side being exactly that of a normal hybrid, whilst the left side is pure *subsignaria*.

The problems raised by this specimen are reserved for discussion in the conclusion. Its genitalia present the same division of characters as those exhibited externally, as may be seen from fig. 8, which shows the furca and the penis, the left side being that of the hybrid, whilst the right is evidently that of *subsignaria* conforming itself to the structure of the left.

* Harrison (1913). Lep. comparée p. 112

SECONDARY PAIRINGS.

Contemporaneously with the above hybrids a stock of both parents was being reared in order to make an endeavour to produce secondary hybrids, and cages had been prepared to secure, if possible, the five possible secondary pairings, viz. :

Ennomos quercinaria ♂ × *E. winni* ♀ .

E. winni ♂ × *E. quercinaria* ♀ .

E. subsignaria ♂ × *E. winni* ♀ .

E. winni ♂ × *E. subsignaria* ♀ .

E. winni ♂ × *E. winni* ♀ .

In all cases the pairings were successfully obtained, the *winni* males showing a very full development of the sexual instincts, instantly pairing with any female offered to them in broad daylight long before the normal time of flight and copulation of the parent forms. In all five cages ova were deposited at once, those laid by the *winni* females being in all three cases deposited in large, even masses on the bark of oak twigs. The bulk of the *subsignaria* females fluttered about, laying single eggs at random everywhere, and acting as if they were severely injured. All died a day or so after copulation, just as I have observed when attempting secondary pairing with hybrids of certain species of the *Biston* group. The plight of the *quercinaria* females was not much better, for they only laid a few small, although regular, batches of ova, most of which collapsed at once; not 2 per cent. in all of the ova succeeded in passing the winter, and in all of these the little larvæ perished miserably in spring. On the contrary, the ova laid by the hybrid female all wintered safely, but in the case where both parents were hybrids, the larvæ were utterly unable to break the egg-shell, whilst in the other two cases only 12 per cent. yielded the larvæ.

The little larvæ which did hatch, however, proved very healthy and fed up safely and well, yielding their imagines at the proper time.

DESCRIPTION OF SECONDARY HYBRIDS.

Ennomos hybrid oberthüri = *E. quercinaria* ♂ × *E. winni* ♀ .

(a) *The Male*.—This insect differed but little, in its extreme forms, from *quercinaria*. However, several of the specimens were very curious in their appearance; whilst not exactly the same as the primary hybrid *winni*, they approached very close to it, except that the colour was not quite so intense. Too few were reared to admit of any generalisation.

(b) *The Female*.—The female shows greater traces of *subsignaria* in the greasy and washed-out appearance of its coloration, although the usual *quercinaria* markings were present. Its genitalia, except in size, varied but little from those of *quercinaria*.

Ennomos hybrid goodwini = *E. subsignaria* ♂ × *E. winni* ♀.

This hybrid produced no female, but I would not suggest from this that no female can exist. Too few broods have been reared to allow of a definite statement that there is the total suppression of the female sex, such as occurred in my hybrids *buloveci*, *denhami*, etc.

The imagines in this case showed a marked tendency to separate themselves into two groups—one closely resembling in colour, shape of wings, genitalia, etc., the species *subsignaria*, whilst the other was comprised of forms practically identical with males of *winni*. What was noteworthy, too, was that these sections were numerically equal. These facts are discussed later.

CONCLUDING REMARKS.

As a result of the above experiments, several very important observations stand pre-eminent, and their discussion has been reserved for treatment here. These are :

- (A) The very great vigour of the primary hybrids.
- (B) The apparent sterility of the primary hybrid male.
- (c) The definite division of each of the two secondary forms into two groups.
- (D) The points arising from the gynandromorphic individual.
- (E) The problem presented by the asymmetrical specimen.
- (F) The question of the secondary sexual characters.

(A) *Vigour of Primary Hybrids*.—As was noted previously, the wing expanse of hybrid *winni* lay between the limits of 43–50 mm., and, in this, it contrasts greatly with the measurements (38–42 mm.) of the diminutive *subsignaria* and those of the larger *quercinaria* (40–43 mm.). In fact, we have an increase of over 10 per cent. above the theoretical expectation or mean. This increase of size is significant, and agrees well with a similar increase noted in rearing *Ithysia* *hyb. langei* (= *I. zonaria* ♂ × *P. pomonaria* ♀) and its allied forms, and shows the great increase in constitutional vigour practically always observable in the rearing of insect hybrids. It confirms the general opinion that strange blood tends to increase the vigour of the race.

(B) *Sterility of the Male of the Primary Hybrid*.—This sterility of the male of hybrid *winni* is in direct contradiction to the usual experience with hybrids; very rarely indeed do we find the female fertile when compared with the abundance of cases in which the male is functionally active, and, even then, a fertile female is accompanied by a fertile male. Why, then, does the male in this case appear sterile? Nay, the question becomes, when one considers the inability to secure fertile hybrid ova from *subsignaria* female, is it sterile? And the answer is in the negative. Let us examine the three cases. *Winni* ♂ × *winni* ♀ yielded ova which failed to hatch, simply because,

as dissection proved, the little larvæ, as in many cases of attempts to breed from hybrid parents, were unable to break the egg-shell. In fact, in my own numerous experiments, I have only known two cases where progeny resulted from such a cross. Next, what about the *winni* ♂ × *subsignaria* ♀ pairing? The case is parallel with that of the primary pairing *quercinaria* ♂ × *subsignaria* ♀. The defect is mechanical, and the attempted pairing results in fatal internal injury to the female. Our third possible pairing gives us a combination of both of the defects of the other two cases. The female is seriously injured, but still is not prevented from laying eggs, some of which are fertile but unable to yield their little larvæ. From all of these considerations one can conclude that, sooner or later, with multitudinous experiments one would secure progeny by means of this hybrid male.

(c) *The Segregation in the Secondary Forms.*—It is clear that here, whilst we are concerned with some scheme of inheritance based on the plan worked out by Mendel—so ably expanded by Bateson, Punnett, and others—we are not dealing with a pair of single allelomorphic characters. We have, in the formation of the F₁ gametes, a total segregation of almost all the *quercinaria* characters (with the possible exception of the colour factor) from those of *subsignaria*. To put it plainly, we have a linking of almost the whole block of *quercinaria* characters, and a similar linking of all the *subsignaria* characters; in other words, we can talk of “*quercinarianess*” and “*subsignarianess*.” The gametes of the pure species may be represented as S and Q respectively, and consequently the zygotes of the F₁ generation as SQ, which, in the absence of dominancy of S or Q, are to a very great extent midway between the parents—an observation exactly parallel to the well-known case of the blue Andalusian fowl, and such as has usually been found to occur when one crosses two distinct species. That this was not incompatible with the correct segregation of the gametes in the F₁ generation was proved by Bateson and Punnett’s experiments with Andalusian fowls, and, what is more important, it is indicated, but not discussed, by Denso* in his account of the secondary hybrid between *Celerio* *hyb. galiphorbiæ* and *Celerio* *euphorbiæ*. In the F₁ generation *Celerio* *hyb. galiphorbiæ* was intermediate, whilst in that of F₂ segregation occurred—a case exactly the same as the present.

To proceed, the gametes of the pure species are all Q and all S respectively, whilst half of those of the hybrid will be Q and half S. Hence, in crossing *quercinaria* ♂ with *winni* ♀, the gametes of *quercinaria* will meet in fertilisation exactly one-half of their number of Q and a similar number of S. There ought, therefore, to be produced, if fertilisation is successful, an equal number of zygotes of composition QQ and SQ, and similarly, when *subsignaria* male is used, we should have

* Bull. Soc. Lep. de Genève, vol. i, fasc. 4, p. 308.

similar numbers of zygotes SS and SQ, a prediction exactly in accordance with the actual result, except for the slight effect of the colour factor in certain cases—a factor which, in other instances, can be demonstrated to act independently of the whole “block” of characters.

(D) *The Problem of the Gynandromorph.*—The characters of the gynandromorph give us a very peculiar problem to discuss, more particularly in view of certain recent developments in theoretical zoology. On dissection of this specimen, as was pointed out, only certain secondary sexual characters were found to be female, the primary organs being wholly male. Now, according to the “hormone” theory, the development of the secondary sexual characters is stimulated by the secretion and subsequent distribution through the body of certain substances called hormones, these hormones being formed either in the testes or ovaries or in the interstitial tissues of these organs. As the present specimen has only testes, the hormone, developed and passed into the soma in the early life of the insect, ought to have caused the development, in all parts of the body, of solely male characters; yet we see that, except for the colour and the primary sexual characters, the right side is wholly female. It is clear, therefore, that the hormone theory does not account *in toto* for secondary sexual characters. It is not here denied that experimental data prove that this is one of the causes; it is simply asserted that there must be some inherent qualities in the tissues of the soma to allow of their development independent of any secretions of the primary organs.

As noted above, whilst the majority of the characters of the right side were female, the colour was wholly male; clearly the colour has acted as a unit character independent of the others, as was indicated above. This is a further proof of the validity of the Mendelian concept of a unit character and also of the possibility of coupling, *i.e.* the remaining characters acting together.

(E) *The Asymmetrical Specimen and its Problems.*—We have here an example of an insect displaying hybrid characters only on one side, the other side being typical of the pure male parent. It seems clear that we are concerned with some kind of double fertilisation. That the phenomenon cannot be produced as the result of an ovum with two nuclei is certain, for then we ought to have had *quercinaria* characters on both sides, and we are therefore forced to the conclusion that the influence of the male has in some way caused the anomalous creature to be developed. Cases are well known of the passage of two spermatozoa into one ovum, but normally the second spermatozoon degenerates and fails to effect the embryo. Here, however, the whole of the circumstances are abnormal; we are dealing with the fertilisation of an ovum by foreign sperm. Probably, then, two sperma-

tozoa passed through the micropyle, the nucleus of one of which conjugated as usual with the egg nucleus, but the nucleus of the other, instead of degenerating, gave rise to nuclei determining the right side of the body, which would thus be pure *subsignaria* and differ from the hybrid left side which resulted from the conjugation of nuclei derived from two different species.

(F) *Inheritance of Secondary Sexual Characters*.—In these experiments I have used species, one of which carries very marked secondary sexual characters, whilst in the other these characters are almost absent; the primary cross was between the female of the male which possessed these characters, and the male used was without them. What was the result? We might expect that each sex carried its own peculiar characters, and that therefore the hybrid males would not show any. The reverse is the case, however; the male secondary characters are passed on by the female and correctly appear in the male of the primary cross. Not only is this so, but, where the hybrid female was crossed back on the male which was devoid of them, they nevertheless appear in some of the secondary forms, thus demonstrating that the hybrid female also carried latent the secondary characters of a male which had never appeared either in the production of the primary or of the secondary hybrid. It is thus evident that both sexes may carry and transmit the characters of the opposite sex, as was most beautifully proved in my experiments with the winged and the wingless forms of the *Biston* group.

EXPLANATION OF PLATES.

PLATE I.

- I. *Ennomos quercinaria*. A. Male genitalia. B. Penis. C. Female genitalia showing bursa copulatrix, ductus bursæ, and signum. II. Similar structures in *E. subsignaria*. III. The same structures of hybrid *E. winni*.

PLATE II.

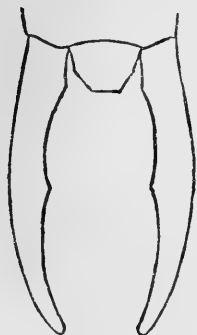
- IV. Genitalia of gynandromorphic hybrid *winni*. V. Typical female genitalia of the same hybrid. VI and VII. Furcæ (most intermediate forms) of the secondary hybrids—VI of *oberthuri*, VII *goodwini*. VIII. Penis and furca of asymmetric form. IX, X, XI. Wing outline—IX of male *quercinaria*, X of male *subsignaria*, XI of male hybrid *winni*.

BRITISH ORTHOPTERA IN 1915.

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

IN 1915 but few facts connected with our Orthoptera have come to hand, which seem to be worthy of record. Of these, however, one—the capture of one of our scarce earwigs—is of considerable importance.

Forficulodea.—During September, while beating for *Zonosoma omicronaria*, Hübn., etc., Mr. B. S. Harwood captured in Suffolk an earwig quite new to him. On comparing his capture with Burr's figure, and specimens that he had received from the late Mr. A. J. Chitty he found that it was *Apterygida albipennis*, Meg. (= *media*, Hagenb.), previously noted only from Kent and



Callipers ♂ of *A. albipennis* (× 10.)

Norfolk. A few days later two specimens were taken on the Essex side of the Stour, and still later others were taken again in Suffolk with larvæ of *Apamea unanimitis*, Tr. Mr. Harwood considers the species not rare, since it occurred in three places, but certainly very local, as other apparently suitable spots failed to produce a specimen. It was beaten from hedges and other similar places. *A. albipennis* is of about the same size and colour as the common earwig (*Forficula auricularia*, Linn.), but there are two clear points of distinction easily seen by an observant naturalist. (1) *A. albipennis* is wingless in both sexes, whereas in *F. auricularia* a small portion of the well-folded wings is visible projecting from behind the small elytra. (2) The callipers of the male bear no resemblance to those of *F. auricularia* as the figure in 'Entom.' xxxviii. p. 266, clearly shews.

Blattodea.—*Ectobius panzeri*, Steph., was met with in the New Forest on August 11th, and this was the only cockroach record made by me during the year.

Gryllodea.—On August 2nd some female specimens of *Nemobius sylvestris*, Fab., were captured in the neighbourhood of Lady Cross, in the New Forest. These were kept alive at home and supplied with food of various kinds. They were fed at first on leaves of *Pyrus torminalis*, Ehrh., and banana-fruit. Bread was readily eaten on August 12th, and the next day they fed freely off raw beef. Later in the day (13th) I noticed a quantity of cork-fragments in the large tube in which they were confined, bitten off, I presume, in an attempt to make a way out of the prison. They would not take to a Nasturtium leaf. One escaped on August 14th. On August 15th the remaining two appeared not to eat readily a piece of cheese. A rose-leaf was eaten a little only, although *Pyrus torminalis* had seemed quite acceptable. These two specimens were killed on August 19th. Apparently bread is a suitable food; but it is quite possible that these crickets are omnivorous, like their relatives of the kitchen. Of this latter species, *Gryllus domesticus*, Linn., Mr. S. E. Boycott sent me a male caught in a house at Radlett, in Herts., in November.

Locustodea.—Mr. A. O. Rowden took a female *Leptophyes punctatissima*, Bosc., in September on Clematis in a garden in

Exeter. Mr. C. W. Bracken tells me that *Meconema thalassinum*, De Geer, can be taken in abundance in August, September and October in the Priory Gardens, Saltash (on the Cornish side of River Tamar opposite Devonport). It is found freely on bay; there are no oaks in the garden. He further says that *Pholidoptera griseo-aptera*, De Geer, is very common in many places in Devon and Cornwall: he could have taken twenty or thirty in a few square yards near Plymouth in August. [Mr. Bracken sends me an addition to Devon records for 1914, which perhaps might suitably be noted here: "After five hours' patient sweeping near Churston, S. Devon, on August 26th, 1914, I took three (two ♂, one ♀) of the rare orthopteron, *Conocephalus dorsalis*, Latr. They were captured in exactly the same spot as that in which Mr. G. T. Porritt took them several years ago. It was a pretty sight to see them sunning themselves on the rushes, their antennæ waving like threads of spun glass."]

Acridiodea.—My first acquaintance with orthoptera in the field in 1915 was made on June 5th, when tiny nymphs, no doubt all Acridians, courted attention in the neighbourhood of Oxshott, Surrey. On the 19th, amongst grasshoppers found on Netley Heath, Surrey, *Omocestus viridulus*, Linn., was taken mature. Judging, however, by its texture and colouring, it had but recently become an imago. On July 3rd grasshoppers were plentiful on the North Downs near Newland's Corner. On August 6th *Omocestus rufipes*, Zett., *Chorthippus parallelus*, Zett., *Sturoderus bicolor*, Charp., and nymphs of *Tetrix* were found at Marlborough Deeps, in the New Forest. *Mecostethus grossus*, Linn., was seen several times at a large bog in the New Forest on August 8th, and a large female was captured. *S. bicolor* and *C. parallelus* were taken at Bincombe on August 21st, and near Preston on August 22nd—both near Weymouth, in Dorset—while *C. parallelus* was taken also at Upwey, in Dorset, on August 23rd.

On September 3rd I renewed acquaintance with *Chorthippus elegans*, Charp., at Matley Bog, in the New Forest. On the same day (September 3rd) I found a specimen of *Tetrix bipunctatus*, Linn., on a leaf, and by its side the empty nymph-skin from which it had lately emerged. Apparently the change had been so recent that the imago was scarcely strong enough to leap. Earlier in the season (on June 5th) I had found an example of this species swimming in a rut near Oxshott. Presumably it had hopped into the water and was swimming out. On September 4th I paid another visit to Marlborough Deeps to get specimens of its congener *T. subulatus*, Linn., and secured a few by sweeping in damp places. Writing from Plymouth, Mr. Bracken says: "*T. bipunctatus* is common everywhere, but *T. subulatus* rarely occurs. Mr. J. H. Keys has given me one taken at Nodder Bridge, Saltash (near Plymouth, but on the Cornish

side of the Tamar), April 24th, 1915. All my previous captures were made at Bude and Braunton Burrows. *Gomphocerus maculatus*, Thunb., was present in dozens on the slopes of a deep valley at Trebarwith, North Cornwall, this August. The specimens were, almost without exception, of various shades of brown. This species is very local in the South-West, and cannot be called common. I have taken it sparingly at Ugborough (S. Devon) and at Lee Woods (N. Devon)—at both these places the insects were nearly all black."

Dr. T. A. Chapman sent me from Dorking, Surrey, *S. bicolor*, *C. parallelus*, and *Gomphocerus rufus*, Linn.; a few days later, on September 7th, he sent me a female of *Stenobothrus lineatus*, Panz. The last two are amongst our less common Acridians. Mr. K. J. Morton reports the capture of *O. viridulus* near Emyvale, Co. Monaghan, in Ireland, September 9th–11th, and Dr. W. M. Tattersall at Grassington, Lancs., June 26th to July 3rd. Mr. W. Evans adds to our knowledge of the distribution of Scottish Acridians by the following records: "*O. viridulus*—Killantringan, Wigtonshire, ♂, August 27th, 1913; Upper Glen Spean, West Inverness, common, July 23rd–25th, 1915; Carfrae Common, Lammermuirs, Berwickshire, several ♂ and ♀, September 8th, 1915; East bank of Dean Burn, above Pogie, East Lothian, common, September 8th, 1915; West bank of Dean Burn, below Soutra Hill, Midlothian, common, September 8th, 1915. *C. parallelus*—Balquhidder, S.W. Perth, a few, August, 1902; Upper Glen Spean, W. Inverness, abundant, July 23rd–25th, 1915; Rannoch Moor, near head of Loch Laidon, mid-Perth, several, July 26th, 1915; East bank of Dean Burn, above Pogie, East Lothian, abundant, ♂ and ♀, September 8th, 1915. *T. bipunctatus*—Upper Glen Spean, W. Inverness, a few, July 25th, 1915."

With the following interesting note submitted by Mr. G. T. Porritt I conclude this short report: "As everyone knows, St. Anne's-on-Sea is a modern, and now very pretty, seaside resort, built upon the sandhills of the Lancashire coast. On the outskirts of the town there are often small sandy spaces left between the houses, and in some of these ashes and other rubbish from the houses have been thrown, the consequence being that the sand has become of dirtier and darker appearance. In such situations *S. bicolor* still flourishes, but there is a very perceptible difference in the colour of the specimens as compared with the ordinary forms, the tendency to become darker being so marked that some of them are already absolutely black. On the open sandhills the colours of the species, though variable as usual, are quite normal."

Kingston-on-Thames, February, 1916.

ECTOPSOCUS BRIGGSI (McLACH.) PSOCOPTERA.

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

EARLY in December I came across some Psocids in various stages on dead leaves of lime in my garden. I happened to secure one of these and endeavoured to name it, and found it ought to be *E. briggsi*, except that the wings were free from any dark shading at the marginal end of the veins. I asked Mr. Lucas whether it was *E. briggsi* or something else. I think I need not have done so, as I shortly found plenty of typical *E. briggsi*, and have no doubt the first specimen was a variety, though it is curious it should have been the first specimen I found, and such another has not since occurred.

Throughout December and January this insect was to be found, I may say, in all stages on these dead leaves, and up till the present (February 1st) imagines have been maturing from larvæ and nymphs on leaves brought into the house. There were also eggs, most of which perished, by leaves on which they were getting mouldy, owing to my not properly caring for them; but some hatched, and there are now larvæ or nymphs (whichever is the term used for young Psocids). During December there also appeared specimens in nearly equal numbers of *Stenopsocus cruciatus* (I am indebted to Mr. Lucas for the name), but none have appeared lately; for several weeks only *E. briggsi* have appeared. The eggs may have been of the latter species and not of *E. briggsi*. I don't know.

The dead lime leaves on which both species occurred were both on the ground and stranded at some height on bushes. They did not seem to mind how wet they might be, and they could, with our weather during this period, be very wet and fairly continuously so. I fancied they fed on surface funguses and also nibbled very minute holes in the leaves. The holes were there in considerable numbers, but I did not see them made. I also found *E. briggsi* on a dead and very bare skeleton of *Datura stramonium*, so that I fancy it is not at all particular as to its habitat or food. I was rather astonished at the rapidity with which the *E. briggsi* made their escape by running and flying when the jar in which they were bred was opened. I was perhaps rather careless, as I did not want specimens, nor knew anyone who did. It contrasted with the way in which the larvæ, though fairly active, were very careful not to be separated from the leaves which afforded them both board and lodging, wet and uncomfortable though they often were.

I find to-day some four or five imagines recently emerged, and think that two of them are somewhat deficient in dark marginal markings, so I suspect this may be evidence of immaturity. There are also larvæ of different ages. I also brought in a

handful of leaves from the garden. They are drier than usual and the temperature much lower. The leaves afforded one imago of *E. briggsi*, but none at earlier stages. Young spiders, Collembola, Apions, and other small cattle were abundant in them.

Betula, Reigate, February 1st, 1916.

THE LARVA STAGE OF *ANCYLIS SICULANA*.

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

ACCORDING to Barrett the larva of this species has been briefly described by Treitschke.

Imagines of the first brood were not infrequent in Wicken Fen from June 17th to 24th instars, frequenting the vicinity of bushes of Alder Buckthorn (*Rhamnus frangula*), and at the same date a larva feeding upon the leaves of this shrub, which eventually turned out to be that of *A. siculana*, was abundant.

The larva in the last instar adopts various methods of forming a habitation; sometimes it will turn down a portion of a leaf and form with it a neat pocket similar to those made by other members of the genus; at other times it will spin two leaves together and feed between them; or again, it will spin the whole of the terminal leaves of a shoot together and live therein. It eats only one cuticle of the leaf, usually the lower one, but not invariably so, and leaves the membrane between the upper and lower cuticles intact; the leaves that were affected by the larva have thus the appearance of being blotched.

The imagos resulting from these larvæ emerged during the last half of July and the first half of August.

The following is a short description of the larva in the last instar:

Length 10 mm., very active, when placed upon a sheet of paper if touched it wriggles frantically backwards and crawls rapidly; the colour of all the segments except the first and second is greenish brown; the head and second segment are amber coloured, the latter having a number of black blotches and spots, chiefly on the posterior margin; the internal canal is seen distinctly as a dark line along the centre of the dorsal area; all the segments except the first, second, and last, are studded with tubercles of a somewhat lighter colour than the segment itself; these tubercles are arranged in transverse rows of four, the third and fourth segments have each one of these rows, the others have two rows; the anal segment has black blotches similar to those on the second. When full fed the larva (in confinement) spins a silken cocoon between the leaves of its food plant and changes therein to a chrysalis.

NOTES AND OBSERVATIONS.

THE Australian Commonwealth requires for service in Papua a fully qualified entomologist with practical knowledge of the diseases affecting Coconuts and Para Rubber.

THE NATURALIST AT THE FRONT.—The following letter was received by an entomological friend last July when the writer was in the trenches, apparently in north-eastern France in the department of Nord, Pas de Calais, or Somme. The first and last of these departments have a rich lepidopterous fauna; probably also the Pas de Calais, though, curiously enough in view of its proximity to England, it appears to have been little worked, and there is no recent account of the local lepidoptera as a whole. French entomology generally is of great interest, and it is a pleasure to those of us who perforce remain at home to know that, amid the grim realities of war, the mind of the young soldier finds relaxation in the observation, and even the collection, of natural history objects. I may add that the officer commanding a distinguished London Territorial regiment last summer gave me a cordial invitation to his quarters in the firing line—at that time described by him as the haunt of innumerable Chalk Hill Blues—probably somewhere on the chalk hills of the Upper Somme.—H. R.-B.

“France, July 27th, 1915.

“The parts of France and Belgium where we were until a short time ago were exceedingly poor collecting grounds, but now we are nearly eighty miles south of there, by means of train and ‘frogging’ it. The wood we are now camping out in is fine ground for all sorts of insects. The wood itself grows on a long ridge and the slopes are covered with a fine growth of wild flowers, mainly hairy St. John’s wort, musk mallow, and nettle-leaved bellflower. There is not much here, however, except a few Red Admirals and Painted Ladies. It is just on the outskirts of the wood, on the hedges of bramble dividing it from the lucerne and cornfields that you see such a number of flies. First and foremost everywhere in such situations is the Silver Washed Fritillary, a close second is the Ringlet, but both of these are apparently nearly over, as they are practically all battered to pieces. I saw one specimen of the var. *valesina* and actually knocked it down, but unfortunately could not find it afterwards. I was more fortunate with the other good thing I saw, and that was the Purple Emperor in fine condition. I have him packed up now in a box with other specimens waiting an opportunity to despatch. How did the first consignment of *galatea* arrive, by the way?

“I had my doubts about the safety of such packing, and I certainly should not care to trust my *iris* to the tender mercies of the cancelling stamp. The lucerne fields I mentioned before are absolutely swarming with the Latticed Heath, rather a common thing, but I fancy rather local, so I will enclose one or two specimens with the rest. I have seen two of those huge green grasshoppers of which you mounted one specimen. I had forgotten that the blighters bite like h—l, but the first one I picked up didn’t forget to remind me

of the fact. Another thing that is very common here in the woods is that huge brick-red slug with the tiny remnant of a shell near its head, *testacella* I believe its name is. I have about twenty Fox Moth larvæ feeding up; one unknown larva also doing well on elm, and another that has now turned into the chrysalis. This latter by the general characteristics of the chrysalis I should say belonged to the Tussock family. The larva was a large hairy one, dark and with a series of large purplish warts along the back. The unknown larva is a most ferocious looking creature. The following is his description. Pale yellow green in colour, rather rough-looking surface, series of yellow transverse stripes on body, short horn on anal segments, two horns on front segment, and two more horns on second segment from front, head pale green, prolegs red [here follows sketch].

"In the previous village from which I sent the *galatea*, I went out one day to have a look round and found that nearly all the poplar trees were riddled with, presumably, Wood Leopard borings. I could not find any live chrysalides or larvæ, but have a couple of the pupa cases. I also found a Puss Moth larva there, and a newly emerged Poplar Hawk. Otherwise there was little of note.

"By the way, I forgot to mention that I caught one specimen of the White Admiral, but it was so badly damaged that I let it go again.

"Well, I must close now. I haven't a lot of time, and I want to write home as well. With best wishes,
FRED STONE."

BANKIA ARGENTULA IN WICKEN FEN.—With reference to Messrs. Farn and Thurnall's notes in the current number of this magazine, the establishment of a Lepidopteron in a locality is so interesting that it is desirable to throw all the light that is possible on it. Barrett says: "Two specimens were taken in Wicken Fen in 1877 by Mr. A. B. Farn, and two more in 1878 by Mr. W. H. B. Fletcher"; these, with Mr. Thurnall's specimen taken in 1879, constitute the only records I can find, and are only five specimens in all. Mr. Morley Houghton, the well-known Wicken professional collector, informs me that the late Solomon Bailey said he had never taken a specimen at Wicken previous to introducing it in 1901; and that he himself had never seen or heard of the species being found there since he first collected in the Fen about twenty years ago. In view of this evidence, and also of the fact that *B. argentula* is a day flier and therefore very noticeable, it seems almost certain that it was extinct at Wicken many years before Bailey introduced it. I am assuming, of course, that there are no further records; if there are, it would be interesting to know them. It would also be interesting to know if there are any records previous to 1877. Assuming that there are not, it would seem probable that the specimens occurring in that and the two following years were the results of an immigration from Chippenham Fen, which is only a few miles away. The only other alternative that I see is that the species was established at Wicken, but died out about 1880. One cannot see a good reason why *B. argentula* should not be widely distributed in Britain; the larva feeds upon grasses, *Poa annua*, etc., which flourish almost everywhere. With us it is, I think, always a bog species, formerly reported from Norfolk, but now restricted, so

far as is known, to Cambridgeshire and Killarney. On the continent, however, in some countries at least, its habits are widely different. In 1914 it was one of the most abundant species at Sarepta, on the banks of the Volga, frequenting dry slopes, railway banks, etc.—W. G. SHELDON; February 8th, 1916.

THE NORFOLK "HESPERIA ALVEUS."—In Barrett's 'Lepidoptera of the British Isles,' vol. i, pp. 272–274, there is a detailed account of the capture in Norfolk of *Hesperia (Syrichthus) alveus* by the Rev. T. H. Marsh in the early days of 1860, and of an unsuccessful search on the same ground thirty years later, when the specimens had been identified in the captor's collection. Is anything known of the later history of these specimens; in whose collection they are placed at the present time; or their ultimate fate? I see Mr. Meyrick ('British Lepidoptera,' p. 356) suggesting an error after the lapse of so long a time, and in view of the fact that they carried no label, is disinclined to accept their authenticity. If, however, the species taken was actually *alveus*, as then known, we may infer that it should now be referred to *H. armoricanus*, Obthr., which inhabits the Channel littoral from Finistère to the department of the Nord, and has been finally separated by M. Charles Oberthür and Dr. J. Reverdin from the mountain species, which is the true *H. alveus*. The accidental introduction of the butterfly into Norfolk from France is improbable; it is more likely, if imported, and assuming the capture to have been made at all at the spot indicated, to have come from Belgium. Though, being a strong flier, and a hardy insect, judging from its known distribution (as *alveus*) throughout the plains of northern Europe at least as far north as the German Baltic coast, it is surprising that it has not transferred itself across the Channel after the fashion of *Callimorpha quadripunctaria*. I suggest, therefore, that as the energies of our British continental collectors are likely for yet another year to be concentrated on native lepidoptera, they should keep close watch for *H. armoricanus*, which in normal seasons is on the wing simultaneously with *H. malvæ* in May and early June, but, unlike *malvæ*, is double-brooded, appearing again in August and September. The larva affects *Potentilla reptans*, and doubtfully *Fragaria vesca* according to M. Rehfous ("Obs. biologiques sur *H. alveus*, Hb., et *H. armoricanus*, Obthr.," 'Bull. Soc. Lépid. Genève,' vol. ii, p. 149).—H. ROWLAND-BROWN; Harrow Weald, February 9th, 1916.

MITES IN SETTING BOARDS.—May I be allowed to ask if setting boards can be treated to render them immune from the attacks of Mites. The cork of new boards even appears to be frequently affected, and though I find others have experienced the same trouble, no one seems aware of an effectual remedy.—JOHN E. EASTWOOD; Gosden House, Guildford.

VARIETY OF BARATHRA BRASSICÆ.—Last June I had the pleasure of breeding a fine variety of *Barathra (Mamestra) brassicæ*. It is nearly black, with a slight reddish tinge; all the white markings, stigmata and subterminal lines being entirely absent. It had thus

somewhat the appearance of *Hadena adusta*.—W. G. CLUTTEN ; 132, Coalclough Lane, Burnley.

EUVANESSA ANTIOPA AT CHICHESTER.—A specimen of *Euvanessa antiopa* was taken at Hunston, a village about two miles from this city, on September 30th last, by Master Laurence W. Horton. It is in very fair condition. The borders are ochreous, not white or pale. The butterfly is now in my collection.—JOSEPH ANDERSON.

HYBERNIA LEUCOPHÆARIA.—On January 30th last the Spring Usher, *Hybernia leucophæaria*, was out commonly on the oak-fence separating Esher Common from Claremont Park, Surrey. As we passed along we counted forty examples at rest. How many we missed I cannot say, as the speckled forms and the very dark ones were often quite difficult to detect. The strongly banded specimens were usually conspicuous. Probably most of the specimens were on the dark side of the normal, a few being quite melanic. Some had a ruddy appearance. All were in good condition; and apparently had but recently emerged.—L. C. E. BALCOMB ; Kingston-on-Thames.

GEOTRUPES STERCORARIUS.—On January 19th my brother while walking from Rottingdean picked up this coleopteron from the road. The prothorax is shining coppery, and the elytra, abdomen, and legs are metallic green, but much brighter than usual.—G. B. RYLE ; 15, Madeira Place, Brighton.

MICROPHYSA ELEGANTULA IN SUFFOLK.—As Mr. Morley's Catalogue (published in 1903) contains very few records for this species, I think it worth noting that last June the females were very plentiful on the trunks of beeches at Exning, in the Newmarket district, but males, of course, were few and far between.—OSCAR WHITTAKER, F.E.S. ; "Ormidale," Ashton-upon-Mersey, January 24th, 1916.

PYRAMEIS ATALANTA IN JANUARY.—In 'The Field' for February 5th Mr. Charles C. Dallas records the occurrence of *Pyrameis atalanta* near Lyndhurst Road Station, New Forest, on January 24th last. Mr. Dallas has since written kindly informing me he was quite close to the butterfly when he saw it on the wing. It flew up over a holly bush ; the sun was shining brightly at the time. The appearance of this species in midwinter is of sufficiently rare occurrence to place on record.—F. W. FROHAWK.

EARLY APPEARANCE OF ANISOPTERYX ÆSCULARIA.—Influenced by the mild weather of the first six weeks of the year, I found specimens of both *Anisopteryx æscularia* and *Phigalia pilosaria* on February 14th at rest on palings at Chipstead, Surrey.—F. W. FROHAWK.

PYGÆRA ANACHORETA IN KENT.—It may be of interest to your readers to record that in the spring of 1913 I bred two specimens of *Pygæra anachoreta* from wild larvæ taken the preceding September in the neighbourhood of Deal. The moths emerged on April 29th and May 25th, 1913, respectively.—G. B. BROWNE ; "Thorndene," South Benfleet, Essex.

ACRONYCTA STRIGOSA AT WICKEN.—Another good capture was that of a fine specimen of *Acronycta strigosa*, taken on the trunk of

an ash tree in Wicken village on July 31st, 1907.—G. B. BROWNE; "Thorndene," South Benfleet, Essex.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, November 3rd, 1915.*—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—Messrs. H. C. Tytler, Vacoas, Mauritius, and Albert F. Winn, 32, Springfield Avenue, Westmount, Montreal, Canada, were elected Fellows of the Society.—Mr. S. A. Neave exhibited a remarkable and unrecognised species of *Acræa*, which was described and figured by Lathy, in the Transactions of the Society for 1903, as a Lycaenid, and placed in the genus *Telipna*. The name for this species will therefore stand as *Acræa actinota*, Lathy.—Mr. Donisthorpe exhibited a series of the beetle *Scymnus arcuatus*. He also communicated a short paper descriptive of the life-history of the insect, sent to him by Fr. J. F. Perry.—Mr. Willoughby Ellis exhibited a teratological specimen of the common Lucanid beetle *Sinodendron cylindricum*, L.—Prof. Poulton a collection of insects captured February 20th, 1915, at the flowers of a Eucalyptus at Healesville, Victoria, by Mr. R. Kelly.—Mr. Arrow exhibited specimens of a new species of *Thaumaglossa*, bred from the egg-clusters of Mantidæ, and read notes.—Mr. G. Talbot, on behalf of Mr. J. J. Joicey, a number of new Lepidoptera from Dutch New Guinea, and read notes.—Mr. Stanley Edwards, a small box of aberrant butterflies taken by Mr. Dawson, viz. an albinistic specimen of *Epinephele jurtina* (ab. *semialba*); melanic specimens of *Brenthis pales*, *Melitæa dictynna*, and *M. didyma*; a striated specimen of *Agriades escheri* and a specimen of *Polyommatus hylas* with obsolescent spotting. The specimen of *M. didyma* was taken at Digne, the other in Switzerland. *Paper.*—The following paper was read, "On New and Little Known Species of *Xylophilidæ*," by G. C. Champion, A.L.S., F.E.S.

Wednesday, November 17th, 1915.—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—Messrs. John Wesley Carr, M.A., F.L.S., F.G.S., Professor of Biology in University College, Nottingham, and Albert Harry Hamm, 22, Southfield Road, Oxford, Assistant in the Hope Department, Oxford University Museum, were elected Fellows of the Society.—The President said he was sure the Fellows would wish, without passing any formal vote, to express their regret at the death of the late Professor Meldola, formerly President of the Society.—The Secretary announced that the Council had nominated all the officers for re-election, and proposed the following Fellows to act as the Council for 1916: Messrs. A. W. Bacot, E. A. Butler, B.A., B.Sc., T. A. Chapman, M.D., F.L.S., F.Z.S., E. A. Cockayne, M.A., M.D., J. C. F. Fryer, M.A., C. J. Gahan, M.A., E. E. Green, F.Z.S., G. B. Longstaff, M.A., M.D., G. Meade-Waldo, M.A., S. A. Neave, M.A., B.Sc., H. Rowland-Brown, M.A., A. E. Tonge.—Mr. O. E. Janson exhibited on behalf of Mr. L. H. Bonaparte Wyse a number of Coleoptera taken by him in Ireland this year.—Dr. Cockayne exhibited a series of *Dysstroma* (?)

concinata, Steph., taken by Mr. R. Y. Horn at Tarbert, Argyllshire, July, 1915. They were at rest on rocks amongst heather. For comparison *D. concinnata*, Arran, and the two Irish specimens taken by Capt. Gwatkin-Williams, R.N., on Achil Island. Also *D. citrata* ab. *pythonissata* (*immanata*), Shetlands, and *D. truncata*, Sutherland. Also a melanic aberration of *D. concinnata* taken by Mr. Horn on Arran Island.—The Rev. G. Wheeler exhibited a series of *Pieris napi*, from Kinghorn, on the coast of Fife, taken on August 4th, 1915, the ♂♂ being remarkable for the extent of the black markings on the fore-wings, the ♀♀ for the extent of the grey suffusion along the costa, inner margin and nervures of the same wings.—Dr. Guy A. K. Marshall exhibited a specimen of a Noctuid moth, *Arcyophora longivalvis*, Guen., forwarded from Rukuba Hill (4000 feet), German East Africa, by Mr. W. F. Poulton, a veterinary officer of the Uganda Protectorate, who had taken it feeding in numbers on the moisture from the eyes of mules.—Prof. Poulton exhibited two examples of a Pentatomid bug, *Zicrona cærulea*, L., and a freshly emerged male *Agriades coridon*, Poda, taken at Royston, Herts, July 25th, 1915, by Dr. E. A. Cockayne. The two brilliant green bugs were sucking the butterfly, one attacking the thorax, the other the abdomen.—Mr. W. J. Kaye exhibited ova of *Pyrrhopyge charybdis*, a skipper belonging to the wholly neotropical sub-family *Pyrrhopyginae*. The eggs for the size of the butterfly are enormous. Also a number of species of the *Pyrrhopyginae* illustrative of the different genera of the sub-family. Also *Pseudosarbia phænicicola*, a mimic of *S. xanthippe*, and *Pyrrhopygopsis socrates*, a mimic of *P. pelota*, and *Phocides pigmalion*, mimicking *J. hospita*.—Mr. G. T. Porritt, a form of *Cymatophora or*, entirely black with the exception of the pale stigmata, taken at Sunderland this year, several of the form having been taken there during each of the past four or five years.—Mr. G. Talbot, on behalf of Mr. J. J. Joicey, a number of new butterflies from Biak. Also cells of mud-wasp (*Odynerus* ? sp.) formed in the groove of an insect store-box in the Witley Museum, the mud having been collected and brought into the Museum by the wasp.—The following paper was read, "On the Biology of *Sphodromantis guttata*," by C. B. Williams, B.A., F.E.S., and P. A. Buxton, B.A., F.E.S.

RECENT LITERATURE.

Monograph of the Bombycine Moths of North America, including their transformations and origin of the larval markings and armature. Part III. Families Ceratocampidæ (exclusive of Ceratocampinæ), Saturniidæ, Hemileucidæ and Brahmæidæ. By ALPHEUS SPRING PACKARD, edited by THEODORE D. A. COCKERELL. (National Academy of Sciences, vol. xii, First Memoir.) Washington. 1914.

THIS large thick quarto volume of 276 pages and 113 plates makes one pleased to have the rest of Dr. Packard's work on this subject, and more, to regret that his death ten years ago has deprived us of the results to which these laborious studies had led him.

Mrs. Packard in the Preface says: "The manuscript and notes

for this final volume of my husband's (Alpheus Spring Packard) Monograph of the Bombycine Moths are printed, with the exception of editorial additions, exactly as he left them at the time of his death on February 14th, 1905." He "was fully aware of the incomplete condition of this later part and had expected to spend much time in finishing it." Professor Cockerell in the Introduction says that Dr. Packard "contemplated what would have amounted to a monograph of the Saturnioid moths of the world. Beginning with the North American forms he soon found it necessary to make comparisons with those of other regions . . . As all Lepidopterists know, he was led to novel and interesting conclusions regarding the classification of these insects. . . . As will be seen, great progress had been made, but very much remained to be done. . . . The arrangement is that of the Editor, following, however, the order of genera preferred by Dr. Packard, so far as could be ascertained. . . . Additions have been made . . . indicated by square brackets."

If we compare this part with the two preceding ones, we find that in Part I, the Notodontids, the species treated of are entirely North American, in Part II, South American are practically included, and in the one before us there is no geographical limit to the species dealt with. Dr. Packard obviously had to enlarge the area of his studies of this super-family as he went on. So far we might have gained largely, but unfortunately the work was cut short, so that whilst in Part I, 86 pp. out of 290 are devoted to general considerations bearing on the Notodontids, from the general structure and classification of Lepidoptera to special details, and in Part II there are 55 pp. out of 147 discussing the structure, colouration, philogeny, etc., of the Notodonts, Sphingines and Ceratocamps, and discussions of their affinities, in the part before us, anything of the sort is absent, though unquestionably, had Dr. Packard lived, the corresponding essays and discussions in this volume would have been of the greatest interest and importance. This is the measure of what we have lost. It is true that various minor points of the relationships between allied species and genera are shortly discussed, as, for example, one, of perhaps wider bearing than some of the others, as to *Rothschildia* and *Attacus* (from 'Psyche,' 1902), showing that forms from America (*Rothschildia*) differed very markedly in their neuration and other points from extremely similar Asiatic ones (*Attacus*).

Dr. Packard's discussion of the position of *Aglia tau* from 'Proc. Am. Philos. Soc.' 1893, are quoted (p. 19) and on the Saturniid family from the same volume (p. 151).

The remarkable change at the last moult in the larva of *Rhodia fugax*, losing as it does all but two of its tubercles and bristles, affords remarks as to somewhat similar changes in *Rothschildia Cercophana* and *Aglia* (p. 170). On the last two pages there are some valuable observations on *Brahmaea japonica*, in which features suggesting relationship to *Megalopyge*, *Ceratocampa*, *Bombyx* and *Endromis* are discussed. All these and others hardly console us for the loss of the wide general conclusions.

The volume, in fact, consists of descriptions of the imagines, usually critical and with references to structure, of life histories,

and descriptions of each stage where available, often directly by Dr. Packard himself from living or preserved material. The pity of it is that the grasp of the whole subject which this laborious detailed work must have afforded Dr. Packard, can hardly be obtained by any one else, by studying this volume. Whoever follows the matter up will have to go over the whole of the ground again, but will no doubt find the material here gathered will help him very largely.

The 32 plates of larvæ in colour are most effective, some of natural size, some enlarged. They are generally those of American species or of imported Asiatic such as *selene*, *atlas*, *pernyi*, with African and some others from preserved specimens.

An immense caterpillar in the collection of the Royal College of Surgeons was exhibited at the Entomological Society by the late Professor Stewart in 1906 (see 'Proceedings,' p. lxxviii). No one volunteered a name for it, but the figure of the larva of *Acanthocampa belina* on Plate XXXII of this volume shows the two larvæ to be not identical, but almost certainly congeneric.

There are 5 plates of photographs of larvæ, and 20 of neurations, presumably drawn by Dr. Packard, though this is not stated.

There are 56 plates of photographs of imagines (and one in the text) in some of which photographs of larvæ and cocoons are also presented. These are, one may say, all very good; in some cases the photographer is mentioned, but this is not so in most cases. One plate says, "photographed by J. H. Watson," and 25 plates, "all in collection of J. H. Watson," were supplied by Mr. Watson (of Manchester) and are presumably photographed by him. Eight other plates are of specimens in the United States National Museum, and selected for photography by Dr. H. G. Dyar.

There are 34 text figures, generally of details of spines, hairs and other skin armatures, and there are not a few of these on the larval plates. These emphasise the outstanding value of the book, as giving structural and other details of larvæ in their various instars.

Structural and other details of other stages are features of most of the life histories given, and are occasionally illustrated.

It may not be generally known, that in Natal the natives do (or used to) make anklets of the cocoons of *Argema mimosæ*, a number being sewn on monkey skin, and with one or more small stones in each cocoon, "rattle in a most delightful way" (p. 179).

Professor Cockerell appears to have edited the work with great efficiency and discretion, adding what is necessary to make things clear and connected, and yet in no case obtruding on you the fact that there is an Editor.

T. A. C.

OBITUARY.

EDWARD A. WATERHOUSE.

THIS most amiable man and respected British entomologist passed away on February 2nd, in his sixty-sixth year, after a painful illness, the victim of a somewhat sudden attack of cancer.

He was a member of a family inseparably connected with the study

of our coleoptera. His father, George Robert Waterhouse, is well remembered by his 'Catalogue of British Coleoptera.' His brother, Charles Owen, is a coleopterist of renown; his other brother, Frederick H., has also been an ardent collector, while his late brother-in-law, E. C. Rye, was a recognised authority on the subject. Beside the atmosphere of such an entomological family circle, our deceased friend has often told the present writer of entomological suppers given by his father, when old-time workers—such as Dr. Power—gathered round the table. He was thus reared among coleopterists, and where anything but enthusiasm was impossible. Often when he has joined me on angling and other rambles, he has frequently recognised spots as where he had accompanied his father on collecting visits years before.

He was for some time entomological curator to the Marquis of Ripon, and was for several years engaged in the City on business pursuits, where he nearly achieved prosperity, which was only prevented by one of those recurrent financial blizzards which wreck so many promising campaigns. It was in the City and in early days that he first made the acquaintance of the late George Verrall; they collected together at Rannoch and elsewhere, while the friendship was never broken.

Edward Waterhouse published and recorded very little, his great service to British entomology was reliable information placed at the disposal of any enquirer. He was frequently consulted, and his great familiarity with these insects, combined with his wonderful memory and recognition of species, was seldom at fault; if he did not identify at sight, it was not long before the names of both genus and species were forthcoming. As a collector he added two species to the British list, viz., *Quedius brevicornis*, Th. (1871) and *Adrastus pusillus*, F. (1888), while among his rare captures may be mentioned *Nyctophagus fulvicollis*, F., *Acylophorus glabricollis*, Boisd., *Hylotropes bajulus*, L., *Clytus arenatus*, L., *Lamia textor*, F., *Anisotoma picea*, Ill., and *Bruchus pecticornis*, L. He also made a very fine collection of vars. of Coccinellidæ. As Mr. H. Donisthorpe—who has given me these particulars—remarks, "He was a very sound Coleopterist and a first-rate collector." His knowledge was not confined to the Coleoptera, for of British insects in general he had a good and first-hand familiarity. He occupied a trustworthy and recognised position in the entomological setting and distributing room of the British Museum, and of his technic it could be said that no specimen was too badly damaged for him to restore, and none too minute for him to set out.

It was, however, his unique personality that endeared him to his many friends and enlisted the regard of all who met him. He had the most delightful veneer of Bohemianism over a character that comprised an almost puritanical rectitude and sincerity. In recreation he was known as a more than average amateur in the game of billiards, and in the late sixties and seventies was well known at Kilpack's (now only a memory) as a good player at bowls.

He will be more than missed by many personal friends, and by none more than the writer of this notice.

W. L. D.

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APRIL, 1916.

[No. 635

NOTES ON SOME SPRING AND AUTUMN BUTTERFLIES OF CANNES AND THE NEIGHBOURHOOD.

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

My correspondent, Mr. C. Morris, of Le Cannet, has kindly furnished me with an annotated list of the butterflies coming within his observation in the Alpes-Maritimes at Cannes, and to the north of it as far as Grasse; westward to the Estérel; and eastward to Vence, and the Gorge du Loup.

British entomologists who have collected in these regions will be interested with a detailed account of the rarer species observed by a resident in so far as he throws fresh light on the reputed captures of the past, especially as regards the autumn emergences less often displayed to those of us familiar enough with the early spring Lepidoptera of the Department.

Since Millière's day and the publication of his 'Catalogue Raisonné des Lépidoptères des Alpes-Maritimes' (Paris, 1871-75), and the Supplements thereto (1883-87), the immediate neighbourhood of Cannes has altered greatly for the worse from the entomological point of view, as was even the case when Dr. Chapman was making his observations there in the spring of 1899 (*cp.* 'Entomologist's Record,' vol. xi). Always a favourite winter and spring resort for our countrymen, and likely to be one of the first Riviera places revisited when the war is over, large areas of once productive land have been enclosed and built over, with the inevitable result that some of the finest collecting ground is no more, and the local forms and species which haunted them have disappeared. With this and the outlying region Mr. Morris has made himself familiar, collecting with Mr. Tucker in the past few years from February to about June 10th, returning generally during the first week of October. Where not otherwise recorded, therefore, dates are from February to June 10th.

HESPERIIDÆ.—Since Millière wrote, this much debated Family has been, so to speak, reorganised and classified, and we are now able, thanks to the zealous work of M. Charles Oberthür, Dr. T. A. Chapman, Dr. J. Reverdin, and others to determine with some accuracy the species actually occurring at Cannes and other places on the Riviera. Mr. Morris includes the following:—

ENTOM.—APRIL, 1916.

H

Carcharodus alcea var. *australis*.—According to Tutt, the local form.

C. althææ.—This butterfly is not included in Millière's lists. Dr. Chapman records a pupa found near Cannes on March 6th, 1899. In the mountains of the Basses-Alpes it seldom emerges before mid-July.

C. bæticus (= *marrubii* Rbr. *in litt.*).—This species, formerly regarded as a variety of *althææ*, but separated by Dr. Reverdin ('Bull. Ent. Soc. France,' 1911, pp. 335-36),* occurs at Cannes, but does not appear to have been identified by Mr. Morris.

C. lavateræ.—Not common, confirming Mr. Powell's, and Mr. Warburg's observations ('Entomologist,' xxii, p. 257).

Hesperia sidæ.—I have some examples in my collection from Cannes labelled June 1891, taken by Miss Fountaine. M. Oberthür also records it from the Estérel, near Cannes.

H. carthami.—Mr. Bromilow ('Butterflies of the Riviera,' p. 103) declares, curiously enough, that in the Alpes-Maritimes this is an alpine species, and does not occur on the coast. It appears to be fairly common at Cannes.

[*H. alveus*.—Mr. Morris includes this in his list. I venture to suggest that it is probably a large form of the following species, *alveus* being now recognised as a mountain species, which would in any case hardly be out before July.]

H. armoricanus.—Mr. Morris quotes with a ?, but I have no doubt that he has rightly identified the species which Dr. Reverdin records from Cagnes, at no great distance, on May 14th, 1908.

H. onopordi.—Appears to be quite common in May at this point of the Riviera. I have seen many examples from Cannes and neighbourhood.

H. malvoides.—Mr. Morris not unnaturally reports *H. malvæ*, but Dr. Reverdin ('Bull. Soc. Lépid. Genève,' vol. ii, fasc. 2, August, 1911) demonstrates the absence of *malvæ* in the Alpes-Maritimes, while recording the presence of *malvoides* at Cannes, April 20th, 1911, and Vence, May 16th, 1910.

[*Pyrgus tessellum*.—As there are records for this east-European Hesperiid in the south of France, and Millière actually reports it at Cannes "in May and June, rare," it may be as well to state at once that there is no reliable authority for the occurrence. In fact, when I wrote some time since to Mr. Harold Powell of Hyères for information, he replied that he had never come across it in the Var, or anywhere else on the French Mediterranean littoral, and that no doubt it had been misnamed by collectors who identified with it *H. carthami*, or even *P. proto*. An investigation of the authorities reveals the root and origin of the legend. Boisduval, in his 'Index

M. Lacreuzé of Geneva has demonstrated that the appendages of the female also differ (*loc. cit.*).

Methodicus' (1829), p. 26, under Genus *Hesperia*, Lat., Och., includes "Tessellum, H., Och. . . . Galloprov," but, as Duponchel points out, both Godart and Oechsenheimer had confused *tessellum* with *carthami*, and applied the name of a South Russian species to the not uncommon Hesperiid of the "Galloprov." Oechsenheimer repaired this error (tom. iv. suppl. p. 157, no. 3. 1816), but though Cantener, usually very accurate ('Lépid. Rhopal. des Haut-Rhin., etc.', p. 149, 1834), accepts *tessellum* as a French insect, and describes *carthami* separately, neither Boisduval nor Millière (*loc. cit.* Suppl.) noticed the duplication, and as neither mentions *carthami* in their lists, it is a natural deduction that they continued, at their respective epochs, to regard the French *carthami* as properly named *tessellum*. Meanwhile, Duponchel unconsciously contributed to the perpetuation of the mistake by announcing that he had received from the Comte de Saporta a Hesperiid, described in his 'Supplément' (tom. i., 1832) under *alveus*, "which might very well have been the true *tessellum* (la quelle pourrait bien être le véritable *tessellum*)," although it did not conform entirely to Oechsenheimer's description, still less to Hübner's figures (469, 470) of the latter. This *tessellum*-like *alveus* M. Oberthür identifies with his *Hesperia foulquieri*—at all events, Duponchel's description closely tallies with it. We have, therefore, no evidence that *H. tessellum* ever occurred in France, and it need scarcely be added that M. Oberthür, in 'Lépid. Comparée,' fasc. iv., where he enumerates the French Hesperiiids, ignores altogether the *tessellum* of the Alpes-Maritimes, and of the Var (de Boormans). Mr. Bromilow merely repeats Millière's error.*]

P. proto does not apparently come as far east along the Riviera as Cannes.

[*P. orbifer*.—Writing in the 'Entomologist,' vol. xxii., p. 257, Mr. Warburg says: "I do not think we take it" at Cannes.]

I should not have reverted to this remark, unless Dr. Siepi, a recognised authority on the Lepidoptera of Marseilles and the Bouche-du-Rhône, had given a circumstantial account of the capture of this central and east European Hesperiid in his careful work on the Lepidoptera of the Department ('Ann. Mus. Hist. Nat., Marseille,' 1904-5, p. 43). He states that *P. orbifer*

* Another entomological legend of the Family which has been handed down through a century or more of writers is that which locates *Cyclopides silvius* Knoch, in Piedmont. As late as Kane's 'European Butterflies' (1885) the Fenestrella Mountains are cited as a haunt of this essentially northern butterfly—being the locality originally recorded for his *Papilio silvius* by de Prunner ('Lépid. Pedemontana,' p. 67. 1798), though Ghiliani, who completely mastered Rambür's lucid diagnosis of the Hesperiiids, is silent on the subject ('Elenco dei Lépid. degli Stati Sardi'). De Prunner's *silvius* reads not unlike an aberration of *C. palaemon* in which the yellow ground-colour predominates to the exclusion of the black.—? Tutt's ab. No. 5 = *lutea-excessa* ('Brit. Butterflies,' vol. i., p. 195).

occurs in June and July in the Vallée de Pons and the Vallée de Cuges, and at the "glacière du Pic de Bretagne." Common in some parts of Italy, and in Hungary, there is still no other authentic French record for it, and it will be gratifying to hear from Dr. Siepi, when time and opportunity permit, that he is satisfied with his identification, in view of the general clearing-up of the group to which I have already referred. M. Oberthür, in a short notice of the butterfly, refers neither to the above notice, nor to the Italian localities ('Lépid. Comparée,' fasc. vi (1912) p. 77).

P. sao.—Very variable, and, as Rambur said of it long ago in Andalusia, "un véritable protéé pour les couleurs et le dessin des ailes inférieures."

The rest of the Hesperiiids call for no further remark here until we reach :

Parnara nostradamus.—Mr. Morris writes that he has never seen this species at Cannes, but the late M. Constant announced ('Ann. Soc. France,' 1887, p. clxxxv) that on September 27th, 1887, he captured a specimen at rest on a blade of *Andropogon hirsutum*, evidently freshly emerged, quite close to his villa at Golfe Juan. This was hailed as the first recorded species in France, but it seems that, either in the preceding year, or earlier, Dr. Coulon had discovered *nostradamus* somewhat further east at Eze, near Nice, where several examples were taken by him and Wagner in October (Lépid. des Alpes-Maritimes, 2^e. Supplément Millière, signed Cannes 1886, Addenda, p. 81). Finally, M. Oberthür tells us that M. Decoster found it at Mentone, still further east, at some date unstated. In other southern countries it appears to be double brooded, emerging from May to October (cp. Frionnet, Premiers États des Lépid. Français Rhopalocera, p. 276, who credits Millière with Cannes records). But there has been considerable confusion between this species and *P. lefebvrei* (which is not a French insect), and we must await further information upon its biology. At all events, it is clear that the butterfly has been taken in the autumn in this one favoured Department.

(To be continued.)

NEW HYBRIDS IN THE BISTONINÆ.

BY J. W. H. HARRISON, B.Sc.

SINCE my last list of Biston hybrids, published in the 'Entomologist' for July, 1910, each year has produced its quota of new hybrids, and my experiments have become more extensive than ever. The result is that I am practically overwhelmed

with an enormous mass of observations which awaits publication, and is held up owing to the war. A very brief *résumé* of these results is therefore given here in order to clear the air, as it were, for this year's experiments, which have already commenced. Although three of the hybrids have been discussed to some extent in 'Lepidopterologie Comparée,' fasc. vii, they are included here, as that work is not generally accessible to English readers.

(a) PRIMARY HYBRIDS.

(1) *Lycia* hyb. *buloveci* = *L. hirtaria* ♂ × *Ithysia græcaria* ♀. ('Lep. Comp.,' fasc. vii, p. 120).

Like all other hybrids, in which a male of the genus *Lycia* and a female of the genus *Ithysia* are involved, this hybrid only exists in the male sex.

(2) *Lycia* hyb. *arethusa* = *L. hirtaria* ♂ × *Pæcilopsis isabellæ* ♀. Both sexes are produced, and in equal numbers.

(3) *Lycia* hyb. *wallacei* = *Lycia hirtaria* ♂ × *Pæcilopsis lapponaria* ♀.

This likewise produces the sexes in equal numbers. The females are rather like those of the cross between *hirtaria* and *zonaria*.

(4) *Lycia* hyb. *fletcheri* = *L. hirtaria* ♂ × *P. rachelæ* ♀.

Interesting as being a cross between a Canadian species and a European one. Called after the late Dr. Fletcher, Dominion Entomologist, who introduced me to the species *rachelæ*.

(5) *Pæcilopsis* hyb. *gibsoni* = *P. rachelæ* ♂ × *zonaria* ♀.

Of the same nature as the last form. Named after Mr. Arthur Gibson, Assistant Entomologist, who has assisted me with "raw" material for my experiments.

(6) *Pæcilopsis* hyb. *margueritæ* = *Pæcilopsis pomonaria* ♂ × *Pæcilopsis rachelæ* ♀.

(7) *Pæcilopsis* hyb. *henrici* = *P. isabellæ* ♂ × *P. rachelæ* ♀.

These two forms are named after the children of a friend who has been of invaluable assistance in getting me material—help which, I hope, will be continued after the war.

(8) *Pæcilopsis* hyb. *christianæ* = *P. pomonaria* ♂ × *P. isabellæ* ♀.

Produces both sexes, and in approximately equal numbers.

(9) *Pæcilopsis* hyb. *robsoni* = *P. isabellæ* ♂ × *P. pomonaria* ♀.

Like the last, has both sexes in equal numbers, but is much more prone to "lying over."

(10) *Pæcilopsis* hyb. *heslopi* = *P. pomonaria* ♂ × *P. lapponaria* ♀.

A sturdy and strong hybrid with both sexes and, in spite of its parentage, showing no signs of lying over.

(11) *Ithysia* hyb. *criddlei* = *I. zonaria* ♂ × *P. rachelæ* ♀.

The hybrids involving *Pæcilopsis rachelæ* I owe to my friend, Mr. Norman Criddle, of Treesbank, Manitoba, whose efforts to get me living females of the species shipped in safety to England have been untiring.

(b) SECONDARY AND OTHER HYBRIDS.

(12) *Pæcilopsis* hyb. *felkeli* = *P.* hyb. *christianæ* ♂ × *P.* hyb. *robsoni* ♀.

(13) *Pæcilopsis* hyb. *proxima* = *P.* hyb. *robsoni* ♂ × *P.* hyb. *christianæ* ♀.

Both of these hybrids were easily obtained and fairly easily reared, the former being the more fertile cross and the latter the stronger.

(14) *Pæcilopsis* hyb. *confusa* = *P.* hyb. *heslopi* ♂ × *P.* hyb. *christianæ* ♀.

(15) *Pæcilopsis* hyb. *mixta* = *P.* hyb. *heslopi* ♂ × *Ithysia zonaria* ♀.

These two crosses are noteworthy, inasmuch as they are the first *Biston* crosses reared containing three species. Another noteworthy point is the fact that, although the hybrid ♀ of *heslopi* was absolutely sterile, on the contrary the male was fertile. The latter cross, as is usual when the male is of the genus *Pæcilopsis* and the female of the genus *Ithysia*, produced no female.

(16) *Pæcilopsis* hyb. *connexa* = *P.* hyb. *christianæ* ♂ × *Ithysia zonaria* ♀.

The last remark of the preceding paragraph applies to this likewise.

(17) *Pæcilopsis* hyb. *laricis* = *P.* hyb. *christianæ* ♂ × *P.* *isabellæ* ♀.

Remarkable as the only hybrid which fed on larch, the food of *P. isabellæ*. The others always refused it.

(18) *Pæcilopsis* hyb. *inversa* = *P.* hyb. *christianæ* ♂ × *P.* hyb. *margueritæ* ♀.

(19) *Pæcilopsis* hyb. *reversa* = *P.* hyb. *margueritæ* ♂ × *P.* hyb. *christianæ* ♀.

(20) *Pæcilopsis* hyb. *brooksi* = *Pæcilopsis pomonaria* ♂ × *Lycia* hyb. *pilzii* ♀ ('Lep. Comp.,' fasc. vii).

Of great importance, as up to the present this cross has yielded gynandromorphs only.

(21) *Pæcilopsis* hyb. *hulli* = *P.* hyb. *hunii* ♂ × *L. hirtaria* ♀. Produces, in spite of its curious pupæ, both sexes.

(22) *Pæcilopsis* hyb. *interfauna* = *P.* hyb. *confusa* ♂ × *P. rachelæ*.

Contains, as will be seen, four species.

(23) *Lycia* hyb. *burrowsi* = *L.* hyb. *pilzii* ♂ × *L. hirtaria* ♀. Produces both sexes in equal numbers.

(24) *Lycia* *hyb. adkini* = *L. hyb. burrowsi* ♂ × *L. hirtaria* ♀.
Very like pure *hirtaria*, as one would expect.

(c) OTHER RESULTS.

I have interbred in the following pairings with satisfactory results.

P. hyb. christianæ ♂ × *P. hyb. christianæ* ♀.

P. hyb. robsoni ♂ × *P. hyb. robsoni* ♀.

(*P. hyb. christianæ* ♂ × *P. christianæ* ♀) ♂ × *P. christianæ* ♀.

In all these three cases segregation on Mendelian lines occurred, but the numbers reared, except in the first case, were too few to admit of any conclusions being formed.

In addition to the above, I got the cross *Lycia* *hyb. felkeli* ♂ × *L. hirtaria* ♀.

This produced fertile ova, but the little larvæ died in the egg.

As soon as an opportunity presents itself, I intend to publish a detailed account of the above hybrids. The great obstacle to this is the impossibility of publishing such a great amount of material in a magazine.

In conclusion, I can only repeat my thanks to the following friends for help with the ova of the pure species: Messrs. R. Adkin (Lewisham), G. Brooks (Friern Barnet), Anton Bulovec (Laibach), N. Criddle (Treesbank), E. J. Denham (Acocks Green), H. E. Lange (Freiberg), and to Herr Felkel (Innsbruck).

YELLOW FORM OF *BREPHOS PARTHENIAS*.

BY H. WORSLEY WOOD.

MR. SACKVILLE recorded in the 'Entomologist' for June, 1912 (p. 181), the capture at Wimbledon of a yellow form of *Brephos parthenias*, and quoted 'Moths of the British Isles,' ii, p. 98, as to its rarity. From this locality in the same year, and again in the three following years, I took one example of this aberration. In addition to these one was taken by Mr. Pugsley in 1914, and in 1915 Messrs. W. Austin and H. J. Lee took one each. All these insects except Mr. Sackville's, which I have not seen, were males. Last year the collecting ground was worked daily by a number of my friends over the whole period of the insect's emergence, but only those recorded above were seen or captured. The light under surface of this form gives the insect a totally distinct appearance on the wing, and it would be impossible for anyone having once seen it to overlook it. Of many hundreds of specimens caught, examined, and released last year

I only found one which could in any way be regarded as a form intermediate between type and var. It would be interesting to know in how many of its many haunts this yellow form occurs regularly.

The form has not been named, and the only named variety in this country appears to be Tutt's ab. *Nigra* from a solitary example in the Dale collection.

Brephos parthenias ab. *flava*, n. ab.

Fore wings grey-brown without any trace of the reddish suffusion of the typical *Parthenias*. Hind wings a pale clear yellow without any trace of orange colour. Under surface pale yellow, markings as in the typical insect. Wimbledon Common: Type, a ♂ captured March 27th, 1912, in my collection.

MELANIC *COSYMBIA* (*EPHYRA*) *PENDULARIA*.

By H. WORSLEY WOOD.

At a recent meeting of the London Natural History Society two collectors exhibited between them three examples of a melanic form of *Cosymbia pendularia*. Two of the insects were from the Oxshott district in 1915, the other from Haslemere in 1911. The following is a description of this very distinctive form:

Cosymbia pendularia ab. *nigro-roseata*, n. ab.

Ground colour of all wings black, cross lines whitish, space between inner and outer cross-lines of fore wings reddish. Haslemere: Type, a ♂ bred from larva, May 16th, 1911, by Mr. W. B. Pratt.

NEW SPECIES OF DREPANIDÆ AND NOCTUIDÆ
FROM FORMOSA.

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

DREPANIDÆ.

Phalacra kagiensis, sp. n.

♂. Fore wings slightly hollowed below apex, angled about middle; whitish, powdered and suffused with pale brown; medial and postmedial lines blackish, each excurved, approximating towards dorsum, space between the lines darker suffused, especially on the dorsal area, where the veins are blackish; discoidal spot and a dot at lower angle of cell black; subterminal line blackish, wavy; black marks on the veins before termen, those towards tornus in a dark brownish lunular patch. Hind wings crenulate, deeply notched below

apex; whitish, powdered with pale brown, discoidal spot black, a smaller spot at lower end of the cell; antemedial line dark brown, wavy, diffuse, not continued to costa; postmedial line dark brown, double, wavy; several diffuse dark brown transverse lines on the terminal area; black marks on the veins before termen. Underside whitish suffused and powdered with brown, discoidal marks as above; all the wings have a dark brown postmedial line and subterminal band.

♀. Apex of fore wings rather more produced and the angle at middle more acute; the hind wings more deeply notched below apex, slightly angled about middle.

Expanse, 34 millim.

Collection number, 632.

One example of each sex. The male from Kagi, August 21st, 1905 (on the plains), and the female from Kanshirei (1000 feet), April 12th, 1908.

Near *P. excisa*, Hampson.

NOCTUIDÆ.

Enispa bilineata, sp. n.

♂. Head brown, white between antennæ, the latter ciliated white at base; thorax and abdomen rather greyish-brown, the latter white at base. Fore wings greyish brown, costa darker edged with white beyond the middle; antemedial and postmedial lines whitish, indistinct; the postmedial slightly excurved, and indented above dorsum; discoidal dot and points on the termen black. Hind wings greyish brown, discoidal dot blackish, line beyond whitish and slightly sinuous; terminal line black, interrupted. Underside whitish, fore wings suffused and the hind wings freckled with fuscous; all the wings have a dusky discoidal spot and a transverse line beyond.

Expanse, 18 millim.

Collection number, 1628.

A male specimen from Kanshirei, May 7th, 1907. There are two specimens from Formosa (Wileman) in the British Museum; both of these are smaller in expanse and have a larger discoidal mark on the fore wings.

Comes nearest to *E. leucosticta*, Hampson.

Plecoptera (?) *umbrosa*, sp. n.

♂. Head and thorax ochreous brown mixed with darker greyish brown; antennæ fasciculate; abdomen pale brown, flecked with darker. Fore wings ochreous brown, flecked with darker, medial and basal area transversely clouded with dusky; antemedial line blackish, sinuous; postmedial line blackish, wavy, indented before dorsum; discoidal dot pale; terminal area dusky, traversed by an indistinct and irregular band of the ground colour; a white point followed by a dark dot at end of the veins; fringes dusky, paler at base. Hind wings fuscous, wavy, terminal line and tornal cloud ochreous brown.

Underside pale brown suffused with darker; all the wings have a blackish discoidal mark and transverse line beyond.

Expanse, 38 millim. ♂; 44 millim. ♀.

Collection number, 1873 ♂, 1501 ♀.

A male specimen from Arizan, June, 1908 (7300 feet), and a female from Kanshirei, July, 1908 (1000 feet).

Diomea stellata, sp. n.

♂. Head dark brown, palpi reddish brown, darker above; thorax reddish brown, darker in front; abdomen paler brown. Fore wings cinnamon brown suffused and clouded with blackish on terminal two-thirds; a white mark in the cell and one just below; antemedial line black, oblique, slightly excurved, thickened above middle, bifurcate on costa; postmedial line black, broad on costa, thence slender and serrated, some white dots on it, followed by a transverse series of white dots; terminal line black, arched, preceded by a black triangular cloud about middle; fringes cinnamon brown mixed with blackish. Hind-wings fuscous brown, subterminal band paler; terminal line black, arched. Underside pale brown suffused with fuscous; all the wings have two black or blackish transverse lines and the fore wings have black discoidal spot.

Expanse, 34 millim.

Collection number, 1689.

A male specimen from Arizan, June, 1908.

Paragona dubia, sp. n.

♂. Head, thorax, and abdomen light brown; antennæ with long ciliæ. Fore wings whitish tinged with light brown on basal and terminal areas, also along the costa; a dark brown mark on costal area between the base and the sinuous dusky antemedial line; medial line dusky, sinuous, commencing in a dark brown spot on costa; discoidal mark blackish, linear; postmedial line black, interrupted towards costa; subterminal line black, indistinct towards costa; area enclosed by postmedial and subterminal lines dark brown, except at costa. Hind wings and underside fuscous.

Expanse, 22 millim.

Collection number, 86.

A male specimen from Anping, June 8th, 1904 (plains).

Arasada kanshireiensis, nom. nov.

This species was described by me as *Hyposada albicosta* ('Entom.' xlvii, p. 168, 1914). I now find that it is referable to the genus *Arasada*, in which there is already a species bearing the name *albicosta*.

NOTES ON BRACONIDÆ.—XI.*

THE TRIBE RHOGADIDES, WITH ADDITIONS TO THE BRITISH LIST.

BY CLAUDE MORLEY, F.Z.S., &c.

OUR knowledge of this interesting Tribe has advanced but little since the Rev. T. A. Marshall dealt with it in the *Trans. Ent. Soc.* just thirty years ago. The frequency of many species has since that time been enhanced, and there are a few which should be added to our indigenous fauna; two or three Continental authors have placed the distinctions of the species upon a more scientific footing, and the general breeding that has recently been effected in England from Lepidoptera, upon which the species are exclusively parasitic, render it well to revise the group.

The Rhogadides may be known from the remainder of Braconidæ by the following characters: Head transverse, more or less constricted behind the eyes; occiput distinctly margined; mandibles not divergent and in repose forming, with the deeply emarginate clypeus, a subcircular aperture; abdomen sessile, with the suture of the second-third segments inflexible; front wings with three cubital cells and the posterior (*i. e.* anal) nervure not interstitial.

TABLE OF GENERA.

- | | | | |
|------|-----|--|--------------------|
| (10) | 1. | Third segment not elevated; oral orifice normal. | |
| (7) | 2. | Suture of second-third segment distinct and crenulate. | |
| (4) | 3. | Palpi with 3rd joint securiform; terebra $\frac{1}{4}$ of abdomen | PELECYSTOMA, Wesm. |
| (3) | 4. | Palpi filiform throughout; terebra hardly exerted. | |
| (6) | 5. | First abscissa of radial nervure longer than 2nd; anus of ♀ retracted | HETEROGAMUS, Wesm. |
| (5) | 6. | First abscissa of radius shorter than 2nd; anus normal | RHOGAS, Nees. |
| (2) | 7. | Suture of second-third segment obsolete. | |
| (9) | 8. | Second cubital cell rectangular; abdomen longer than head and thorax | PETALODES, Wesm. |
| (8) | 9. | Second cubital cell trapeziform; abdomen not longer than head and thorax | CLINOCENTRUS, Hal. |
| (1) | 10. | Third segment apically elevated; oral orifice obsolete | ADEMON, Hal. |

PELECYSTOMA LUTEA, Nees.

A somewhat large and stout flavidous species, sparingly scattered through northern Europe, but nowhere common; it is said to have emerged from larvæ of *Papilio Machaon*, Linn.

* Cf. 'Entom.,' 1909, p. 96 et 'Ent. Mo. Mag.,' 1909, p. 209.

With us it is rare; on June 7th, 1899, Tutt sent me two live examples, which had just emerged from an unknown Lepidopteron near London; and at the end of the following June I received another, taken by Dr. R. T. Cassal at Ashby, near Doncaster. The only other species is *P. tricolor*, Wesm., found in Belgium, France, and Germany; both species have been raised from *Cochlidion limacodes*, Hufn.

HETEROGAMUS DISPAR, Curt.

Distinctly infrequent, though commoner than the last in northern Europe, extending to Helsingborg in Sweden. The tricoloured antennæ of the ♀ are distinctive, and its much narrower form will distinguish the ♂ from similar pale forms of *Aleiodes*. Bignell found it in Devon, Marshall at Botusfleming in Cornwall, Cornworthy in Devon, and Charlton in Wilts; and Bridgman says (Tr. Norf. Nat. Soc., v, p. 63) that he swept two ♀ ♀ from a lane bank on July 29th, 1889, at Earlham, near Norwich. Piffard has given me the female from Felden, near Boxmoor, in Herts; and I believe the species to be nocturnal, like so many other testaceous Hymenoptera, because I have swept it (from heather) at Butts Lawn, near Lyndhurst, at dusk on August 6th, 1901, and also, in the pitch dark, long after dusk, in Herringswell Fen, Suffolk, on August 21st, 1905. It has not yet been bred, though some connection with larches is suggested.

RHOGAS, Nees.

The species of this genus, and perhaps of the whole tribe, are remarkable and unique among parasitic Hymenoptera in that they slay their host when it has lived long enough for them themselves to attain the full-fed condition. Thus quite small Poplar Hawk larvæ are found dead, which in other circumstances would have attained the pupal state when attacked by the largest Ichneumon. In every instance the host remains attached to the food-plant; its skin hardens and protects the enclosed *Rhogas*, which in my own experience is always a solitary parasite. The distortion of the host's skin during induration renders *post mortem* determination impossible. Marshall's tables of the species of this genus were founded far too much upon mere coloration, and he himself owns the difficulty of seizing constant characters to distinguish insects, so variable in this very respect. In 1892 Prof. C. G. Thomson, of Lund, published ('Opusc. Ent.' xvi, pp. 1659-82) an excellent account of such species as were known to him; and with this I have attempted to amalgamate the remainder of the palæarctic kinds, by no means an easy task, because the divisional characters employed by him had not previously been noticed in descriptions.

A TABLE OF PALÆARCTIC SPECIES.

- (38) 1. Hind calcaria longer than a third of their tibiæ ; mesosternum not laterally alutaceous ; legs red and usually stout (RHOGAS, *auctt.*).
- (3) 2. Length nearly 10 mm. ; hind tibiæ black, basally white 1. *grandis*, Gir.
- (2) 3. Smaller species, with hind tibiæ not so coloured.
- (23) 4. Scrobes deeply impressed and extending nearly to eyes ; cheeks short.
- (14) 5. Flagellum stout and, like the body, entirely black.
- (7) 6. Nervulus of front wing emitted from centre of cell. 2. *cruentus*, Nees.
- (6) 7. Nervulus of front wing elongately antefurcal.
- (13) 8. Stigma black ; hind wing with no brachial cell.
- (12) 9. Second cubital cell much broader than high.
- (11) 10. Hind femora red, their tarsi black 3. *dissector*, Nees.
- (10) 11. Hind femora apically black, their tarsi rufescent 4. *periscelis*, Reinh.
- (9) 12. Second cubital cell subquadrate 5. *rugulosus*, Nees.
- (8) 13. Stigma pale ; hind wing with recurrent nervure elongate 6. *pulchripes*, Wesm. = ? *affinis*, HS.
- (5) 14. Flagellum slender and, like the abdomen, basally pale.
- (18) 15. Front wing with nervulus emitted from centre of brachial cell.
- (17) 16. Mesonotum nitidulous and very finely punctate 7. *reticulator*, Nees.
- (16) 17. Mesonotum dull and very closely pubescent 8. *medianus*, Thoms.
- (15) 18. Front wing with nervulus emitted before centre of brachial cell.
- (22) 19. Hind tibiæ not white ; flagellum black.
- (21) 20. Three basal segments and hind tarsi rufescent 9. *rufipes*, Thoms.
- (20) 21. Two basal segments rufescent ; hind tarsi black 10. *irregularis*, Wesm.
- (19) 22. Hind tibiæ centrally white ; flagellum basally pale 11. *pallidicornis*, HS.
- (4) 23. Scrobes obsolete ; cheeks elongate and buccate.
- (25) 24. Basal radial abscissa of hind wing double length of second 12. *miniatus*, HS.
- (24) 25. Basal radial abscissa of hind wings not or hardly longer than second.
- (27) 26. Mesopleuræ punctate, their fovea shining 13. *gasterator*, Jur.
- (26) 27. Mesopleuræ rugulose, their fovea dull.
- (33) 28. Sternauli distinct ; abdomen basally rufescent and shortly pilose.
- (30) 29. Flagellum black ; basal nervure of hind wing not continuous 14. *dimidiatus*, Spin.

- (29) 30. Flagellum basally broadly red; basal nervure of hind wing continuous
- (32) 31. Palpi not pale; third segment basally red
15. *alpinus*, Thoms.
- (31) 32. Palpi stramineous; third segment black
16. *flavipalpis*, Thoms.
- (28) 33. Sternauli hardly indicated; abdomen black or elongately pilose.
- (35) 34. Body elongately pilose; base of abdomen pale
17. *hirtus*, Thoms.
- (34) 35. Body shortly pilose; abdomen black.
- (37) 36. First segment hardly broader apically than basally
18. *carbonarius*, Gir.
- (36) 37. First segment much broader apically than basally
19. *morio*, Reinh.
- (1) 38. Hind calcaria not longer than a third of their tibiæ; mesosternum laterally alutaceous; legs testaceous and usually slender (ALEIODES, Thoms.)
- (44) 39. Mesopleuræ laterally glabrous and nitidulous.
- (41) 40. Second segment not longer than third; ocelli large
20. *heterogaster*, Wesm. = ? *albitibia*, HS.
- (40) 41. Second segment distinctly longer than third; rima of mouth large.
- (43) 42. Basal segment twice as broad apically as basally
21. *modestus*, Reinh.
- (42) 43. Basal segment but little contracted basally
22. *fortipes*, Rhein.
- (39) 44. Mesopleuræ laterally alutaceous and dull; rima of mouth small.
- (50) 45. Sides of mesosternum granulosely punctate.
- (49) 46. Flagellum consisting of about 37 joints.
- (48) 47. Vertex constricted in a straight line behind eyes
23. *tristis*, Wesm.
- (47) 48. Vertex rounded behind the eyes 24. *bicolor*, Spin.
- (46) 49. Flagellum consisting of at least 45 joints
25. *geniculator*, Nees.
- (45) 50. Sides of mesosternum finely alutaceous.
- (52) 51. Radial cell of hind wings not centrally constricted
26. *vittiger*, Wesm.
- (51) 52. Radial cell of hind wings centrally constricted.
- (54) 53. Tarsal claws dilated; abdomen laterally white-marked
27. *angularis*, Thoms.
- (53) 54. Tarsal claws not dilated, nor abdomen white-marked.
- (56) 55. Basal radial abscissa very short; 2nd cubital cell quadrate
28. *punctipes*, Thoms.
- (55) 56. Basal radial abscissa not short; 2nd cubital cell longer than high.
- (60) 57. Legs and body nearly entirely black.
- (59) 58. Abdomen obovate, with segments five to seven retracted
29. *arcticus*, Thoms.

- (58) 59. Abdomen normal, apical segments exerted
30. *borealis*, Thoms.
- (57) 60. Legs and at least centre of abdomen pale.
- (68) 61. Length 7 mm. or over; body stout.
- (63) 62. All the femora and tibiæ apically black
31. *æstuosus*, Reinh.
- (62) 63. Both femora and tibiæ not black-marked.
- (65) 64. Femora alone nigrescent 32. *hemipterus*, Marsh.
- (64) 65. Only the hind tibiæ apically black.
- (67) 66. Basal segment half as broad again apically as
basally 33. *prætor*, Reinh.
- (66) 67. Basal segment nearly thrice broader apically than
basally 34. *procerus*, Wesm.
- (61) 68. Length six millimetres or under; body slender.
- (74) 69. Vertex rounded behind the eyes.
- (71) 70. Second segment shorter than broad, of ♀ con-
siderably 35. *testaceus*, Spin.
- (70) 71. Second segment longer than broad; of ♀ slightly
shorter.
- (73) 72. Hind femora stout; abdomen black, anus alone
pale 36. *crassipes*, Thoms.
- (72) 73. Hind femora normal; abdomen at least discally
pale 37. *circumscriptus*, Nees.
- (69) 74. Vertex narrowed in a straight line behind the eyes.
- (76) 75. Body infuscate or black, with a discal plaga
38. *nigricornis*, Wesm.
- (75) 76. Body mainly testaceous in colour.
- (80) 77. Abdomen testaceous, at most with the extremities
black.
- (79) 78. Flagellum consisting of at least 49 joints
39. *unicolor*, Wesm.
- (78) 79. Flagellum consisting of at most 41 joints
40. *armatus*, Wesm.
- (77) 80. Abdomen black, with the two basal segments
testaceous 41. *apicalis*, Reinh.

Of these forty-one species no more than fourteen have hitherto been recorded from Britain, to which I am enabled to add three more.

(To be continued.)

NOTES AND OBSERVATIONS.

ENTOMOLOGICAL SOCIETY OF FRANCE, BULLETIN, 1916, Nos. 1, 2.—
The first issue of the 'Bulletin' for the current year contains the list of Members down to January 16th, 1916. In one or two respects it differs materially from the usual annual publication. In the first place, a special Roll of Honour is reserved for the ten "Membres morts pour la Patrie," among whom the name of M. l'Abbé Vouaux indicates the universality of the French national service system. On the other side of the medal the short list of

those whose names have been removed is headed by—Cobourg (Ferdinand de), Sofia. But in this connection it is interesting to note that more than one enemy German retains his membership. The President for the year is M. l'Abbé J. de Johannis, well known to all British lepidopterists who work in France as an unimpeachable authority upon a group far more popular with British than French entomologists.

To No. 2 'Bulletin' (the 'Bulletin' is published, apart from the 'Transactions,' bi-monthly, and has appeared punctually even during the last eighteen months of the war) M. l'Abbé J. de Johannis contributes a short paper on the time of emergence from the pupa of certain insects, of which the following may be cited as common to both France and Britain: *Agrotis agathina*, 6 p.m. to 9 p.m.; *A. ripæ*, 5 p.m. to 8 p.m.; *Catocola fraxini*, 9 p.m. to midnight; *Callimorpha dominula*, and *C. quadripunctaria*, 10 a.m. to 2 p.m.; *Anthrocera trifolii*, 9 a.m. to noon; *Sesia vespiformis*, 10 a.m. to 2 p.m.; *S. myopæformis*, 9 a.m. to noon; *S. chrysidiformis*, 8 a.m. to 11 a.m.; *Hepialus upulina*, 5 p.m. to 8 p.m.

THE NORFOLK HESPERIA ALVEUS.—Since writing my note (*antea*, p. 66) on the Norfolk *H. alveus*, I have received a letter from Mr. J. Edwards drawing my attention to his article on the subject published in the 'Ent. Mo. Mag.' xxxix. p. 90 (1903), in which he establishes beyond all doubt the identity of Mr. Marsh's captures. I much regret that I should have overlooked his lucid account of the identification and habitat of what he claims to be a truly indigenous species, a survival of the ancient fauna of Norfolk. It is also interesting to know that he is the possessor of one of the Hesperiids in question; and this not one of a pair or so, but of a series taken at the same spot, Cawston. The Rev. T. H. Marsh, nephew of the captor, and his successor as Rector of Cawston, tells me that some still remain in his late uncle's collection. A pair fetched 40/- at the sale of the late Mr. Barrett's collection on March 16th, 1906, at Stevens, one of which probably served as model for the very poor figure in his Lepidoptera of the British Isles. Perhaps some reader of the 'Entomologist' will kindly inform me where the rest of the series have found a home. As to whether they are *alveus* or *armoricanus* Obthr., I am safe in leaving the problem to be solved in the able hands of Mr. Edwards.—H. ROWLAND-BROWN; Harrow Weald, Middlesex, March 24th, 1916.

IS XANTHIA ERYTHRAGO, Warren = PALLEAGO Hb., fig. 442 = GILVAGO VAR. PALLEAGO Gn., A BRITISH INSECT?—Mr. Bernard Cooper, of Stoke Newington, has recently asked my opinion of a pair of insects which he thought might be a form of *X. ocellaris* Bkh. I at once recognised them as the *X. erythrago* of Warren (Seitz, 'Macrolepidoptera,' vol. iii) an insect for a long time regarded as a var. of *X. gilvago*, and one which has never been recorded from this country. The specimens are labelled "E. Kent," but no date or name of captor is given. Mr. Cooper tells me that they were purchased from Mr. J. H. Shepherd, late of Shipley, Yorks. *Erythrago* is both local and rare on the Continent, but from the little I have read of its habits and habitat there seems no reason

why it should not occur here. It may possibly have been overlooked, or specimens may exist in collections as forms of *ocellaris* or *gilvago*, or even as *Cosmia paleacea* Esp. If any of your readers can find specimens in their series of these three insects, which agree with Warren's description of *erythrago* given below, I should be glad if they would communicate with me. It is perhaps too much to hope that there may be someone who could throw some light on the history of the two insects which have prompted this query. Warren's description runs: "Fore wing reddish ochreous or yellowish ochreous with all markings very slightly deeper, except the black spotted submarginal and a pale grey dot at the lower end of the reniform which are distinct, the other markings are disposed as in *gilvago*—hind wings whiter."—H. WORSLEY WOOD; 31, Agate Road, Hammersmith, W.

EVERGESTIS STRAMINALIS IN TILGATE FOREST.—Some twenty-five years ago, on an August afternoon, whilst looking for larvæ of *Cucullia gnaphalii* in a recently cleared portion of this Forest, I disturbed a few worn examples of this local species, which I have never seen elsewhere, before or since. Last July I passed over the same ground, which again had been recently cleared of undergrowth, and sure enough, within a few yards of the same spot, I knocked up a specimen, and on a subsequent visit two others. I have never seen, as above stated, this species in any other part of the Forest, but it evidently does occur elsewhere at Tilgate, for recently my friend, Mr. Rayward, showed me a fine specimen he took there some years ago; exactly where he does not remember, but it was not my locality, for he was not acquainted with it, and it is an outlying portion of the Forest.—W. G. SHELDON.

ALISPA ANGUSTELLA IN SURREY.—For many years I have examined the berries of the spindle tree, *Euonymus europæus*, each autumn for larvæ of this species—which round Croydon, as in all chalk districts, is an abundant shrub—without success; but in October last, on the Downs west of Dorking, I did find one, and only one, bush which contained a good number of larvæ.—W. G. SHELDON.

NOTE ON CRYPTOBLABES BISTRIGA.—Last autumn, after many abortive attempts, I succeeded in finding larvæ of this species. My first success was in Tilgate Forest, where I found the larvæ very local and not common. A little later I obtained about two dozen in an afternoon at Brockenhurst in the New Forest.—W. G. SHELDON.

LOCAL TORTRICES, ETC., AT LIMPSFIELD CHART.—During the past year I paid several visits to this wood in search chiefly of Tortrices, for which it is undoubtedly one of the best localities I know. There is a good deal of whortleberry, *Vaccinium myrtillus*, included in the undergrowth, and amongst this *Grapholitha geminana* swarmed in July, with odd examples of *Olethreutes sauciana*; and earlier *Ancylis myrtillana* occurred, with plenty of *Epione advenaria*. Amongst birch *Ancylis upupana*, *A. uncana*, *Olethreutes corticana*, *Epiblema demarniana*, *E. bilunana*, and *Conchylis nana* occurred, the last two species abundantly. Flying over oak in the afternoon sun *Pammene germanana* and *P. nitidana* were not uncommon in early

June, with plenty of *Ancylis mitterbacheriana*. There is a certain amount of *Pinus sylvestris* in one portion of the chart, amongst which I found *Steganoptycha rubiginosana* abundant, and also a few *Grapholitha cosmophorana*, *G. coniferana*, *Olethreutes bifasciana*, and swarms of *Evetria pinivorana*. *Acrobasis tumidana*, *Salebria betulae* and *S. fusca* also occurred.—W. G. SHELDON.

LYMANTRIA MONACHA, ab.—My attention has recently been drawn to a note by Mr. Rippon in this Journal for September, 1914, on a form of *L. monacha* in which the crimson bands on the body are replaced by yellow. As it is suggested that this variation is of great rarity, it may be worth recording the occurrence of a few yellow-banded specimens (I have four, and there were certainly others) among a large brood of otherwise normal insects bred in June, 1910, from ova from a ♀ taken near Dawlish the previous summer.—H. WORSLEY WOOD; 31, Agate Road, W.

CILISSA MELANURA IN SURREY.—I am not sure if this bee has been recorded from Surrey; but although rather late in the day, it may be interesting to mention the capture of a single ♀ specimen at Thornton Heath in August, 1908. I should have passed it over as merely the far better known but closely allied *C. leporina*, had I not noticed the sub-triangular abdomen. The other differences pointed out by Mr. Sladen when he added it to the British list ('Ent. Mo. Mag.', xxxiii, 220) are to be seen plainly enough. I may add that the far better known *leporina* was at times not at all uncommon in the same district. In August, 1905, I found eleven ♂♂ in a cluster on a flower head of *Senecio jacobaea* near Purley. The late Mr. Edward Saunders suggested the presence of a female, which was probably the case, but I was unable to find her.—A. THURNALL; Wanstead, January 25th, 1916.

DEPRESSARIA HEPATERIELLA.—I took a specimen of this insect at Aviemore on August 6th, 1914, which has only lately been identified. As it is new to the British list, it may be as well to note its capture. A second specimen was taken in the same place last August by Mr. F. Pennington, who kindly gave it to me. The latter specimen was identified by Mr. Meyrick. The second capture is interesting as showing that the first was not a casual specimen, and that the insect may be included as a genuine British insect.—FRANCIS C. WOODBRIDGE, F.E.S.; South Mead, Gerrards Cross.

VARIETY OF VANESSA URTICÆ.—In May of last year (1915) Master J. Robertson, of Hoole, Chester, caught on the wing an unusual colour variety of *V. urticae* in Messrs. Dickson's nurseries, Newton, Chester. When captured it was with a number of the normal type and *Pyrameis atalanta*. A description of the colour variation is here given:—Measurements same as in the type. Front wings: Costa and hind margins black, diffused with brown, (blue spots entirely absent). Central area of orange-red, diffused with sooty-brown, with one black spot instead of three. Hind wings; Blue spots on hind margin, as in the type, or nearly so. Subterminal band of orange-red, almost hidden with diffusion of sooty-brown. Under surface generally diffused with sooty-brown (nearly black).

Hind margins of front and hind wings show a trace of the blue spots.
—A. NEWSTEAD; Chester Museum.

HYBERNIA MARGINARIA IN FEBRUARY.—On February 20th we found on the oak fence of Esher Common three *Hybernia marginaria* (and one on a Scotch fir trunk); but could not see a single *Hybernia leucophaea*, although this species was very common both on January 30th and February 13th. A specimen of *Pterophorus monodactylus* was seen on the fence and one of *Apocheima hispidaria* (♂) on a tree trunk, also on the Common. I don't recollect seeing the last-named species in that district before, although I have found it accidentally in Richmond Park.—W. J. LUCAS; 28, Knight's Park, Kingston-on-Thames.

CYANIRIS ARGIOLUS EMERGING IN FEBRUARY.—Two specimens of *C. argiolus* emerged during February of this year from pupæ of last July. There was no fire in the room.—(Rev.) C. A. SLADEN; Alton Barnes Rectory, Pewsey, Wilts.

ERRATA.—Page 72, line 21 from bottom, for "*Nycetophagus*" read "*Mycetophagus*"; line 20 from bottom, for "*arenatus*" read "*arcuatus*"; line 19 from bottom, for "*pecticornis*" read "*pectinicornis*"; line 16 from bottom, for "*Celeopterist*" read "*Coleopterist*."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, December 1st, 1915.*—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—Mr. K. S. Padmanabha Aiyar, Trivandram, Travancore, India, and Major Harry Diamond Peile, I.M.S., Bannu, North-West Frontier Provinces, India, were elected Fellows of the Society.—Signor A. Berlese, Italy, and Dr. L. O. Howard, U.S.A., were elected Hon. Fellows to fill the vacancies caused by the death of Messrs. Fabre and von Wattenwyl.—Mr. A. H. Jones exhibited, on behalf of Mrs. Walsh, a number of insects from Java, nearly all of which were taken by her in her garden and grounds at Soekaboemi.—Mr. C. B. Williams, a series of coloured drawings of the pupa cases of the British Aleurodidæ executed by Mr. H. G. Osterstock.—Mr. R. Adkin, several families of *Boarmia gemmaria*, and gave explanatory notes of breeding from a melanic race.

Annual Meeting.—*Wednesday, January 19th, 1916.*—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—The Balance Sheet was read by Mr. C. J. Gahan, one of the Auditors, and adopted on the motion of Mr. Stanley Edwards, seconded by Mr. Frisby.—The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. W. J. Lucas, seconded by Mr. C. B. Williams.—No other names having been received by the Secretaries in addition to those nominated by the Council as Officers and Council for the ensuing year, the latter were declared by the President, with the consent of the meeting, to be elected.—The President then delivered

an address, illustrated by slides shown in the epidiascope, after which a vote of thanks to him was proposed by Lord Walsingham, seconded by Mr. W. J. Kaye, and carried unanimously, with the request that the address might be published as a part of the Proceedings of the Society.—The President having shortly replied, Mr. J. Hartley Durrant proposed a vote of thanks to the Officers of the Society for their services during the past year; this having been seconded by Mr. A. W. Bacot and carried, the Treasurer and both the Secretaries said a few words of thanks in reply.

Wednesday, February 2nd, 1916.—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—Messrs. Frederick Laing, Natural History Museum, Cromwell Road, S.W.; Robert Latta, D.Phil., Prof. of Logic, University of Glasgow; Arthur Raymond Palmer, Inglehome, Norton Way, Letchworth, Herts; and Yelseti Ramachandra Rao, M.A., Assistant Government Entomologist, Agricultural College, Coimbatore, India, were elected Fellows of the Society.—The President announced that he had nominated Dr. T. A. Chapman, Dr. C. J. Gahan, and Commander J. J. Walker as the Vice-Presidents for the current year.—The Secretary read a notice, signed by the President and six members of the Council, that a Special Meeting should be called to consider alterations in the Bye-laws.—Mr. G. T. Bethune-Baker proposed the following resolution: "That this Society would view with deep regret the closing of the Natural History Museum."—This was seconded by Mr. H. Rowland-Brown, and carried unanimously.—Mr. E. B. Ashby exhibited a beautifully illustrated book entitled 'Moths of the Limberlost,' by Mrs. Gene Stratton Porter.—Dr. H. Eltringham, a new mechanical stage for examining pinned insects.—Mr. G. T. Porritt, the three forms of *Cidaria suffumata* as it occurs in south-west Yorkshire.—Mr. Donisthorpe, two ants taken at the front—*Myrmica rugulosa*, Nyl., ♀, taken by Mons. Bondroit at Ramseapelle (Yser), December 14th, and *Messor barbara* var., winged ♀ taken in the fire trenches at Gallipoli on December 21st, 1915, by Lieut. Noel S. Sennett. Also specimens of the "Argentine Ant," *Iridomyrmex humilis*, taken at Enfield and Eastbourne.—Mr. A. W. Bacot, specimens of the butterfly *Libythea labdaca*, and read notes on a very numerous migration of the species at Freetown, Sierra Leone, on May 6th, 1915. He also exhibited a box containing recently hatched lice resulting from a pairing between *Pediculus capitis*, ♂, and *P. humanus (vestimenti)*, ♀, and remarked that there was no difficulty in obtaining pairings between the two insects in either direction.—The following paper was read: "On the Pairing of the Plebeiid Blue Butterflies," by T. A. Chapman, M.D., F.Z.S., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 13th.*—Mr. A. E. Gibbs, F.L.S., Vice-President, in the chair.—It was reported that Mr. A. C. Morris, of Norwood, had been killed in action in France. Mr. Leeds exhibited a rare form of gynandromorphism shown in a specimen of *Agriades coridon*, the upper side of both fore wings showing male colour characteristics, the hind wings being completely female in colour, and females of the same species showing the range of ground colour on underside of

hind wings.—Mr. A. E. Gibbs, a letter of H. Doubleday, written to Bernard Piffard, with particulars of the famous Howitson collections.—Mr. Buckstone, bred small and dark suffused specimens of *Polyphoca flavicornis* from Surrey, and a bred semidiaphanous example of *Gonodontis bidentata*, together with short series of *Anthrocera trifolii* from several Surrey localities, and read notes. Mr. A. E. Gibbs, the species and local races of the genus *Melanargia*, *M. syllius*, and ab. *ixora*, *M. meridionalis*, *M. lachesis*, ab. *catalaunica*, and ab. *canigulensis*, *M. ines*, *M. arge*, *M. japygia*, var. *suvarovius*, and var. *transcapica*, *M. larissa*, and var. *herta*.—Mr. Curwen, *M. galathea*, var. *procida*, and ab. *galene*, *M. titea*, and others.—Mr. Turner, the same species, and gave a short note on the variation in *M. galathea*.—Mr. Frohawk, a picked series of *M. galathea*, to show range of variation in ground colour.—Rev. G. Wheeler, a mixed aberration of *M. galathea*, unique in being ab. *lugens* on the left side but irregularly streaked and blotched with dirty cream colour on the right, and var. *lucasi* (*mauritanica*) from Algeria.—Mr. Platt-Barrett, the same species, especially the numerous races he was familiar with in Sicily and South Italy, and read a paper on the genus *Melanargia*. In the discussion Mr. Rowland-Brown suggested that the origin of the genus was in North Asia Minor and from one primitive ancestor, and pointed out numerous apparent relationships between some of the species and local races.—HY. J. TURNER (*Editor of Proceedings*).

January 27th, 1916.—Mr. R. Adkin, F.E.S., in the chair.—Annual Meeting.—The Report of the Council and the Balance Sheet were read and adopted.—The following is a list of members elected as Officers and Council for the ensuing year: President, Hy. J. Turner, F.E.S.; Vice-Presidents, R. Adkin, F.E.S., and A. E. Gibbs, F.L.S., F.E.S.; Treasurer, T. W. Hall, F.E.S.; Librarian, A. W. Dods; Curator, W. West (Greenwich); Editor of Proceedings, Hy. J. Turner, F.E.S.; Hon. Secretary, Stanley Edwards, F.L.S., F.E.S.; Council, S. R. Ashby, F.E.S.; B. S. Curwen; F. W. Frohawk, F.E.S., M.B.O.U.; W. J. Kaye, F.E.S.; D. R. Morford; W. G. Sheldon, F.E.S.; F. H. Stallman; A. E. Tonge, F.E.S.; C. B. Williams, B.A., F.E.S.—Votes of thanks were passed to the President, Treasurer, Secretaries, and other Officers.—Ordinary Meeting.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Edwards exhibited Brongiart's "History of Fossil Insects," and called attention to the plate illustrating the huge dragonfly *Meganoura moneyi*, two feet in expanse.—Mr. Kaye, the three species of *Caligo* occurring in the Island of Trinidad, *Caligo braziliensis* sub-sp. *minor*, *C. ilioneus* sub-sp. *saltus*, and *C. teucer* sub-sp. *insularius*, and remarked on the confusion in identification which had hitherto existed.—Mr. Brooks, a *Papilio machaon* in very good condition found in the fens impaled on a thorn, presumably by a shrike.—Mr. Stallman, a series of *Salebria semirubella* from Surrey, including ab. *icterella* (?), with the snow-white costa.—Several members remarked on the early appearance of *Hibernia leucophaearia*, and larvæ of *Arctia caja*, *Callimorpha dominula* and *Abraxas grossulariata*, and the breeding of *Tephrosia crepuscularia* and *Dimorpha versicolora*.—Mr. R. Adkin, *Polygonia*

c-album taken at Eastbourne on September 18th last, and read a paper, "Autumn Butterflies at Eastbourne and some other Notes."—
H. J. TURNER.

RECENT LITERATURE.

The Entomological Magazine. Published by the Entomological Society of Japan. Vol. i, 1915.

The appearance in Japan of a periodical devoted to the study of insects is an event of unusual interest, and we wish our contemporary a long and prosperous career. The magazine makes a direct appeal to entomologists in the British Empire and in the United States, inasmuch as a number of the papers are written in English or are accompanied by abstracts in English. Another paper is in German; but otherwise the contents are in Japanese, and must, unfortunately, remain inaccessible to workers of other nationalities. In the interests of entomology in general, and of Japanese entomology in particular, it is greatly to be hoped that the practice of describing new species in English, which has here been adopted to so large an extent, will become a rule of the strictest application. The orders of insects to which additions are made are Lepidoptera, Trichoptera, Hymenoptera, Rhynchota, and Odonata. Apart from the papers embodying these novelties and others dealing with the same groups, there is a list of the Hemerobiidæ of Japan, enumerating twenty-seven species of that family of Planipennia. The volume consists of four parts and 170 pages. It is illustrated with four plates and several text-figures. The price of each part is 6d., and the annual subscription 2s. post free. It is intimated that communications of all kinds should be addressed to Mr. Akio Nohira, Ichijoji, Otagi-gun, Kyoto, Japan.
H. C.

- (1) *Notes on Neotropical Dragon-flies, or Odonata.* By E. B. WILLIAMSON. (Proceedings of U.S. National Museum, May 12th, 1915.) Washington, 1915.

An excellent paper of 38 pp., with 7 plates by this well-known Odonatist.

- (2) *Notes on some United States Grasshoppers of the Family Acrididæ.* By A. N. CAUDELL. (Proceedings of U.S. National Museum, June 12th, 1915.) Washington, 1915.

A systematic paper of 7 pp.

- (3) *Notes on the Life History and Ecology of the Dragon-flies (Odonata) of Washington and Oregon.* By C. H. KENNEDY. (Proceedings of U.S. National Museum, July 28th, 1915.) Washington, 1915.

A valuable paper of 87 pp., with 201 splendid illustrations.

- (4) *Annals of Tropical Medicine and Parasitology.* Liverpool. (Series T.M.)

In vol. viii, No. 3 (December 15th, 1914), having some connection with entomology, we find: (1) "Sleeping Sickness in the Eket District of Nigeria," by J. W. Scott Macfie and G. H. Gallagher, in which are references to insects connected with the disease;

pp. 379-438. There is reference to *Glossina tachinoïdes*, pp. 464-5, in another paper by J. W. S. Macfie. (2) "Quelques observations préliminaires sur la Morphologie et la Biologie de la larve, de la nymphe et de l'imago de *Auchmeromyia luteola*, Fabr.," par le Dr. J. Schwetz, pp. 497-507. (3) "The Morphology, Biology, and Economic Importance of *Nosema bombi*, n. sp., parasitic in various Humble-bees (*Bombus* spp.)," by Dr. H. B. Fantham and Dr. Annie Porter, pp. 623-638. . . .

In vol. ix, No. 1 (March 18th, 1915), we find: (1) "Preliminary Notes on the Mosquitos of Kabinda (Lomami), Belgian Congo," by Dr. J. Schwetz, pp. 163-168. (2) "On some previously undescribed Tabanidæ from Africa," by H. F. Carter, pp. 173-196.

J. W. LUCAS.

OBITUARY.

GEOFFREY MEADE-WALDO.

Born January, 1884. Died March, 1916.

THE death of Geoffrey Meade-Waldo has occurred with such terrible suddenness that it is difficult yet to realise there has passed away one of the most promising of the younger school of entomologists. In those who knew him—and all who knew him were his friends—he inspired a deep affection; his gentle manners, his winning smile, his readiness to help, his ardent love of Nature—all contributed to make him welcome wherever he went, and in whatsoever sphere of usefulness he adorned. He went to Eton in January, 1898, and left in July, 1903, matriculating at Magdalen College, Oxford, in the following October. During his school days he had already begun to study at home and abroad the group of Insecta to which he remained attached—the Lepidoptera. In 1899, and again in 1902, he collected in Morocco,* and later in France and Switzerland; and four years after he had left the University, at the invitation of the late Lord Crawford, he joined the party of scientists on board the "Valhalla" for a long cruise, extended among other places to the Federated Malay States and Borneo. On return, having proceeded to his M.A. Degree, he took up his appointment in 1909 at the Natural History Museum, South Kensington, where latterly he was in charge of the Hymenoptera section. While thus engaged he was chosen as delegate for the Museum (Entomology) to attend Zoological Congresses at Ghent, and Monaco, and in Canada. He also attended the first and second Congress of Entomology at Brussels and Oxford. Elected a Fellow of the Entomological Society of London in 1904, he

*"Collecting near Tangier in August and September, 1901," 'Entomologist,' xxxv, pp. 195-6; "Notes on a Collection of Butterflies and Moths made in Touraine," *id.*, xxxvii, pp. 69-71; "Note on a Month's Collecting in Normandy," *id.*, xxxvii, pp. 301-3. Besides notes on Lepidoptera, Mr. G. Meade-Waldo contributed to science a considerable number of valuable papers on the Hymenoptera in the Natural History Museum—descriptions of new species, and notes upon synonymy. The majority will be found in the *Annals and Magazine of Natural History*; some of them written in conjunction with Mr. Claude Morley and Mr. Rowland E. Turner.

was made a member of the Council in 1914. But his energies were by no means confined to entomology; he was a keen ornithologist, and took a deep interest besides in the movement for the establishment of Nature Reserves in the United Kingdom, and the preservation of our wild indigenous fauna. Indeed, with his father, Mr. E. G. B. Meade-Waldo, of Hever Warren, Edenbridge, Kent, he had worked at Natural History in almost all its branches throughout his life, and to Mr. Meade-Waldo and his family we offer our sincerest sympathy in their bereavement. Geoffrey Meade-Waldo was at the Council Meeting of the Entomological Society on March 1st. A fortnight later he was dead, having succumbed to the after-effects of an attack of pneumonia. We who are left have lost a dear friend and comrade. *Salve, atque vale!*

JOHN HILL.

ON January 29th, 1916, passed away painlessly and peacefully John Hill, of Little Eaton, Derbyshire, one of the old school of Entomologists now fast dying out. Born in the year 1843, he early showed a leaning towards the study of Nature, but it was not until the year 1876 that he took up the science of Entomology, though during the forty years which have since elapsed he was probably the most indefatigable collector in the county of Derby, and became a thorough all round "Field Naturalist."

In his early days, he, Mr. W. G. Sheldon and one of the writers of this notice, were enthusiastic co-collectors, but Mr. Sheldon left Derbyshire in 1880, and afterwards Mr. Hill had few opportunities of comparing notes with local entomologists, consequently he had to discover for himself the habits and localities of the numerous species he added to the local records.

After working at Macro-lepidoptera for some years he turned his attention to the micros and was so remarkably successful that he was continually surprising the Rev. H. A. Stowell, then Rector of the neighbouring village of Breadsall, by bringing to him previously unrecorded local species.

Unfortunately Mr. Hill did not label his specimens and kept very few data, with the result that most of his knowledge, except that embodied in the Victoria County History, has been lost with him.

He was particularly clever in the preservation of larvæ, and many were the encomiums expressed by experts upon the quality of his work in this direction, which far surpassed that ordinarily seen, especially in the preservation of colours and the manipulation of hairy larvæ.

He had a number of exotics collected for him by his friends abroad, and a fine lot of Coleoptera.

He joined the Conchological Society in 1893, and at the time of his death was President of the recently formed Derbyshire Entomological Society.

Full of interesting information, and always ready and willing to impart it to others, he was an excellent companion and a most lovable man, and by no one more than the writers of this notice—one of his oldest and one of his latest friends—will he be missed.

G. H. S., J. D.

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WITH THE ASSISTANCE OF

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THE ENTOMOLOGIST

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MAY, 1916.

[No. 636

NEW SPECIES OF LEPIDOPTERA FROM FORMOSA.

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

NOLINÆ.

Celama umbrata, sp. n.

♀. Head and thorax white, the latter crossed by a brown band in front. Fore wings white, thinly powdered with grey-brown, and suffused with brown on the basal area, costa marked with brown and striated with black; a brown tuft at end of the cell placed at apex of a brown patch on costa; antemedial and postmedial lines obscure; subterminal line white, indented below costa, and again but more deeply above the tornus, excurved from vein 5 to vein 2, inwardly shaded with dark grey, area beyond the line brown; terminal line white, fringes grey. Hind wings whitish suffused with fuscous grey towards the tornus, fringes paler. Underside whitish, fore wings suffused with fuscous.

Expanse, 20 millim.

Collection number, 1278.

A female specimen from Kanshirei (1000 feet), May 27th, 1908.

Near *C. minutalis*, Leech, from which it differs chiefly in its larger size and in the shape of the subterminal line.

Nola punctivena, sp. n.

♀. Head and thorax pale grey sprinkled with dark grey. Fore wings paler grey sprinkled with darker; antemedial line dark grey, indented before dorsum; postmedial line blackish, sinuous, sharply angled below costa, middle portion marked with black and white on the veins, broadly bordered inwardly with dark grey; a dark grey diffuse spot on the costa before postmedial line, and a similar spot before the apex; terminal area clouded with dark grey, veins marked with black; fringes dark grey marked with paler, brown at the base. Hind wings fuscous, fringes paler. Underside fuscous.

Expanse, 22 millim.

Collection number, 1271.

A female specimen from Arizan (7300 feet), August 14th, 1908.

GEOMETRIDÆ.

Venusia bella, sp. n.

♂. Fore wings dark purplish grey, faintly sprinkled with ochreous, blackish at the base with darker transverse lines; sub-

basal, antemedial and postmedial bands ochreous yellow, intersected by crimson wavy lines; the postmedial is angled near costa and again about middle, the other bands are curved; discoidal spot black, terminal dots black. Hind wings dark purplish, postmedial band ochreous, wavy, intersected by a crimson wavy line. Under side purplish grey, all the wings have a dark edged ochreous postmedial band.

♀. Similar, but the ground colour is rather paler, and the discoidal spot of fore wings more conspicuous.

Expanse, 25 millim. ♂; 28 millim. ♀.

Collection numbers, 881, 881A.

A male specimen from Arizan (7300 ft.), September 27th, 1906, a female specimen from Arizan, August, 1908; and another from Rantaizan, May, 1909 (7500).

Allied to *V. bicolorata*, Moore.

In the Arizan female the postmedial band of the fore wings is hardly traceable towards the dorsum, and all the other ochreous bands are obscured. On the hind wings the postmedial band is obscure except the outer edge.

LIMACODIDÆ.

Thosea (?) *arizana*, sp. n.

♂, Antennæ serrated. Head pale brown, darker on the crown; thorax black brown, mixed with reddish on terminal segments. Fore wings pale brown, inclining to whitish on apical area, basal area clouded with dark brown at costa, a dark brown streak from the base about middle almost to termen; antemedial line black, inwardly pale edged, wavy from costa to middle, thence inwardly oblique, a black spot at the dorsal extremity; postmedial line indicated by black marks on and between the veins; a pale line outwardly edging the postmedial curves to termen just above tornus; space between the antemedial line and the pale curved line suffused with brown and clouded with darker; a brown mark on costa before the apex and a blackish mark on the costal extremity of the brown terminal line; fringes brown, marked with whitish at ends of the veins. Hind wings dark fuscous; fringes rather paler at base and tips, preceded by a black line. Underside fuscous, paler on termen.

♀. Similar, but the costal portion of median area is darker and encloses a pale mark, veins 2-4 marked with black beyond the postmedial line; the hind wings are rather paler.

Expanse, 33 millim. ♂, 36 millim. ♀.

Collection number, 1833.

An example of each sex from Arizan (7300 feet), March, 1909.

Thosea taiwana, sp. n.

♂. Fore wings pale chestnut brown faintly irrorated with shining whitish grey, basal area and terminal area towards apex clouded with dark velvety chestnut brown; an oblique pale line, silvery mixed, from apex to about middle of dorsum; terminal line

chocolate brown, fringes brown and rather shining. Hind wings light brown with a slight rusty tinge on dorsal area. Underside light brown, somewhat glossy, paler on dorsal area of the fore wings.

Expanse, 22 millim.

Collection number, 1412.

A male specimen from Kanshirei (1000 feet), August 15th, 1908.

THYRIDIDÆ.

Betousa reticulata, sp. n.

♀. Fore wings slightly produced at apex, bluntly angled about the middle; pale cinnamon brown reticulated with darker, costa dull purplish brown expanding into a large irregular patch towards apex; antemedial band dull purplish-brown, broadest on costal area; post-medial band dull purplish-brown, broad on costal area where it unites with the apical blotch, twice contracted below middle; two spots in lower edge of the apical patch and three on its outer edge, pale marks on apical half of costa; terminal line dull purplish-brown, fringes rather paler. Hind wings, termen slightly excised before tornus; pale cinnamon brown, reticulated with darker; antemedial and postmedial bands dull purplish-brown, the postmedial broadest on dorsum and indistinct towards costa; terminal line and fringes as on fore wings. Underside as above, but bands on hind wings less clearly defined.

Expanse, 28 millim.

Collection number, 1872.

Two female specimens from Arizan, one taken in February and the other in April, 1909.

Comes nearest to *B. industalis*, Walk.

EPIPLEMIDÆ.

Epiplema quadripunctata, n. sp.

♂. Head and thorax white marked with ochreous and brown; abdomen white, hind segments ochreous tinged. Fore wings white, freckled and clouded with ochreous and darker brown except on the dorsal area; postmedial band ochreous with some blackish diffuse marks on it; four black dots on the terminal area below the apex; fringes ochreous, paler towards tornus. Hind wings white suffused with ochreous except on the dorsal area; discoidal mark black, traces of a medial band and a cluster of black scales beyond; a black dot about the middle of termen; fringes ochreous. Underside white; fore wings suffused with fuscous, except on the dorsal area.

♀. Similar, but the blackish marks on postmedial band of the fore wing, and the black dots on the terminal area are rather larger.

Expanse, 20 millim. ♂; 22 millim. ♀.

Collection number, 97A.

One example of each sex from Kanshirei (1000 feet), the female taken June 13th, 1906, and the male April, 14th, 1908.

Allied to *E. instabilata*, Walk.

SOME BEES FROM COLORADO.

BY T. D. A. COCKERELL.

✓ *Osmia globosa*, Cresson, variety a.

♀. Length 9.5 mm.; hair of face and front mixed black and white, entirely white at sides of face, nearly all black on clypeus; occiput with long pale hair; thorax with long white (faintly ochreous-tinted) hair, abundant on scutellum; legs with mainly black hair, on anterior femora behind it is white; wings dilute reddish. Abdomen short but not globose.

Hab.—Bluebird, Boulder County, Colorado, July 25th, 1915 (Cockerell). At the same time and place I took *Titusella pronitens*, Ckll. and *Megachile wootoni* subsp. *rohveri*, Ckll. This looks like a distinct species, but is probably a form of *O. globosa*. It may be the hitherto unknown female of *O. globosiformis*, Ckll., but the wings are much darker and redder than in the male of that species.

Osmia propinqua, Cresson.

Boulder, Colorado, male visiting daffodil (*Narcissus*) flowers, April (*Hazel Andrews*).

Osmia ramaleyi, Cockerell.

Boulder Canon, in road, May 22nd, 1912; male.

Osmia kenoyeri, Cockerell, variety a.

♀. Hair of thorax above white, with a faint creamy tint; hind margins of abdominal segments blue-green.

Baldy Mtn., Boulder County, Colo., above timber-line, July 24th, 1915 (Cockerell).

Halictus pruinosiformis, Crawford.

Nebraska Hill, Colo., female at flowers of *Salix*, just below timber-line, July, 1915 (Kenoyer). This species ranges unchanged from the Middle Sonoran zone to the upper limit of the Hudsonian.

Halictus fraseræ, sp. n.

♀. Length about 8 mm.; head dark greenish, the clypeus black; mesothorax yellowish-green, especially the shining posterior middle; other parts of thorax blue-black; tegulae piceous, rufous posteriorly; wings suffused with brownish, stigma amber-colour; abdomen with the first two segments green, the others black; segments 1-4 with broad dense apical fringes of pure white hair, that on the first interrupted in middle. Hair of head and thorax dull white; clypeus

prominent; face broad; antennæ black; front extremely densely and minutely punctured; mesothorax closely punctured; area of metathorax densely sculptured, punctostriate; hind spur with short teeth. The largest American member of the *H. tumulorum* group, easily known from *H. arapahonum*, Ckll., by the dusker wings and dark tegulæ and antennæ, as well as the greater size. The clear white abdominal bands are also peculiar.

Halictus fraseræ is closely related to *H. virgatellus*, Ckll., but differs in the colour of the tegulæ and the abdomen. Possibly the two may prove to be races of a single species.

Hab.—Tolland, Colorado, at flowers of *Frasera*, July, 1915 (L. A. Kenoyer).

Halictus dasiphoræ, Cockerell.

Kingston, Colorado, on flowers of *Frasera*, just above timberline, July, 1915 (Kenoyer); Nebraska Hill, Colo., on *Polemonium confertum* flowers, July 18th (Kenoyer). New to Colorado.

Halictus inconditus, sp. n.

♀. Length about 7 mm., anterior wing about 5.4; black, with scanty pale pubescence; head rather broad; clypeus prominent, shining, with scattered punctures more or less running into grooves; supraclypeal area shining, minutely punctured; mandibles black; antennæ black, the flagellum very obscurely fuscous beneath; front perfectly opaque, as also the sides of the vertex; mesothorax with very little hair, shining, extremely finely punctured, with a microscopical lineolation between the punctures; scutellum also shining and finely punctured, depressed in middle; area of metathorax semilunar, appearing entirely granular under a lens, but actually covered with very fine anastomosing ridges, between which are exceedingly delicate cross-lines; posterior truncation of metathorax rounded at sides above; tegulæ piceous with a dark reddish spot; wings hyaline suffused with brown, stigma and nervures dark rufous; legs black, with white hair; hind spur of hind tibia with two large very oblique teeth; abdomen shining, the depressed apical portions of the segments not discoloured; no hair-bands or patches; ventral segments fringed with white hair.

Hab.—Tolland, Colorado, at flowers of *Frasera*, July, 1915 (L. A. Kenoyer).

This is separated from the species it most resembles, thus:

Area of metathorax with coarse rugæ *pectoralis*, Smith.

Area of metathorax very finely sculptured 1.

1. Vertex on each side of ocelli dull and roughened; tegulæ without a clear red spot *inconditus*, Ckll.

Vertex on each side of ocelli smooth; tegulæ partly clear ferruginous *macoupinensis*, Rob. (including *divergens*, Lov.).

Halictus regis, sp. n.

♀. Length a little over 5 mm., anterior wing about 4.6; black, with thin pale hair; facial quadrangle longer than broad; clypeus projecting; cheeks broad; clypeus shining, with scattered punctures; front dull, densely and minutely punctured; upper orbital margins narrowly shining; sides of vertex dull; flagellum clear ferruginous beneath; mesothorax somewhat shining, very minutely punctured and microscopically lineolate; area of metathorax not defined, with very delicate irregular plicæ mainly confined to the basal part; posterior truncation small, sharply defined at sides except the upper fourth; tegulæ rufopiceous; wings greyish hyaline, stigma and nervures pale dull testaceous; legs black, with pale hair; hind spur with short saw-like teeth; abdomen shining, especially basally; no hair-bands, but slightly indicated thin hair-patches at basal corners of second and third segments.

Hab.—Kingston, Colorado, at flowers of *Frasera*, just above timber-line, July, 1915 (*L. A. Kenoyer*). Close to *H. dasiphoræ*, but considerably smaller, with the area of metathorax quite differently sculptured.

A NEW GENUS OF TRICHOGRAMMATIDÆ FROM AUSTRALIA CHARACTERISED BY BEARING A POSTMARGINAL VEIN.

BY A. A. GIRAULT.

With the exception of *Pseudobrachysticha semiaurea*, Girault, which bears a short, triangular postmarginal vein, the following new species is the only member of the family yet known to me which has that vein distinct.

Thoreauia, new genus.

Female.—Similar to *Pseudoligosita*, Girault, but neither the pedicel nor funicle is elongate, the funicle joint being subglobular (wider than long) the, pedicel twice its length, two and a quarter times longer than wide at apex. There are the following additional differences: The body is slender, the thorax and abdomen each long, the latter somewhat longer than the former, distinctly *compressed* and with the valves of the ovipositor slightly, distinctly extruded; the pronotum is prolonged over the head in the form of a button-like medial projection. The long scutum seems to be divided transversely at distal three-fourths, leaving a crescentic sclerite between it and the scutellum, the suture being concave. Caudal femora swollen, coarsely scaly. All tibiæ dorsad armed with four or five weak, setigerous teeth. No oblique hairless line from stigmal vein. Mandibles

4-dentate. Club without a terminal nipple or spine. Stigmal vein ovate, with a short, thick neck. Tibial spurs short, straight, single. Habitus like *Lathromeroides*, but the thorax longer in proportion to the abdomen.

Thoreauia compressiventris, n. sp., genotype.

Female.—Length, 0.90 mm. Black, the head and thorax (except the sides, except ventrad centrally) deep golden yellow; vertex dusky, axillæ black. Antennæ dusky yellow. Thorax laterad of scutellum dusky. Knees broadly, tibiæ except dorsad and the first two tarsal joints pallid. Venation dusky, the fore wing subhyaline but with a distinct, short, substigmal spot against the apex of the stigmal vein. Fore wings with about eighteen regular lines of discal cilia, the eighth of which is longest, from apex, curving past the stigmal knob caudo-proximad to join the proximal end of the sixteenth which curves slightly cephalad to meet it; the seventeenth also meets the other two at this point, which is farthest proximad for this ciliation. Caudal wings not broad, with a paired row of discal cilia a little cephalad of middle, their caudal marginal fringes distinctly longer than their greatest width. Club longer than the pedicel and funicle taken together, conic. Marginal cilia of the fore wing very short, sparse at the apex. Scape moderate in length, not as long as the club.

Described from four females received for identification from the Government Entomologist, Northern Territory, Australia, and said to have been reared from galls on *Eucalyptus miniata*, Port Darwin (1.8.15).

Types.—Catalogue No. 20005, U.S.N.M., the four females on a slide.

NOTES ON SOME SPRING AND AUTUMN BUTTERFLIES
OF CANNES AND THE NEIGHBOURHOOD.

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

(Continued from p. 76.)

HESPERIIDÆ (*continued*).*

[*Cyclopides palæmon*.—Does not appear to descend to the lower regions of the Department. Millière says that it is not

* To my remarks on *Pyrgus orbifer* (*antea*, p. 75) I should have added that it figures in Cantener's 'Catalogue des Lépidoptères du Département du Var,' p. 7, Strasbourg, 1833. I notice, too, that Mr. F. S. Norris, who was collecting at Hyères in 1889, includes it among his captures—"sparingly in May"—('Entomologist,' xxii, p. 185). I cannot even guess what these Hesperiidæ actually were, but to my eye this is one of the most easily distinguishable of a notably difficult group. *Parnara nostradamus*. Four examples sold in the Giesecking (Cannes regional) collection.

uncommon in the Lantosque valley in the grassy places in June.]

[*Heteropterus morpheus*.—Mr. Morris does not include this species in his list of observations, and Millière was content to accept on hearsay Heilmann's record of several specimens, Estérel, Route de Mt. Vinaigre. Mr. Powell adds that he has never taken it there, and that the locality is a most unlikely one. In this connection, however, Mr. Morris mentions an alleged locality near St. Raphael on the authority of Herr Giesecking, formerly a German resident at Cannes, whose collection was sold at the end of March last after sequestration. The indication, if not a repetition of Heilmann's, is at least as doubtful, and requires confirmation.]

LYCENIDÆ.

Thestor ballus.—The geographical distribution of this species is interesting and puzzling. It appears to range from Egypt (Alexandria, etc.) along the North African coast provinces to Tangier; and in Spain along the Mediterranean seaboard from Gibraltar, where it is abundant (J. J. Walker, 'Trans. Ent. Soc. London,' 1890, p. 372) to Malaga; thence northwards, from Barcelona, traversing the foothills of the Pyrenees, to Perpignan. But I can find no recent record of its occurrence in the Pyrénées-Orientales. The quotation, "Perpignan," is copied from Boisduval's 'Icones,' p. 48, where a certain M. de Cerisy is credited with the capture in 1824. None of the later cataloguists of this favoured region include it in their lists; and Dr. Chapman, to whom we owe the complete life history, when hunting *Callophrys avis*, Chpmn., at Amélie-les-Bains in April, 1909 ('Entomologist,' xlii, p. 121) expressly notes the absence of both *Thais cassandra* and *T. ballus*. While in an amusing series of "Causeries"—'Guide pédestre de la Bourgogne aux Pyrénées'—by Anatole Carteron (Paris, 1868), the author, summing up the butterfly treasures of the neighbouring village of Céret in comparison with those of the Riviera, says, "que vous demanderiez en vain les polyomates *Dolus* et *Ballus* aux échos des Pyrénées." Nor is it likely that *T. ballus* would have escaped the keen eyes of Rambur had it haunted the then prolific environs of Montpellier, in Hérault. It reappears to-day at Geménos in the Bouches-du-Rhône, where it has been observed by my correspondent M. Gédéon Foulquier (cp. his 'Catalogue des Lépidids,' 1899); and it is decidedly common at Hyères, finding its eastern limit near Cannes, at Vallauris (*teste* Millière). But it must be extremely rare thereabouts. Mr. Warburg says boldly ('Entomologist,' xxii, p. 257): "*T. ballus* does not belong to the Cannes fauna"; Mr. Morris declares that he has never seen it; but a single example was captured by a friend of his at

La Bocca (the Cannes plage) in February, 1907. There are, of course, long stretches of wholly unexplored ground on the Mediterranean coast of Spain and France, but the sporadic nature of its known distribution yet remains to be elucidated. Almost without exception *T. ballus* in Europe is associated with the coast. But, if existing records are to be trusted, it extends inland at least to Aix-en-Provence and ? Draguignan (Segond, 'Catalogue des Papillons du Var,' 1853). In Spain it is reported also from Grenada; on the Atlantic watershed in South Portugal at Elvas and Evora, well away from the sea towards the Spanish frontier.

Chrysophanus virgaureæ.—This, of course, is a summer butterfly at Cannes, and, as such, is not within Mr. Morris's ken. I have seen examples captured there by Mr. Warburg, the males as fine and even more brilliant than those taken by me at St. Martin-Vésubie, where in size the species seems to attain the maximum.

[*C. thersamon*.—Another of Millière's extraordinary finds. He records the var., or rather *gen. aest. omphale*, Klug, from St. Martin, "replacing type," a mistake surely the more obvious as, even supposing *thersamon* to occur at all up to 4920 ft. west of the Alps, there would probably be but one brood, and the tailed *omphale*, as a constant variety, I believe, is invariably of the second emergence. Yet we are informed that it is generally distributed there, and that *omphale* "appears to replace the type." Neither I nor other British or French collector at St. Martin have ever encountered it since; and I conclude, therefore, that Millière confused it with *C. phléas* var. *eleus*.]

C. alciphron var. *gordius*.—Mr. Morris mentions the capture of a few examples at the end of April, and in May, a poor form and scarce. Which leads me to think that the emergence at Cannes is probably prolonged, and that the later flight is better developed. M. Oberthür described the *gordius* of the Alpes-Maritimes as a magnificent race. His examples, no doubt, are from the uplands. My own from St. Martin-Vésubie are worthy peers of the glorious Digne form. April, at all events, is a very early date, or are there two generations here, as elsewhere, with *C. hippothoë* var. *rutilus* and *C. phléas*? M. Oberthür considers the emergence at Vernet in the eastern Pyrenees at the end of May exceptionally advanced.

C. doritis.—Not common at Cannes.

C. phléas.—And in autumn ab. *et* var. *eleus*.

Lycæna arion.—Rare. M. Oberthür ('Lépid. Comparée,' fasc. iv, p. 325) writes that he has received a superb form from the Alpes-Maritimes under the name of *ijurica*. The ground colour of the upper side is clear vivid blue, especially in the female; the black spots highly developed chiefly on the upper wings, sometimes forming a kind of broad and closely packed cluster of

“arrow heads” pointing towards the basal area. The inconstancy of these local races, and Frühstorfer’s mania for creating therefrom sub-species, is carefully discussed and dealt with by Mr. Wheeler in the article on *L. arion* in Tutt’s ‘British Butterflies,’ vol. iv, where also *ligurica*, Wagner, is diagnosed at length. Mr. Morris writes: “I have had no luck at all with this beauty at present, common though it is. I am always too late, and find only worn ones, or a small second brood and rare.” This suggestion of a (partial?) second emergence is very interesting when it is remembered that the writer does not return to Cannes before the beginning of October.

[*L. euphemus*.—*L. arcas*.—There is an element of humour in Millière’s observations on these species (‘Cat. des Alpes Maritimes,’ 2^e Suppl., p. 4). A single *euphemus*, he says, was met with in August in a moist meadow bordering the Upper Var. Immediately underneath this record follows *L. arcas*—“August. Valley of Vésubie, where it flies in company with *euphemus*.” What is to be inferred from the conjunction? I can only conclude that the single supposed *euphemus* was well attended by its congener. At all events, both records require, and have never to my knowledge received, confirmation.]

Cupido minimus.—Scarce.

(To be continued.)

LEPIDOPTERA FROM THE ARGENTINE AND FROM CANADA.

BY F. G. WHITTLE.

IN April, 1913, during a short visit to the Argentine, I was able to devote a little of my time to collecting Lepidoptera. At Lerviers, a few miles out of Buenos Ayres, on the Buenos Ayres Western line I found *Colias pyrrhothea*, Hübn., common, and without any difficulty got a long series, which, however, does not show a great amount of variation. The suffusion is a little more fiery in some males than in others. At Belgrano, Tigre, and Boulogne, suburbs of Buenos Ayres, I found a number of larvæ of a *Saturnia* ready to pupate. These duly spun up in a box and produced, after I had returned home, *Automeris leucane*, Gey. *Diatræa saccharalis*, Fab. (Larger Corn-stalk Borer), a very destructive insect, occurred on the trunk of an acacia; *Hylephila phyleus*, Druce, *Ochyria argentina*, Prout, *Cidaria impromissata*, Walker, *Callicista thiis*, Hübner, and an Arctiid larva which, after my return home, produced *Ecpantheria indecisa*, Walker. In Buenos Ayres itself I got, attached to a fence enclosing a small patch of cruciferous weeds, a few pupæ of *Tatochila autodice* and

bred the butterfly; *Pyralis farinalis*, Linn., on a tree trunk; also two Fireflies of one species. I found an aquatic beetle, ? species, under a street lamp. Cases of the Psychid *Æceticus platensis*, Berg., were very common in the outskirts of Buenos Ayres.

I went from Buenos Ayres to Cordoba through miles of uninteresting, monotonous, treeless pampas. The collecting ground did not look as if it could yield much. Just a few prickly shrubs, some straggling plants of alfalfa and an occasional cactus with broadly ovate-oblong joints and a very dry soil. *Terias deca*, Dbl., rather common both here and at Buenos Ayres. *Phyciodes ithra*, Kirby, a few at alfalfa; a small *Phyciodes* ? species, of which I got a dozen examples. It is represented in the National Collection, but without a name. *Dione vanilla*, Linn., one or two in bad condition; *Pyrameis braziliensis*, Moore, two examples, one at Lerviers, the other at Cordoba; *Pyrameis carye*, Hüb., at Lerviers and Cordoba; *Euptoieta hortensia*, Blanch., Boulogne and Cordoba; *Hamearis* ? *chilensis*, Felder, one only, but smaller than the smallest of the three in the National Collection; *Junonia lavinia*, Cram. (*genovera*, Cram.); *Callicista argona*, Hewitson, *Imolus rufofusca*, Hew., *Thanaos nævius*, Lintner, *Hesperia syrictus*, Fab., a nice series of both sexes—Boulogne, Lerviers, and Cordoba; *Gerespa bisinuata*, Felder; *Tephrias* ? species. There is one specimen only in the National Collection, and that is without a name. *Thermesia rubicans*, Bois., *Tephriopsis fragilis*, Warr., *Eudule cupraria*, Walker, *Zinckenia fascialis*, Cramer, and *Nomophila noctuella*, Schiff. I found the mosquitoes rather troublesome. These are, I should think, something of a scourge in the summer months.

I went in July of the same year to the Niagara Falls. On the journey up the St. Lawrence *Tortrix jumiferana*, Clem., was common. Later, in the Montreal shops, I saw hundreds of this insect dead, many of them attached to ordinary fly papers. On landing, early in the morning, at Quebec, I must have seen quite a large number either of *Malacosoma americana*, Fab., or *disstria*, Hübner (I am not sure which). They had been attracted by the powerful lights near the landing stage. At Montreal I found *Ganoris rape*, L., *Satyroides canthus*, L., *Ctenusia virginica*, Charp., *Lithacodia albidula*, Guen., *Hematoptis grataria*, Fab., *Nomophila noctuella*, Schiff., *Sparganothis pettitana*, Rob., *Argyroproce scudderiana*, Clem., *Cacæcia purpurana*, Clem., and *Tortrix clemensianus*, Fern. I also got, both at Montreal and Toronto, *Colias palæno*, L., *Danaïs archippus*, F. I noticed that some small boys who interested themselves in my proceedings referred to this insect as King Billy: "There goes a King Billy." At Toronto I got *Limenitis disippus*, God., *Polygonia silenus*, Edw., *Pyrameis huntera*, Fab., *Cercyonis nephele*, Kirby, *Lycænoptis pseudargiolus*, Bois., *Strymon calanus*, Hüb.,

Thanaos ? juvenalis, Fab., *Limochores thaumas*, Fab., *Catocala relicta*, Walker, only one specimen of this fine moth—I searched well for more. *Diacrisia virginica*, Fab., *Ochyria lacustrata*, Guen., *Hadena arctica*, Boisd., *Drasteria erechthea*, Cramer; *Loxostege sticticalis*, L., *Phyciodes tharos*, Drury, occurred both at Montreal and Toronto; as also *Ewanessa antiopa*, Linn., *Drasteria crassiuscula*, Haw. (very common on grassy roadsides and fields), *Crambus laqueatellus*, Clemens, *Cacœcia retiniana*, Wals. (knocked out of Pinus), and *Coleophora cretaticostella*, Clem. I am much indebted to Mr. Meyrick, who very kindly overhauled and named the Tortrices and the one Tinea included in the above list, also to Mr. Prout for identifying my puzzles among the Geometers.

BRITISH NEUROPTERA IN 1915.

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

For this year I have nothing more than a few notes of dates and localities; but these, no doubt, should be put on record, that they may, to however slight a degree, increase our scanty knowledge of the British Neuroptera. *Chrysopa vittata*, Wesm., was taken at the Black Pond on Esber Common, Surrey, on July 11th (W. J. L.). *C. flava*, Scop., was noted near Oxshott, June 30th (W. J. L.); on a fence in the village of Oxshott, July 17th (W. J. L.); Walverden Park, Nelson, Lancs., June 24th, and Grassington, Lancs., June 26th–July 3rd (W. M. Tattersall); in a garden at Rochdale, Lancs., July (T. Clegg). *C. septempunctata*, Wesm., on a window in Surbiton, July 14th (W. J. L.). On June 19th at a flowery spot in a wood between Netley Heath and Gomshall, Surrey, Chrysopas were very numerous, and *C. alba*, Linn., and *C. perla*, Linn., were captured. At Bishop Wood, near Selby in Yorkshire, Mr. G. T. Porritt took *C. aspersa*, Wesm., *C. alba*, and *C. perla* in June.

Of the Scorpion-flies, *Panorpa germanica*, Linn., was noted on several occasions: Bagshot, Surrey, May 23rd (E. E. Green); Blackwater in the New Forest, May 25th (W. J. L.); near Oxshott, Surrey, May 30th (W. J. L.); near Claygate, Surrey, June 12th (W. J. L.); between Netley Heath and Gomshall, Surrey, June 19th (W. J. L.); flying over bracken at Aspull, near Wigan, Lancs., July 2nd (W. M. Tattersall). A large female, *P. communis*, Linn., was taken between Netley Heath and Gomshall on June 19th (W. J. L.).

Kingston-on-Thames, March, 1916.

NOTES ON BRACONIDÆ.—XI.*

THE TRIBE RHOGADIDES, WITH ADDITIONS TO THE BRITISH LIST.

BY CLAUDE MORLEY, F.Z.S., &c.

(Continued from p. 87.)

✓ 1. *Rhogas cruentus*, Nees.

A very broadly distributed species from France, through Hungary and Germany to Russia and Sweden. Not before noticed in Britain: I owe a single female to the generosity of Mr. O. E. Janson, who captured it on August 30th, 1901, at Horsey Mere, in the Norfolk Broads.

2. *Rhogas dissector*, Nees.

I possess only the two Scots females recorded by me from *Angelica* flowers at Banchory on July 30th and August 6th (Ent. Mo. Mag., 1910, p. 37), when they were captured by Ernest A. Elliott, F.Z.S. Champion has taken it at Aviemore. It is widespread in Northern Europe, extending from Hungary to Lapland and Sweden. Marshall has entered, in his copy of the 'Monograph of British Braconidæ' which I possess: "N.B. *R. dissector*, Ns., is not the sp. bred by Brischke from *A. euphorbiæ*, F., but *R. rugulosus*, Ns., which is not British."

3. *Rhogas reticulator*, Nees.

One of the two British species I do not possess: Marshall in 1885 had seen neither this nor the last species. It is said to have been captured near Belfast by Haliday, and in Monk's Wood, near Cambridge, by Dale. Bignell has, however, confirmed the species as indigenous, for he says (Entom., 1883, p. 69): "*Rhogas reticulator*, Nees, infests the larva of *Odonestis potatoria* before the fourth moult, and emerges in its imago state from its victim. The infested larva remains on its food-plant, and has the appearance of preparing to moult, but it gradually shrinks and appears to dry up; the imago [of the parasite] ultimately making its appearance through the back of the wretched caterpillar." I do not know how Marshall overlooked this record; and I suspect from Bignell's remarks upon *R. geniculator* (Trans. Devon. Assoc., 1901, p. 263) that that species was mistaken for the present.

4. *Rhogas irregularis*, Wesm.

By no means a rare species, though I have infrequently met with it myself and always in the most marshy situations, such

* Cf. 'Entom.', 1909, p. 96 et 'Ent. Mo. Mag.', 1909, p. 209.

as by sweeping reeds in Henstead Marsh early in July, 1906, in ditches at Barnby Broad in the middle of August, 1898, in Herringswell Fen early in July, 1903, and at Ipswich during 1894; out of Suffolk, it has occurred to me in Cuckney Hay Wood, near Nether Langwith, in Notts., and at Huntingfield, in Kent, both in August. But it is very widely distributed, and I have received it from Ashby, in Lincs. (Thornley); Crosland Hall, near Huddersfield, in 1896 (Porritt); Whitby towards the end of August, 1897 (Beaumont); Shere, in Surrey (Capron); Lamington during June, and Barr, in Ayrshire, during July (Dalglish); and Clunie, in Scotland, on August 16th, 1907 (Elliott). Charbonnier has bred three specimens at Shepton Mallet, in Somerset, during May to July from four Lepidopterous larvæ indurated in the usual way, from the last of which there emerged a female Ichneumonid, *Mesochorus vittator*, Hlmgr., doubtless hyperparasitic (as the genus is well known to be, especially upon the Braconidous genus *Apanteles*) upon this *Rhogas*. Mr. H. Bury found a similar larva beneath elm bark at High Lane, in Cheshire, during October, 1914, from which emerged the present species on the 19th of the following June.

5. *Rhogas gasterator*, Jur.

Apparently uncommon with us: Marshall knew only the male, which he took in Wales and Wilts during June; Bignell records it from Devon early in August. Elliott has presented me with a couple of females, captured by him on July 24th, 1908, at North Berwick, and in September, 1910, at Banchory, in Scotland.

6. *Rhogas dimidiatus*, Spin.

Bred in Devon from *Agrotis tritici* and other Noctuæ. It has occurred to me in Tuddenham Fen in early July and Staverton Thicks, where it was flying on June 22nd; I have two females from Edw. Saunders' collection, probably from Bury St. Edmunds; Tomlin has sent it from Darley Dale, near Matlock, where he took it in July, 1900; and Donisthorpe from Co. Kerry, in 1902. Atmore found the species at King's Lynn in 1906. During August, 1903, Dr. Chapman bred a male and three females from *Orgyia splendida* in Spain.

7. *Rhogas modestus*, Reinh.

Introduced as British in 1888, from the nest of a wasp (*Eumenes*) near Bournemouth. It has also been bred from species of *Eupithecia*. Dr. E. A. Cockayne has kindly given me two females of this insect, which he bred in September, 1911, each from a larva—indurated in the usual manner—of *Macaria liturata*, taken at Oxshott, in Surrey. Elsewhere it is known only from Sweden and Germany.

8. *Rhogas tristis*, Wesm.

Doubtless rare with us; there were, I believe, several unnamed examples in the collection of the late Alfred Beaumont, who gave me a male, taken by him at Byfleet on July 22nd, 1899. Marshall has a MS. note against this species: "Bred by Bignell from *Epinephele ianira*, L., July 17th"; it is ascribed to *E. tithonus* by the latter in 1901.

9. *Rhogas bicolor*, Spin.

By no means common. I have swept it from reeds at Covehithe Broad, in Suffolk, on September 15th, 1910, and at Carramore Lake at Louisburgh, in Mayo, during the preceding July in Ireland, where Beaumont took a couple of half-red females at Kilmore on September 1st, 1898. Another, with 39-jointed antennæ, was bred from its host-lava's skin at 7000 feet at Le Lautaret by Dr. Chapman in 1914, from *Polyommatus eros*.

10. *Rhogas geniculator*, Nees.

Certainly uncommon: Louisburgh on July 17th, 1910 (misnamed *R. gasterator* by me at Proc. Royal Irish Acad. 1911, No. 24, p. 16); bred on June 30th, 1900, from *Eulepia cribrum*, Linn., at Bournemouth, by Rev. C. D. Ash. Another was raised from *Orgyia aurolimbata* at Vigo in mid-June, 1906, and three more from the same host in Spain during August, 1903, by Dr. Chapman. The species seems attached to woolly caterpillars, for I have seen one bred from small *Arctia villica*, taken on the cliffs at Beer, in South Devon, on September 1st, 1910, by Lyle; and Bignell noticed that all the transformations take place within the skin of its hosts, to which he adds *Odonestis potatoria*, before the fourth moult.

11. *Rhogas vittiger*, Wesm.

The other British species unknown to me: it rests in our list upon a somewhat doubtful ancient specimen from Barnstaple in Marshall's collection, though widely distributed in Northern Europe, extending south to Switzerland.

12. *Rhogas arcticus*, Thoms.

Not hitherto noted in Britain. I have no hesitancy in ascribing to this species a female swept at the Brandon Staunch, in Suffolk, on June 7th, 1903, and two ♂♂ from the same marshy spot on May 21st, 1911. It is very like the common *R. circumscriptus* but of stouter form with laterally more rounded abdomen, and differs in lacking all trace of metanotal transaciculation, but especially in having the second segment deeply impressed centrally on either side.

13. *Rhogas prætor*, Reinh.

Another addition to our list. I had the pleasure of breeding a single female of this distinct species from a quite young larva of *Smerinthus populi*, fastened to an aspen leaf at Monks Soham two or three years ago. A single female was described by Reinhard in Sichel's collection from Moutiers in Savoy; subsequently the species has been recorded only by Szépligeti from Hungary.

(To be continued.)

 NOTES AND OBSERVATIONS.

A DRAGONFLY AS FOOD FOR DIPTERA.—Early in July, 1915, Mr. R. South was good enough to give me a number of small Diptera belonging to the family Phoridae, which he had found a few days before in a drawer of British Odonata. The species was kindly identified for me by Mr. F. W. Edwards as *Aphiochæta albicans*, Wood. When first observed, the Flies, both living and dead, were concentrated about a specimen of *Libellula depressa*, Linn. (now likewise in my possession), dated New Forest, 1914, and investigation showed that numerous empty puparia were attached to various convenient points on the underside of the Dragonfly. In the 'Cambridge Natural History' Dr. D. Sharp states that the larvæ of Phoridae "live in a great variety of animal and vegetable decaying matter, and attack living insects, and even snails, though probably only when these are in a sickly or diseased condition" (Ins. ii, p. 494, 1899). In the present case the larvæ seem to have fed upon the contents of their host's thorax, and a large perforation at the base of the pectus evidently afforded means of egress when the time for pupation arrived. The feeding of these little Flies upon their powerful and ruthless enemy strikes one as being quite a pretty example of retributive justice.—HERBERT CAMPION; 58, Ranelagh Road, Ealing, March 11th, 1916.

FURTHER NOTE ON FORMALDEHYDE.—Last year, in consequence of my notes on the use of formaldehyde for setting insects, Mr. Kershaw suggested that hypodermic injections might be useful ('Entom.' 48, p. 19). Shortly after his suggestion I received some three dozen or so butterflies from the East Coast of Africa; they were very dry and stiff and difficult to relax, in fact most of them had to be forced into position on the setting-boards. As they were of a good size (about as large as *V. antiopa*) I felt that there would be no difficulty in injecting them. This I did with a 5 per cent. ethereal solution of formaldehyde, after they had been on the boards for a week or so, injecting the solution with an ordinary hypodermic syringe into the body on each side of the pin. One or two drops were sufficient. I was glad to find that the specimens had set quite rigidly; there was not the slightest tendency for the wings to slip back nor to droop or spring. Although the solution slightly diffused into the wing membranes they dried perfectly without any loss of colour.

One butterfly, of a delicate lilac shot-satin tint, was not in the least affected. My brother sent me a few Sphinges from India. After they had been in the relaxing box two or three days they began to smell putrid; an injection of about fifteen drops at once cured this, they have remained in perfect condition ever since and have not shown any sign of "grease" after ten months. For general purposes I have stuck to my original method as described in the 'Entomologist,' and have found it very satisfactory. I have had no opportunity of trying formaldehyde on "Emeralds," and I have not the slightest doubt that Mr. W. S. Gilles is quite correct in warning us not to.—WINSTON S. A. ST. JOHN; Derwent House, Derby.

NOTES ON *RHYACIONIA POSTICANA*.—In the 'Entomologist's Monthly Magazine,' xxi, p. 138 (September 13th, 1884), I recorded among other Tortrices captured at Rannoch "5 *Retinia duplana* of our lists (Scotch form of *Retinia turionana*?)" For upwards of thirty years these five specimens have remained in my cabinet unsatisfactorily named, especially as Mr. C. G. Barrett in his article in the same magazine, xix, p. 136, so emphatically stated that we have no British *duplana*. Not long since I submitted the specimens in question to Mr. J. H. Durrant, who pronounced them to be *Rhyacionia posticana*; according to Standinger this species occurs in Scotland, but *duplana* does not. In those early days the tortrix in question was very rare and almost unknown in collections. It would be of interest to me to know if it has been taken in Scotland in modern times and if its life history is known. For the information of those who may be visiting Rannoch this year and are interested in this very fascinating group of moths, I may mention that I took the *posticana* flying in the afternoon sunshine—not in the Black Wood, but among the smaller scattered fir-trees on its outskirts—during the last half of June.—A. H. JONES; Shrublands, Eltham, March 26th, 1916.

LONG PERIOD OF EMERGENCE OF *APOCHEIMA HISPIDARIA* IN 1916.—Owing to the unusually mild weather experienced during the first half of February and the succeeding long spell of cold weather extending into the middle of March, the period of emergence of *Apocheima hispidaria* in Epping Forest has this year been an exceptionally long one. I found ♂ examples on Sunday, February 13th, and again on Sunday, March 12th, all newly-emerged examples; and I have heard of captures by friends of the same insect in Epping Forest on February 20th and on March 1st of this year. In normal years *A. hispidaria* usually commences to emerge in Epping Forest round about the 18th of February and it would then be a hard task to find even a worn example after the end of the month.—R. T. BOWMAN; 108, Station Road, Chingford, Essex.

EARLY APPEARANCE OF *HYBERNIA MARGINARIA* AND OF *ANISOPTERYX ÆSCULARIA*.—On February 7th I took at light a specimen of *Hybernia marginaria*, and on February 8th *Anisopteryx æscularia* on a paling.—H. O. HOLFORD; Elstead, Surrey.

THE VAGARIES OF SPRING.—March 1916 will long be remembered
ENTOM.—MAY, 1916,

as one of the worst on record. The rainfall exceeded the average of the last fifty years by nearly three inches, and the prevalence of strong and chilly winds, chiefly from some northerly quarter, with comparatively little sunshine, put a sudden check on the rapid advances made by all Nature during the mild if somewhat unpleasantly damp weather of the first two months of the year. The 28th was perhaps the worst day of the month, the whole country being swept by a northerly gale, accompanied by heavy snow-storms, and although the south-eastern counties did not get the full brunt of the storm, it was even there sufficient to fell trees and dislodge slates and chimney-pots by the hundred. We, at Eastbourne, were late in receiving our share of it, for although it had been blowing hard and cold all day the rain did not commence till evening, but it then fell heavily, and during the night changed to snow, and on the morning of the 29th we awoke to a white world, and so cold was it in the early hours that the surface of all still water was frozen over. The storm had passed, but the 30th and 31st were cold, dull days with a light easterly breeze. April opened with a hazy morning, but the sun soon broke through, bringing a comparatively mild spring day, and I set out for a walk over the downs. As I passed by the side of a small wood, which gave shelter from the breeze, which continued easterly and light, a butterfly, evidently a *Vanessid*, flew rapidly past, but I was unable to identify the species; on my return, however, a couple of hours later, several specimens of *Aglais urticae* were on the wing at the same place; at least half a dozen of them were seen, flitting about or sunning themselves on the bare ground, and one naturally concludes that in this instance the warm sunshine had brought them forth from their hibernating places in the wood. Sunday the 2nd was an even finer day, and as I walked along the parade in the morning sunshine, a solitary *Macroglossa stellatarum* was hovering along the stone wall and then seeking the few flowers that were already blossoming on the banks above. In my garden *Cyaniris argiolus* put in an appearance for the first time this year, the *Euonymus* hedges, for some reason not easily apparent, having a great attraction for them. And in the afternoon, as we sat in the garden basking in the sunshine and sheltered from the wind, *Aglais urticae* suddenly appeared over the hedge that separates us from the neighbouring garden nearer the sea, then another, followed by others; they sported in the air, they rested on the gravel path spreading their wings to the sun, and then passed on. It is impossible to say how many we saw, but I should estimate at least a dozen. The first one was seen at about a quarter past three and before half past they had all disappeared, and no more were seen that afternoon, although the sun continued to shine brightly until he dipped behind the downs some hours later. One wonders whence they came, and whether the same impulse, whatever it may have been, actuated the movements of both *M. stellatarum* and *A. urticae*, but it is significant that the latter appeared to be unusually rare in this neighbourhood last autumn, while of the former exceedingly few specimens were seen. But whatever may be the underlying causes of such happenings, it is interesting to know that a couple of fine

days, after even the worst of spring weather, is sufficient to bring slumbering Nature into activity again.—ROBERT ADKIN; Eastbourne, April, 1916.

MONOGRAPH OF THE BOMBYCINE MOTHS OF NORTH AMERICA, BY A. S. PACKARD: PART III.—Regarding the review of this work (*antea*, pp. 69–71) I may perhaps say that the whole of the plates from Plate LXXXIV to CXIII are from photographs taken by myself, the “J. H. Watson” on the text facing the plate indicating the same. All the specimens without exception are in my collection, those from other collections, such as Lord Rothschild, Mr. Chas. Oberthür, etc., included. For the benefit of students of the Saturnidæ, at Prof. Cockerell’s request the identity of each specimen is fixed with a blue ticket on the pin.—J. HENRY WATSON; 70, Ashford Road, Withington, Manchester, April 11th, 1916.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, March 1st, 1916.*—Commander J. J. Walker, M.A., R.N., F.L.S., Vice-President, in the chair.—In accordance with the decision of the Council, it was announced that the Special Meeting for consideration of the proposed alterations in the Bye-laws would take place on April 5th, before the Ordinary Meeting, and the Fellows present decided that the hour should be 7.30.—Mr. J. H. Durrant exhibited a fine variety of *Arctia caja*, L., ♂, with dark fuscous hind wings; also a specimen of *Laverna nodicolella*, Fuchs, taken at Westerham, Kent, June 24th, 1915, by Mr. P. A. Buxton. This species had not been recorded as British. Mr. G. Talbot, on behalf of Mr. J. J. Joicey, several species of Rhopalocera from Waigeu, and contributed notes.—Prof. Poulton exhibited a specimen of a hawk-moth, *Chromis erotus*, Cr. (*eras*, Boisd.), found in the stomach of a fish in Suva harbour, Fiji; also eighteen *Danais chrysippus* captured between November 3rd, 1914, and February 15th, 1915, at or near Sa. Isabel, on the north coast of Fernando Po.—Mr. G. Meade-Waldo, a South African Carpenter bee (*Xylocopa hottentota*, Smith), the tarsi of all three pairs of legs bearing the pollinia of some *Asclepiad* flower.—Mr. Hamilton Druce exhibited a book he had lately come across, entitled ‘The indigenous insects of the region of Petersburg,’ by John Cederhielm, published at Leipzig in 1798.—The Rev. F. D. Morice, a specimen of true *Sirex juvenus*, ♀, F., from Wakefield in Yorkshire; also a series of photo-micrographs to illustrate specific characters in the ♀ ovipositors or “saws” of various Cimbicids.—Mr. Nevinson, cells of various Hymenoptera; also examples of *Cimbex* and its allies, in illustration of Mr. Morice’s exhibit.—Mr. A. Bacot, a series of lantern slides showing outline camera drawings of preparations of the anal fins or paddles of mosquito pupæ; also a slide showing outlines of eggs of *Eretmopodites quinquevittatus*, illustrating the remarkable range of size. The following papers were read: “On Specific and Mimetic Relationships in the Genus *Heliconius*, L.,” by H. Eltringham, M.A., D.Sc., F.E.S.;

"Gynandromorphous *Agriades coridon*, Poda," by E. A. Cockayne, M.A., M.D., F.E.S.

Wednesday, March 15th, 1916.—The Hon. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—The death was announced of Mr. G. Meade-Waldo, a member of the Council.—Mr. Ralph Headley Moore, B.A., Heathfield, Plymstock, Devon, and Lieut. F. W. Sowerbey, R.N.D., Cleethorpes, Lincolnshire, were elected Fellows of the Society.—The proposed alterations in the By-laws, being in the hands of all Fellows present, were taken as read for the third time.—Mr. D. A. J. Buxton, who was present as a Visitor, exhibited a small collection, mostly butterflies, taken on the Gallipoli Peninsula, where he was stationed from April to October, 1915.—Mr. L. W. Newman, two pairs (a part of a series) of *Pieris brassicæ* bred from wild Aberdeenshire larvæ, the ♂♂ especially showing a decided pink coloration all over the wings.—Mr. G. Talbot, on behalf of Mr. J. J. Joicey, several interesting African Rhopalocera.—Mr. A. Bacot, specimens of *Pediculus humanus (vestimenti)*, *P. capitis*, and the second generation of hybrids resulting from a pairing between *P. capitis* male and *P. humanus* female.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—February 10th, 1916.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Newman exhibited a gynandromorph of *Polygonia c-album*; it was considered unique.—Mr. Sperring, an irregularly banded *Argynnis adippe* from Swinley Woods, and a specimen of *Amorpha populi* with a bright orange-red inner marginal blotch on hind wing.—Mr. C. B. Williams, coloured drawings of the larvæ (enlarged) of the British Neuroptera, *Coniopteryx tineiformis*, and *Senudalis aleurodiformis*.—Mr. Main, the larva and burrows of *Geotrupes spiniger* in one of his observation cages.—Mr. H. J. Turner, a series of *Salebria semirubella (carnella)* with ab. *sanguinella*, ab. *icterella*, and a dark form, and read notes on the variation.—Mr. Moore, *Polygonia californica*, *Papilio daunus*, etc., from N.W. Canada.—Mr. B. S. Williams, eighteen specimens of *Hydræcia palustris* from St. Anne's-on-Sea, showing complete gradation of ground colour from pale ochreous, through red, to fuscous grey, and with white to orange stigmata.—Messrs. Sieh, Frohawk, Newman and others spoke as to the early season.—Messrs. R. Adkin, H. A. Leeds, and B. W. Adkin exhibited series of bred and British captured *Ocneria dispar*.—Mr. R. Adkin read a paper entitled "*Ocneria dispar* in Britain."—HY. J. TURNER.

March 9th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Newman exhibited, on behalf of A. Horne, Esq., bred specimens of *Pieris brassicæ* from Aberdeen, with a very distinct pink tint over all the wings, and a Noctuid, presumably a form of *Mamestra thalassina*, but only two-thirds the usual size, and with the outer one-third of the fore wings with confused markings.—Mr. G. T. Porritt, half a dozen fine aberrations of *Abraxas grossulariata*, including, (1) a lead and yellow coloured specimen with a white star on one wing; (2) ab. *varleyata*, with a black body; (3) with the yellow band of fore wing much emphasised over the black. Mr. R. Adkin, dwarf specimens of *Pieris rapæ*, 33 mm., *P. napi*, 38 mm. and

39 mm., *Euchloë cardamines*, 32 mm. and 34 mm., *Melitæa athalia*, 35 mm., *Aglais urticae*, 38 mm., *Epinephele jurtina*, 37 mm. and 38 mm., *Polyommatus icarus*, 22 mm., and *Agriades coridon*, 30 mm. and 32 mm.—Mr. Frohawk, extreme specimens of *Pyrameis atalanta*, 47 mm. and 76 mm., *P. cardui*, 45 mm. and 72 mm., and *Vanessa io*, 47 mm. and 73 mm., and remarked on the sporadic dwarfing in *Lycæna arion*, and the exceptionally small size of *Dryas paphia* in 1893.—Mr. Bunnett, *Euwanessa antiopa* and the large water-bug, *Benicis griseus*, from Canada, near L. Winnipagos.—Mr. Edwards, species of the African genus *Euryphene* to show the extreme sexual divergence, including *E. arcadius*, *E. sophus*, *E. phranza*, *E. cocalia*, etc.—HY. J. TURNER.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquitt Street, Liverpool, *January 17th*, 1916.—Dr. John Cotton, President, in the chair.—Mr. Arnold W. Hughes read a paper on "Collecting in the Wye Valley." He described in a very lucid and interesting manner the experiences of a fortnight's holiday in that delightful district, so rich in insect life and in other objects of natural history. The scenery at Symonds Yat was described, and a reference to the leading botanical features of the surrounding country led up to a detailed list of the insects to be found in the extensive woodlands clothing the sides of the valley. *Apatura iris* is frequently taken at Symonds Yat, and it is a well-known haunt of *Vanessa c-album*; the larger fritillaries, the two hair-streaks, *Thecla quercus* and *T. w-album*, also *Leucophasia sinapis* are generally common at the proper time as well as many local moths. The paper was illustrated by an exhibition of the species collected, and a general discussion ensued.—Other exhibits were as follows: By Mr. F. N. Pierce, a specimen of *Depressaria hepaticaria* taken in Scotland, the same being one of the only two known British examples.—Mr. W. Mansbridge had a series of *Chesias spartiata* from Delamere Forest, and reported that he had found the insect abundant among its food-plant in widely separated parts of the forest.

February 21st, 1916.—Mr. James Brown, 7, Eltham Street, Fairfield, Liverpool, was elected a member of the Society.—Mr. R. Wilding read a paper entitled "Butterfly Collecting in the New Forest." Having introduced his subject by an appreciative notice of the unique features of the scenery of the New Forest, the grandeur of the splendid trees, and the general beauty of the vistas between them, the author proceeded to describe the favourite localities and haunts of the Lepidoptera to be found there, sometimes in such profusion as nowhere else in the British Isles. The paper was much enjoyed and was followed by an animated discussion. Mr. Wilding brought several drawers from his collection to illustrate his remarks, as well as an excellent album containing views of special bits of scenery in the forest.—Captain A. W. Boyd, who was home on a visit from the Mediterranean, exhibited a box of micro-lepidoptera collected at Rostherne, Cheshire, in 1914. The following species, new to that locality, were included: *Aciptilia pentadactyla*, *Peronea comariana* var. *potentillana*, *Sciaphila virgaureana*, melanic var., *Choreutes myllerana*, *Lampronia rubiella*, *Swammerdamia combinella*, *Cero-*

stoma costella, *Ecophora lambdella*, *Chrysochysta aurifrontella*, and *Gracilaria alchimiella*.—WM. MANSBRIDGE, *Hon. Sec.*

MANCHESTER ENTOMOLOGICAL SOCIETY.—*February 2nd, 1916.*—Mr. L. H. Suggitt read a paper on the Orthoptera. The lecturer first outlined the different families comprising the Orthoptera, and exhibited a series of British and foreign specimens in illustration of them. He further went on to explain their structure, detailing the various ways in which these insects produce sounds, mentioning also the interesting fact that auditory organs are found in the tibiae of many species. As examples of the more remarkable exotic forms he gave the stick insects and the Mantids, with remarks on their curious habits.—Mr. Mansbridge showed small beetles, probably *Ptinus*, in cotton-seed cake from Egypt. The insects had apparently survived, while in the egg stage, the ordeal of the various processes through which cotton-seed passes before being made up into cakes.—Mr. Nathan exhibited various Orthoptera, British and exotic.—Mr. W. B. Lees showed *Hybernia marginata* and *H. rupicaprariva*, January 18th, 1916, a very early record. Also *P. napi*, emerged indoors, January 24th, 1916.

March 1st, 1916.—The following gentlemen brought exhibits: Mr. Mansbridge, a series of Tortrices bred from larvæ obtained by beating birch in mid-June at Delamere Forest—*Tortrix ribeana*, varied series; *T. rosana*, *T. xylostæana*, *T. cinnamomeana*, *Ptycoloma lecheana*, *Padisca solandriana*, *Penthina betuletana*, and the Crambid *Phycis betulæ*.—Mr. Crabtree, a drawer of *Smerinthus populi*, a varied series from very light to dark forms from Bexley, York, Manchester, Keswick, etc., including rosy coloured males and females and several hermaphrodites.—Mr. C. F. Johnson, all the species of the genus *Xanthia*, including a short series of *ocellaris*.—Mr. J. H. Watson, *Archioattacus edwardsi*, a gynandromorph from Siam; *Calinaga buddah*, *C. davidis*, *C. cercyon*, and *C. sudassana*, the last named being one of the original types taken by Roberts in Siam.—Mr. J. E. Cope, Exotic Cassidæ, various brightly coloured genera; Exotic Elaters, including *Chalcolepidus*, various species, *Campylus fulgens*, *Pyrophorus noctilucus*, and *Semiotus cadezei*, the latter from Chiriqui in Panama; also Chrysomelidæ, *Sagra purpurea* from China; *Chrysochus hyphorus*, from Darjeeling, 1915.—Mr. A. W. Boyd read a series of interesting notes of observations he had made on various Lepidoptera, Coleoptera, etc., while on military duty in Egypt and the Gallipoli peninsula, 1914–15.—J. E. COPE, *Hon. Sec.*

April 6th, 1916.—Resolved on the motion of Mr. Crabtree, seconded by Mr. Suggitt, that the June excursion be to Delamere.—Mr. Crabtree exhibited Dallas' 'British Insects,' dated 1792, several volumes containing beautiful hand-coloured plates of insects of all orders—a very interesting work.—Mr. J. E. Cope read a paper by Mr. L. H. Suggitt and himself, entitled "Some Large Beetles," illustrated with a goodly number of specimens, principally of Lamellicornia and Longicornia. In the course of the address it was remarked that the largest beetles are almost all vegetable feeders, being found in forest regions, and, owing to the increasing amount of timber being cut down, are becoming scarcer and scarcer as time goes on. The

larvæ, and, in some instances, even the imagos of these large Coleoptera are eaten by human beings, the Gru-Gru grub of the West Indies being cited, amongst others, as a case in point. The life-histories and habits, as well as structural peculiarities, were described of many species, and an interesting discussion ensued.—J. E. COPE, *Hon. Sec. pro tem.*

THE LONDON NATURAL HISTORY SOCIETY.—October 19th, 1915.—Mr. A. W. Mera, Vice-President, in the chair.—Mr. C. Nicholson exhibited specimens of *Geotrupes typhæus* from Epping Forest and read notes.—Mr. W. E. King, *Epinephele tithonus* ab. *excessa* and three *Aricia medon* including two fine *striata* forms.—Mr. C. Burkill, a specimen of *Achillea millefolium* galled by *Eriophyes* sp. found near Godalming and only recorded previously from Central Europe and France.—Paper: Mr. Hugh Main read a paper entitled "Entomological Notes with a Camera in Switzerland," illustrated by lantern slides from his own photographs and including a large amount of original matter.

November 2nd, 1915.—The President, Dr. E. A. Cockayne, M.A., F.R.C.P., F.E.S., in the chair.—Dr. Cockayne exhibited a living ♀ mantis from Monros Bay, near Cape Finisterre, and three North American colidiads, *C. eurytone*, *C. philodice* and *C. eurydice*.—Mr. L. W. Newman, a long series of Irish *Pieris napi* including dark ♂s and ♀s and a pale yellow form.—Mr. F. J. Hanbury, two specimens of *Gonopteryx rhamni* marked with orange, one at the tip of the fore wing, the other on the hind wings at the tornus.—Mr. H. B. Williams, series of *P. napi* and its Irish form, *Colias hyale*, *C. edusa* with its abs. *helice* and *pallida*, and a long series of *Euchloë cardamines* including abs. *citronca*, *minor*, *turritis*, *quadripunctata*, *dispila*, *adrea*, etc., and the Irish form of the species.—Mr. E. V. Shaw, a series of *E. cardamines* including large and small spotted forms in both sexes, a ♂ with the orange patch heavily rayed with black, a ♂ with the orange patch rayed with white between the veins (underside) and two ab. *turritis* from Caterham.—Mr. J. A. Simes, European colidiads including *C. edusa* ab. *helice*, *C. myrmidone*, *C. hyale*, *C. chrysothème*, *C. palæno* and var. *europome*, *C. aurovina* var. *heldreichi*, etc.—Mr. A. Mera, a cabinet drawer of *Pieris rapæ* and *P. napi*.—Mr. C. H. Williams, specimens of *Aporia crategi*, *Pieris brassicæ*, *P. napi*, *P. rapæ* (including a ♀ with two spots in hind wing), three *P. daphidice*, and *Euchloë cardamines* ab. *dispila* ♀.—Mr. W. E. King, a very varied series of *Nemeobius lucina* from Horsley.—Papers: Short papers were read by Mr. J. A. Simes on "Some European members of the Genus *Colias*," by Mr. L. W. Newman, on "Breeding *Pieris napi* and its Irish Form," and by Mr. H. B. Williams on "The Life History and Variation of *Euchloë cardamines*."

November 16th, 1915.—The President in the chair.—The resignation of the Secretary, Mr. H. B. Williams, on his enlistment in the Army was announced.—Exhibits: Mr. W. E. King, a long and very varied series of "Thorn-moths" from the Chingford district.—Dr. Cockayne, *Selenia* hybr. *parvilunaria* (*bilunaria* × *tetralunaria*) and the reciprocal hybrid, and read notes on them.—Mr. A. W. Mera, a series of *Gonodontis bidentata* showing all the named forms.—Mr. G. T. Porritt, a black form of *Cymatophora or* from Sunderland.

December 7th, 1915.—The President in the chair.—New member, Mr. W. H. Bell, Hillcrest, Sylvan Avenue, Wood Green, N.—Exhibits, Dr. Cockayne, long series of "crosses" between *Diaphora mendica* and its var. *rustica* and graduates.—Mr. L. W. Newman on behalf of Mr. G. B. Oliver, a number of varieties of *Cænonympha pamphilus*, including one with the underside of the hind wings of a unicolorous rich brown without any markings, and one which showed patches of upper side coloration on the underside of the left hind wing. Also a fine variety of *Pararge egeria* with abnormal pale markings.—Mr. W. E. King, a male *Epinephele jurtina* with irregular pale blotches on the right side.—Mr. Bacot, living examples of *Pediculus capitis* and *P. humanus (vestimenti)* and read notes on their habits.—Mr. Burkill, galls of *Biorhiza aptera* from notes of oak in Richmond Park, *Eriophyes fraxini* on ash from Derbyshire, and the rare *Callirhytis gladium* from *Quercus lucombeana*, a hybrid oak in Kew Gardens. Officers and Council for 1916: President, Dr. E. A. Cockayne, M.A., M.D., F.R.C.P., F.E.S.; Vice-Presidents, A. Bacot, F.E.S., Rev. C. R. N. Burrows, F.E.S., M. Greenwood, Jun., M.R.C.S., L.R.C.P., F. J. Hanbury, F.L.S., F.E.S., A. W. Mera, L. B. Prout, F.E.S.; Librarians, W. E. Glegg and A. L. Mera; Curators, S. Austin, C. S. Nicholson, F.L.S., and H. Worsley Wood; President of Research Section, E. B. Bishop; Secretaries, R. W. Robbins and J. Ross; Members of Council, H. J. Burkill, D. E. Digby, L. B. Hall, F.L.S., L. W. Newman, F.E.S., V. Eric Shaw, F.E.S.

December 21st, 1915.—The President in the chair. New members, Mr. C. Flowers, 4, The Avenue, Chingford, and Mr. E. Kay Robinson, Warham, Glamorgan Road, Hampton Wick.—Exhibition of the *Lycenidæ* of 1915.—Dr. Cockayne, *Polyommatus icarus* ♀ with splashes of very bright blue scales near apex of right fore wing, no androconia. *Agriades thetis* showing asymmetry of colour and markings, *A. coridon* asymmetrical, deformed and dwarf specimens.—Mr. Pickett, a very long series of *A. coridon* from Royston, including many fine aberrant forms and sixty-six gynandromorphs.—Mr. W. E. King, *A. coridon* abs. *marginata*, *subsuffusa*, *unicolor*, *aurantia*, *albolunata*, *roystonensis*, *castanea*, *impuncta*, *striata*, *costa-juncta*, etc., and gynandromorphic specimens from Royston and Bedfordshire. *Polyommatus icarus*, a very fine series of upper and underside aberrations.—Mr. C. H. Williams, long and striking series of *P. icarus* and *Agriades coridon*.—Mr. G. T. Porritt, *Abraxas grossulariata* abs. *nigrosarsata* and *nigra* and intermediate forms.—The President delivered his annual address, choosing for his subject "Insects and War."—R. W. ROBBINS, *Hon. Sec.*

OBITUARY.

WITH very great regret we have to announce the death of Mr. T. Baxter, of Min-y-don, St. Annes-on-Sea, Lancs. He passed away, after a short illness, on April 11th last.

We are also sorry to hear of the death of Mr. Bernard Piffard. Biographic notices will be published in June.

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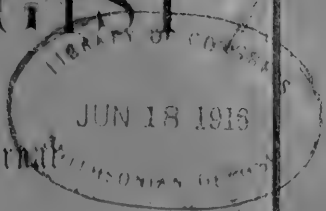
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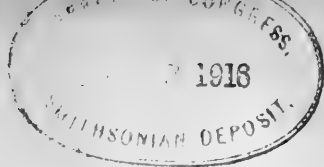
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A. FORD, 36, IRVING ROAD, BOURNEMOUTH.



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CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

No more interesting or more puzzling tribe occurs in the *Braconidæ* than that of which I am treating in this paper. The insects being generally small in size, obscure in colouring, with but few characters by which to distinguish the species, and very numerous, an enormous amount of work is required before our knowledge of even the British species will be anything approaching complete. Many species are of considerable economic importance; for instance, the well-known *Apanteles glomeratus*, which preys principally on the larvæ of the Large White Butterfly (*Pieris brassicæ*), and *A. picipes*, which does much to keep down that pest, the Garden Pebble Moth (*Pionea forficalis*). For this reason alone the group well repays study.

I have again to thank many entomologists who have presented me with specimens they have bred, greatly to their disgust, I fear, and shall always be glad to see and name, if possible, any *bred* Braconidæ that may be sent to me.

I must also thank Mr. B. S. Harwood for allowing me to examine at my leisure a large number of insects from Fitch's collection which are now in his possession, and also Dr. R. C. L. Perkins, Dr. D. Sharp, and Mr. W. J. Lucas, who have assisted me in various ways.

In the following notes, where not otherwise stated, the records are my own, and the insects have been captured and bred in the New Forest.

Microgasteridæ and *Agathidæ* together formed Wesmæel's division *Areolarii*, distinguished by the smallness of the second cubital cell. In *Agathidæ* the radial cell is also small, while in *Microgasteridæ* it is large.

The following characters are given for *Microgasteridæ* by Marshall ('Trans. Entom. Soc.,' 1885, p. 151):

"Clypeus entire, mouth closed. Maxillary palpi 4-5, labial 3-jointed. Vertex short, occiput seldom margined. Mesothoracic sutures obsolete. Abdomen sessile or subsessile, sutures distinct. Cubital cells 2 or 3; in the latter case the second is minute, subtriangular or stirrup-shaped, often imperfect; radial cell ample, nearly reaching the apex of the wing; exterior nervures, and especially the radius, more or less attenuated and obsolete; recurrent nervure rejected (except in *Acalius*), submedian cell longer than the median (except in *Acelius*). Terebra subexserted or exserted."

TABLE OF GENERA.

| | | |
|------|--|--------------------------|
| (2) | 1. Antennæ 14-jointed | 1. <i>Mirax</i> . |
| (1) | 2. Antennæ with more than 14 joints | |
| (4) | 3. Antennæ with 20 joints | 2. <i>Acelius</i> . |
| (3) | 4. Antennæ with 18 joints | |
| (6) | 5. Fore wings with two cubital cells | * 3. <i>Apanteles</i> . |
| (5) | 6. Fore wings with three cubital cells (the second very small, but always more or less complete). | |
| (12) | 7. Spurs of hind tibiæ longer than half the metatarsus. | |
| (11) | 8. Abdomen narrow, slightly or not at all rugulose at base, hind legs elongate, not incrassate, second cubital cell often incomplete, though never so open as in <i>Apanteles</i> . | |
| (10) | 9. Second abdominal segment with two nearly parallel, longitudinal grooved lines or furrows on the disc | 4. <i>Diolcogaster</i> . |
| (9) | 10. Second abdominal segment with- out impressed lines | 5. <i>Microgaster</i> . |
| (8) | 11. Abdomen broad rugulose at base, hind legs incrassate, second cubital cell quite complete | 6. <i>Hygroplitis</i> . |
| (7) | 12. Spurs of hind tibiæ shorter than half the metatarsus | 7. <i>Microplitis</i> . |

* In *Apanteles* the spurs of the hind tibiæ are as long as, or almost as long as, half the metatarsus; yet on June 11th, 1911, I captured on my window an insect which, while having the wings of *Apanteles*, has the spurs of the hind tibiæ much shorter than half the metatarsus, in fact, quite as short as in *Microplitis*. The specimen is anomalous in other respects, the first three abdominal segments being finely and densely rugulose, the second rather longer than the third.

Genus 1.—*Mirax*, Hal.†

The genus consists of a single species, *M. spartii*, described by Haliday in the 'Entomological Magazine,' xi, 467. It has

† 'Ent. Mag.,' i, 263.

been found to be a parasite of *Nepticula septembrella*. I have never been fortunate enough to capture or breed a specimen of this insect.

Genus 2.—*Acælius*, Hal.*

A single species of this genus also is at present known to be British, though several others have been described from the Continent, and will probably be proved to be present in this country also.

A. subfaciatus, Hal.†

Distinguished by the dusky bands on the wings and the incrassated hind tibiæ. A common parasite of the larvæ of leaf-mining Tinea, especially those of the genus *Nepticula*.

Genus 3.—*Apanteles*, Forst.‡

The largest and most difficult genus in the group, widely distributed, though apparently more plentiful in temperate than in tropical regions. Some eighty or so species are now known as British, and all are, I believe, parasites of the larvæ of Lepidoptera. I am aware that other hosts have been recorded, but these seem to need confirmation. With the possible exception of some of those with xylophagous larvæ, it seems doubtful if any species of Lepidoptera in this country altogether escapes the attacks of one or more species of *Apanteles*.

I have examined the larvæ of several species in this genus and have found them all very similar in appearance; on first emerging from the host they have a pale greenish tint, the intestinal canal showing as a darker green line; after spinning their cocoons, however, they become creamy white, the intestinal canal then showing as a faint lemon-coloured line. They are smooth, shining, attenuated towards the head, parts of the mouth chitinous and outlined in dark brown, two brown blotches, one on either side of the second segment; in some species the whole of the body is covered with very minute black dots and there is a noticeable ring of larger black dots round each segment; on a high-power magnification being used it will be seen that each of these dots takes the form of a ring.

The silken cocoons made by the larvæ of *Apanteles* are particularly interesting and often of great assistance in determining the species. Usually they remind one in shape and appearance, if not in size, of the cocoons of the "silk-worm," though some species construct smooth papyraceous cocoons. In colour they vary from a pure white to deep orange. The cap

* 'Ent. Mag.,' ii, 231.

† 'Ent. Mag.,' ii, 232.

‡ 'Verh. pr Rheml.,' 1862, p. 245.

Fig. 2.



Fig. 1.

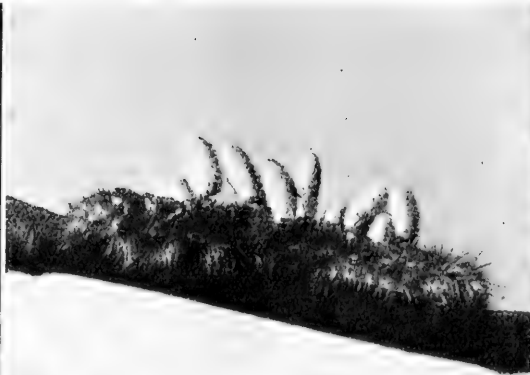


Fig. 3.

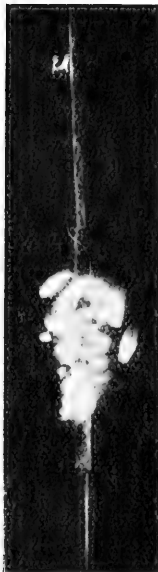


Fig. 4.

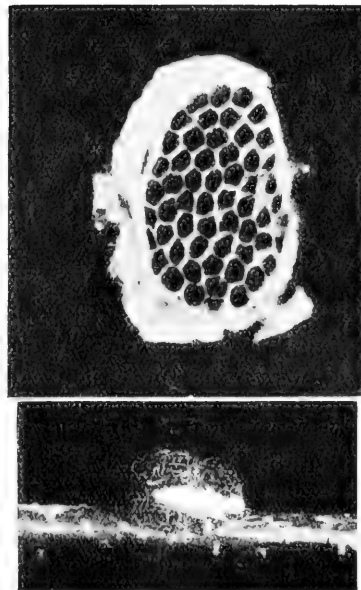


Fig. 5.

Fig. 6.

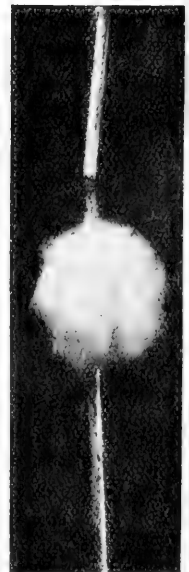


Fig. 7.

Fig. 1.—Larva of *Pacilocampa populi* carrying Cocoons of *Apanteles insidens*. $\times 2$.

Fig. 2.—Cocoon of *A. gonopterygis*. $\times 2$.

Fig. 3.—Cocoons of *A. zyggenarum*. Slightly enlarged.

Fig. 4.—Cocoons of *A. simulans*. Slightly enlarged.

Fig. 5.—Section of Ball of Cocoons of *A. spurius*. $\times 2$

Fig. 6.—Cocoon of *A. juniperatae*. $\times 12$.

Fig. 7.—Ball of Cocoons of *A. congestus*. Natural size.

which the imago removes from one extremity of the cocoon when emerging is invariably most regular in shape, those cocoons which show a ragged or uneven orifice having always been tenanted by hyperparasites.

These hyperparasites are very frequently met with, and probably every species of *Apanteles* is subject to their attacks. The majority of them belong to the Ichneumonideous genera *Hemeteles* and *Mesochorus*; the species are not particularly easy to identify, those mentioned in the following notes I have determined, principally, by the aid of Morley's 'British Ichneumons,' vols. ii and v.

There is no doubt the genus *Apanteles* is somewhat unwieldy, and attempts have been made at subdivision. With this end in view, Ashmead created the genera *Pseudopanteles*, *Parapanteles*, *Protopanteles*, and *Urogaster*, which seem to have been founded on merely specific characters (see Viereck, 'Proc. U.S. Nat. Mus.,' vol. xl, p. 476, etc.). In working at our British species, Ashmead's divisions have seemed to me rather puzzling, so that I have preferred to rely on Marshall's sections as described in the 'Trans. Entom. Soc.,' 1885, p. 157.

It is often rather difficult to separate the species, indeed many can be distinguished more readily by their biology than by morphological characters. The following divisions are almost identical with those suggested by Marshall, with the exception that I have ventured to unite his first and third sections.

SECTION 1.—First abdominal segment truncate behind, never more than twice as long as broad. Second segment never less than half as long as third. Terebra very short.

SECTION 2.—First abdominal segment as in Section 1. Segment 2 usually less than half as long as 3. Terebra elongate.

SECTION 3.—First abdominal segment at least twice as long as its medial breadth, lanceolate or rounded at the apex. Terebra variable.

(To be continued.)

NOTES ON BRACONIDÆ.—XI.*

THE TRIBE RHOGADIDES, WITH ADDITIONS TO THE BRITISH LIST.

BY CLAUDE MORLEY, F.Z.S., &C.

(Continued from p. 112.)

14. *Rhogas testaceus*, Spin.

Haliday synonymised this species with *R. circumscriptus* and Marshall was unable to confirm it as British; but Bridgman took a female at the beginning of September, 1889, near

* Cf. 'Entom.,' 1909, p. 96 et 'Ent. Mo. Mag.,' 1909, p. 209.

Norwich, of which he says (Tr. Norf. Nat. Soc., v, p. 65), "I believe it to be *R. testaceus*. . . . I think it must be *testaceus*." I can at length confirm our claim to the species on the strength of a male bred from *Eupithecia coronata* in West Somerset on September 21st, 1908, by Mr. Henry Slater, of Withycombe.

15. *Rhogas circumscriptus*, Nees.

Our commonest species of the genus, extending throughout Europe to the neighbouring parts of both Africa and Asia. It is recorded from seven species of Noctuæ, Geometræ, and Tortrices, to which I can add only *Coccyx strobilana*, Linn., whence Barrett has raised it in England. This parasite, like the rest of the genus, as Bignell truly says, completes its metamorphoses within the host, and the imago, on emerging, makes a hole in the back of the skin of the half-grown larva between the tenth and twelfth segments. Marshall in 1885 gives no localities; I possess it from Bristol, where two were bred from Lepidopterous larvæ in 1901 and 1908 (Charbonnier); Devon (de la Garde) and Ivybridge there in August (Newbery); Felden in Herts. (Piffard); Blackheath in early July (Beaumont); Deal in May (Edw. Saunders); Tostock and Benacre Broad (Tuck) and Foxhall (Chitty), in Suffolk, where I have found it throughout the summer months—except July—from May 7th, when I bred a male from a dead Lepidopterous larva found under the bark of a pine gate-post at Bosmere Hall, Needham Market, on the 27th of the preceding month, up to October 24th; by sweeping reeds, rushes and long grass, always in marshy situations, at Foxhall, Easton Broad in salt-marshes, Lakenheath, Bentley Woods, Tuddenham Fen, Nacton, once at light—the dark, not testaceous, form—in Southwold, Barnby and Covehithe Broads, Reydon marshes, Mildenhall, Henham, and Brandon. Elsewhere it has occurred to me at Hickling and Rockland in the Broads, Eaton near Norwich, and among marram grass on the Holme sand-hills in Norfolk; Chippenham Fen, in Cambs.; in salt-marshes by the Wash at Gedney, in Lines.; and on the Red Cliff at Sandown, in the Isle of Wight. Elliott has given it me from Birnam in Perth and Banchory in Kincardine; Dalglish from Giffnock; and Donisthorpe from Co. Kerry. I find the antennal joints to be 36, 37, 38, 39, 40, 41, 42 or 43.

16. *Rhogas nigricornis*, Wesm.

By no means so difficult to distinguish from the last species as authors lead one to believe. In addition to their distinctions, the second cubital cell is distinctly more parallel-sided, the stigma larger and protruding further from the line of the costa; the hind femora are sometimes infusate. Probably less rare than hitherto supposed and much mixed with *R. circumscriptus*,

from which the above characters instantly distinguish it. It is very widespread, for on July 16th, 1900, Col. Yerbury sent me from Invershin, in Scotland, the indurated skin of a Lepidopterous larva on a grass stem, whence a female soon afterwards emerged. Elliott took it at Ullswater during September, 1910. On June 13th and 18th, 1907, I swept three at Matley Bog in the New Forest; it has occurred to me also in the Aldercarr Wood at Newstead in Notts., in August, 1914, and by sweeping on July 30th, 1900, in Barnby Broad in Suffolk. I note the antennal joints to be 45, 46 or 48.

17. *Rhogas armatus*, Wesm.

A rare species everywhere, and apparently not bred till Peachell sent me a female raised on June 24th, 1899, from a larva of *Odonestis potatoia* at Weymouth. Males have occurred to me very sparingly by sweeping in Bentley Woods—once at dusk—in Suffolk during June and October, and on reeds in the Wicken marshes in Cambs. All my antennal joints are ♂ 43, ♀ 42.

CLINOCENTRUS, Hal.

A genus of small and somewhat uncommon insects, differing so much from typical *Rhogadides* that Thomson in 1892 removed them to the *Exothecides*, between which two tribes they appear to be a somewhat natural form of transition. From all other *Exothecides* he distinguishes the genus by its deeply impressed sternauli (wherein, and the stout sculpture, it somewhat resembles the Ichneumonid genus *Cecidonomus*, Bridg., which has equally elongate terebra), in the sculptured third segment, the internally subemarginate eyes and structure of the recurrent nervure of hind wing. Its exponents are distinctly uncommon or overlooked. Bignell found none in Devon, and I have hardly more than single specimens of five out of our eight indigenous species, of which two have not hitherto been recorded hence.

TABLE OF EUROPEAN SPECIES.

- | | | |
|------|--|-------------------------------|
| (2) | 1. Hind femora apically black . . . | 1. <i>exsertor</i> , Nees. |
| (1) | 2. Hind femora testaceous throughout. | |
| (10) | 3. Stigma testaceous, darker towards its outer angle. | |
| (7) | 4. Flagellum not filiform, its basal joint not twice as long as broad. | |
| (6) | 5. Third segment trans-striolate; length 3–4 mm. | 2. <i>cunctator</i> , Hal. |
| (5) | 6. Third segment aciculate-punctate; length 4½ mm. | 3. <i>striolatus</i> , Thoms. |
| (4) | 7. Flagellum subfiliform, its basal joint twice as long as broad. | |

- (9) 8. Third segment shining; hind calcaria longer
4. *gracilipes*, Thoms.
- (8) 9. Third segment coriaceous; hind calcaria shorter
5. *brevicalcar*, Thoms.
- (3) 10. Stigma infusate, usually testaceous towards its inner angle.
- (14) 11. Third segment dull, finely aciculate.
- (13) 12. Flagellum subsetaceous; spiracles of basal segment small 6. *excubitor*, Hal.
- (12) 13. Flagellum subfiliform; spiracles of basal segment prominent 7. *tenuicornis*, Thoms.
- (11) 14. Third segment nitidulous and subglabrous.
- (18) 15. Stigma of ♂ infusate; terebra one-third of abdomen.
- (17) 16. Second cubital cell and stigma of normal size
8. *vestigator*, Hal.
- (16) 17. Second cubital cell small and shorter than stigma
9. *stigmaticus*, Marsh.
- (15) 18. Stigma of ♂ bicoloured; terebra half length of abdomen 10. *umbratilis*, Hal.

1. *Clinocentrus exsertor*, Nees.

The first seems the commonest species of this uncommon genus, and has a range from Italy to Russia and Sweden. It has been bred from a somewhat common Tortricid moth; but I have seen only ten specimens, of which one pair was taken at Greenings, in Surrey, in June, 1871 (Wilson Saunders); another at Felden in Herts. (Piffard): *Botusfleming*, Cornworthy and Nunton (Marshall); and I took a single female on the flowers of *Cherophyllum sylvestre* on June 9th, 1900, at Wortham, in Suffolk.

2. *Clinocentrus cunctator*, Hal.

Known only from Belgium outside Britain till 1892; now recorded from France and Sweden. I have a single female, captured some twenty years ago at Felden by the late Albert Piffard.

3. *Clinocentrus striolatus*, Thoms.

An addition to the British list. A single female, with peculiarly refuscent mesothorax, occurred to me in a sandy lane near the Suffolk coast at Alderton on September 3rd, 1899, on the flower-tables of *Foeniculum vulgare*. It was described from Sweden.

4. *Clinocentrus gracilipes*, Thoms.

This is my other new British species, formerly much mixed with *C. cunctator*, as Rev. T. A. Marshall actually named a ♀ captured on August 21st, 1900, at Appledore by Alfred Beaumont. Another ♀ was taken by Wilson Saunders during May, 1872, at Greenings, in Surrey.

5. *Clinocentrus excubitor*, Hal.

Once bred from a *Noctua*; and now known from France, Sweden, Holland and Belgium. A single male occurred to me on July 20th, 1900 (a very hot day, with temperature of 89°), in the Bentley Woods near Ipswich, on flowers of *Heracleum sphondylium*. Marshall had two pairs from Botusfleming.

6. *Clinocentrus vestigator*, Hal.

Not yet found outside Ireland and England, where Marshall took it at Nunton, near Salisbury, and Botusfleming.

7. *Clinocentrus stigmaticus*, Marsh.

A single ♂ was described from "Angleterre" in André's *Species* in 1897. It is not represented in Marshall's collection, now in the British Museum.

8. *Clinocentrus umbratilis*, Hal.

Only recorded from Ireland, England and Wales; apparently very rare. The Swedish *C. petiolaris*, Thoms., is probably synonymous with this species.

ADEMON DECRESCENS, Nees.

This species was originally described as a *Rogas*; and I am of Haliday's opinion ('*Ent. Mag.*', 1837, p. 104) that the present genus "*Rogadibus Genuinis statura satis similis.*" Later authors have followed Wesmael, who found *A. decrescens* in Belgium and, the next year, transposed it to the Opiides; but the whole structure (with the single exception of the oral orifice) so exactly resembles that of the more fragile species of *Aleiodes* that, upon first capturing our single species, I at once recognised it as a member of the Rhogadides. Its correct position will be determined when its hosts become known, for the Opiides prey upon Diptera.

Nees took a single female "in *Sisymbrio Nasturtio* circa Sickershausen" and received others from Bohemia and Italy. Haliday knew it from the Hebrides, had seen a single English example and, in Ireland, found it somewhat gregarious among aquatic plants on the margins of rivers. I do not find it again recorded as British till 1872, when Marshall leaves it in the Rhogadides, as did Kirchner in 1867; but in 1890 he places it in the Opiides. He considered it "rare and local in England. . . I have seen no specimens except my own, which were taken formerly by sweeping *Nasturtium officinale* in a ditch near Aylestone, in Leicestershire; at that place the insects were not uncommon." The next year he gives it as "Répandu dans toute l'Europe, mais peu abondant," adding no new localities. There are, however, no examples in his collection; and the only

British example I find in the British Museum is unlocalised, ex Smith coll., presented by Mrs. Farren White. Thomson ('Opusc. Ent.' xx, p. 2206) discovered the species near Lund and elsewhere in Sweden; Gaulle records it, in his 1908 Catalogue, from France. In the British Museum is a series of ten German examples, one captured on August 30th, 1857, ex. coll. Ruthe.

On July 15th, 1912, a good many males were found together—just as though they were "assembled" by some unseen female—on plants growing in brackish water in the marshes of the Buss Creek, a couple of hundred yards from the sea coast, at Southwold, in Suffolk; on the 17th of the following September a fine female, with the coxæ and prothorax entirely rufescent, occurred a mile or so inland from this spot, at Reydon; on September 16th, 1914, the species was again common in the Buss marshes and several females were taken. I have collected at the same spot annually for the past nineteen years, but seen it upon no other occasion.

NOTES ON SOME SPRING AND AUTUMN BUTTERFLIES OF CANNES AND THE NEIGHBOURHOOD.

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

(Continued from p. 106.)*

LYCÆNIDÆ (continued).

[*C. lorquinnii*, H.-S.—M. Oberthür (*loc. cit. supra*, 303-4) continues to regard this species as a form of *C. minimus*, but I think it has been established that *lorquini*, as he writes it, is separate and distinct, and, so far as Europe is concerned, peculiar to the Spanish peninsula. This is corroborated by his statement that a fine example thereof was taken by Coulet at Digne in 1896, "perhaps, it was an accidental occurrence, and this is the only authentic French specimen I have seen." Occasional purplish-blue-shot males of *minimus* turn up in the Riviera with the type, and these, it may be assumed, are the French *lorquinnii* of the authors. The question of identity is considered by Dr. Chapman (Tutt's 'British Butterflies,' vol. iii, p. 113), and he gives valid reasons for disagreeing with Rambur,

* *Erratum*.—*Thestor ballus*.—In my note on this species (*antea*, p. 104) for "a certain M. de Cerisy," read "M. Lefebvre, of Cerisy." M. Oberthür ('Lépid Comparée,' fasc. iii, p. 98), whose reference to Boisduval's *Icones I* adopted, makes the same omission. Lefebvre is, of course, the distinguished French entomologist, born 1797, died 1867; commemorated by Boisduval in the Pyrenean *Erebia lefebvrei*. The usually correct Hagen has made a mess of his name.

to my mind usually the best authority, even to-day, on the specific differences of the Blues and Skippers. In Central Algeria *lorquinnii* replaces *minimus* altogether (*cp.* Nov. 'Zool.,' xxi, 1914, p. 310), and in the South of Spain, *e.g.* at Grenada.]

[*Nomiades coelestina*.—Millière's failure to identify the supposed examples taken by him and others in the Lantosque Valley with *N. semiargus* is inexplicable, the more so in view of his figures ('Iconographie,' fasc. iii, pl. 154). The first announcement of this South Russian Blue in the Alpes-Maritimes is made without comment in the 'Petites Nouvelles Entomologiques' (vol. i, p. 256) in a short disquisition on the lepidoptera of the locality where Millière was collecting in July and August, 1872. An amplified account follows in the 'Iconographie' (fasc. iii, p. 441), but from the figures alone it is clear that a mistake was made, which some subsequent writers accordingly have accepted, and repeat. A comparison of Millière's charming figures with the *Sarepta* specimens in my collection reveals obvious superficial differences, and the series captured by Mr. Sheldon and Mr. A. H. Jones in May, 1914, correspond fairly well with Lang's figures. The blue of the Lantosque *semiargus*, however, is neither the bright true blue of the Russian examples, nor the velvety mazarine of the butterfly, alas, no longer to be numbered of the British fauna. It is that of a not uncommon upland form of *semiargus*.]

N. cyllarus.—Variable as usual, and several forms occur at Cannes, notably ab. *blachieri*, Millière; the type specimens were taken by him here in 1867 ('Ann. Soc. Ent. France,' 1887, 215).

N. melanops.—Variable in size.

Agriades corydon.—Males greyish silvery blue, May 1st, 1914; evidently the gen. vern. *meridionalis* as taken in the Var at St. Maxime, etc., by Dr. Chapman, and described by Tutt ('British Butterflies,' vol. iv). Some of the co-types were kindly presented to me by the captor, and are in my collection.

A. bellargus.—Var. *punctifera*, Obthr., and var. *semi-ceronus*, Tutt.

A. escheri.—In one locality; over, and very worn in October.

Polyommatus icarus.—Females dark and smoky. I never saw a blue female in the spring on the Riviera, nor at Digne, Basses-Alpes.

[*P. lysimon*.—This, I suspect, is another of the mythical Lyncenids of the Riviera, where it is reported on the slenderest evidence, and probably after a too sanguine reading of a passage in the description of the species in Rambur's 'Faune d'Andalousie.' "M. Solier," he writes, "m'a donné un individu qu'il pense avoir pris dans les environs de Marseille." The italics are my own. M. Oberthür says that he has been assured

that it occurs at Montpellier, and near Marseilles, but that he has no authentic proof; while once more we find Mr. Norris (cited by Mr. Bromilow in his 'Butterflies of the Riviera,' Addenda, p. 212) credited with having observed several *lysimon* near Hyères.]

(To be continued.)

THREE NEW SPECIES OF LEPIDOPTERA FROM THE PHILIPPINES.

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

Amata mindanaoensis, sp. n.

Closely allied to *A. cymatilis*, Swinhow, from which it differs in being smaller in size. On the fore wings the hyaline spots between veins 3 and 5, above vein 6, and above dorsum, are larger and more oval in shape. On the hind wings there is an elongate hyaline spot beyond the lower angle of cell. Band of abdomen represented by a small orange spot on each side.

Expanse, 28 millim.

A female specimen from Kolambugan, Subprovince Lanao, Mindanao, May 22nd, 1914.

Nola benquetensis, sp. n.

♀. Head and tegulæ white, thorax brownish mixed with white; abdomen brownish mixed with white at posterior edges of segments. Fore wings white, basal fourth clouded on costa and dusted below with brownish; antemedial line black, inwardly angled above middle and again above dorsum, followed by a brownish band which is black mottled and irregularly edged outwardly; postmedial line black, wavy, inwardly oblique, merged in the brownish band towards dorsum; area beyond the brownish band clouded with brownish; six quadrate brownish spots on termen, the sixth divided; fringes pale greyish. Hind wings whitish, suffused with fuscous on costal and terminal areas.

Expanse, 24-26 millim.

Two female specimens from Pauai, Haight's Place, Subprovince Benguet, Luzon (7000 ft.), November, 1912.

Comes nearest to *N. melanota*, Hampson.

Roeselia flexilineata, sp. n.

♂. Head and collar white, tinged with rusty; thorax brown, whitish behind; abdomen greyish brown, white at base. Fore wings white, faintly grey tinged, brown at extreme base except on dorsum; costa brown on basal two-thirds, white marked with brown on apical

third; antemedial line black, bent outward at middle, followed on costa by a brown cloud enclosing black marks; postmedial line black, almost straight, preceded by a highly flexuous line; subterminal line black, interrupted; terminal line black, black points on its inner edge; fringes greyish-white chequered with clear white. Hind wings dark greyish inclining to whitish on dorsal area; terminal line black; fringes greyish, whitish at base.

Expanse, 19-22 millim.

Two male specimens from Palali, Subprovince Benguet, Luzon (2000 ft.), December 26th, 1912.

Allied to *R. scripta*, Moore.

NEW SPECIES OF NOTODONTIDÆ FROM JAPAN.

BY A. E. WILEMAN AND RICHARD SOUTH.

Spatalia jezoensis, sp. n.

Fore wings pale brownish buff variegated with russet, clouded with purplish brown on terminal area; a silvery triangular patch, with spot beyond, below the cell; postmedial line black, dentate, interrupted; discoidal crescent black; median nervure shaded below with black and purplish brown; veins marked with creamy white on termen, swelling into a creamy white patch between veins 5, 6. Hind wings fuscous. Under side pale buff mottled with russet on the costal area of all wings; a dusky discoidal mark and postmedial line on the fore wings, and a dusky medial line on the hind wings.

Expanse, 38-43 millim. ♂; 48 millim. ♀.

Two male specimens and a female from Tobetsu, Province Toshima, Hokkaido, July, 1902.

Very similar to *S. doerriesi*, Graeser, to which species these specimens were referred in a paper published in the 'Transactions of the Entomological Society of London,' 1911, p. 297.

Notodonta rothschildi, sp. n.

♂. Fore wings dark chocolate brown, powdered with whitish and suffused with purplish on dorsal area and along costa towards the base; antemedial line pale buff, wavy; postmedial line pale buff, represented by a diffuse crescent mark on the costa and an upright bar on the dorsum; subterminal line indicated by clusters of whitish scales at ends of the veins, most distinct towards apex; discoidal mark pale buff, inclosing a chocolate brown line; tooth on dorsum black; fringes blackish tipped with white except opposite ends of the veins. Hind wings fuscous, darker on the terminal area, discoidal mark blackish; postmedial line whitish, diffuse; fringes whitish, marked with blackish at ends of the veins. Under side fuscous on fore

wings, terminal area beyond the whitish postmedial line tinged with chocolate towards apex: hind wings whitish clouded with brown on the margins; discoidal mark dark brown; transverse line beyond brownish, wavy, indistinct towards dorsum.

Expanse, 48 millim.

A male specimen from Tobetsu, Province Toshima, Hokkaido, July 10th, 1902.

Lord Rothschild has kindly pointed out that this specimen is not *N. dembowskii*, Oberth., with which it had been confused in the paper referred to above (*l.c.*, p. 291).

NOTES ON PSOCOPTERA.

By J. W. H. HARRISON, B.Sc.

I WAS interested to read Dr. Chapman's account of his experiences with *Ectopsocus briggsi*, McLach. (*antea*, p. 62), for they almost coincide with mine in N. Yorks. I began to beat the insect during the last fortnight in October from spruce fir, and I found that every specimen I took possessed no markings at the ends of the veins. This was certainly not due to immaturity, for when I discovered that the species was a veritable *Ectopsocus* I took about a score, and kept them in tubes on leaves to allow them to mature if possible. No change occurred, and I announced to my friend Mr. R. S. Bagnall that I had taken a new species of *Ectopsocus*, and, further, I labelled my spirited specimens *Ectopsocus borealis*, and thus they remain. In November I obtained the insect in myriads from laurel, yew, maple, and sifted it, whilst hunting for spiders, from dead leaves. In no case did the specimens agree with McLachlan's description of *E. briggsi*, but, in the absence of typical specimens of the latter, I refrained from noting the matter. I still think that, if not a genuine species, it is a northern form.

As with Dr. Chapman, I beat the insect with crowds of *Graphopsocus cruciatus*, L., but there was almost an equal abundance of *Stenopsocus immaculatus*, Steph. Mr. Bagnall also took the same species with *Ectopsocus briggsi* at Grange, Lancashire, during November.

On the seabeach at the same place under stones an apterous Psocid was captured by Mr. Bagnall. This I have determined as a new species, and shall describe it shortly under the name *Hyperetes britannicus*. It differs markedly both in the perfect stage and in the nymph from *Hyperetes guestfalicus*, Kolbe, the nymph possessing quite recognisable pointed wing rudiments in addition to being marked quite differently. Needless to say, *Hyperetes guestfalicus* seems abundant in the north.

My local list of this group, which I hope to publish shortly, contains nearly thirty species, the latest capture being that of *Lepinotus inquilinus*, Heyden, which I found recently in the house on marigold seeds.

LEPIDOPTERA COLLECTED ON A TRIP ROUND THE WORLD.

By F. G. WHITTLE.

I LEFT home on Thursday, April 9th, 1914, for a long sight-seeing trip. Of course I took with me a butterfly-net and boxes, to be used as occasion offered. It was not, however, until Monday, May 9th, that, arrived at Colorado Springs from Denver, I set about exploring the Pike's Peak district, Manitou, and the Garden of the Gods in quest of Lepidoptera. The first moth noticed was a Geometer that appeared to be rather common, *Nomenia*, nov. gen., *duodecimlineata* var. *secunda*, Pearsall. I regret that I did not secure a long series of this insect, as it appears to be of special interest. Mr. Prout has very kindly identified the species for me, and states that the antennal structure and neuration separate it from the typical Californian form of *Venusia duodecimlineata*, Packard. The next moth to occur in some plenty was *Ethmia discostrigella*, Chamb., a few *Eucosma pinicolana*, Z., and a small day-flying Noctua, *Litocala sexsignata*, Harvey; a very variable Arctiid of a form that was not represented in the National Collection, *Leptartia californiæ*, Walker, *Eupithecia* ? species. There is a similar unnamed specimen in the National Collection labelled "Colorado, Boulder, Cockerell, 1913.—342."

I next visited the Cheyenne Cañons and the Seven Falls. *Euvanessa antiopa* (much worn), *Polygonia satyrus*, Edw., *Thanaos propertius*, Scudder, a fine Hesperid, but with rather a funereal aspect; a single Lycænid, not in very good order, which is, I think, *Everes amyntula*, Bar.; *Ganoris vernalis*, a Theclid, *Callophrys henrici*, Grote, *Eucosma* ? species, and two Noctuæ at rest on tree trunks. One of them is *Euxoa brunneigera*, Grote, and the other appears to be *Anomogyna vernalis*, Grote, which is represented in the National Collection by one specimen only.

I left Colorado Springs for San Francisco on May 6th, and arrived there on the 8th, having stopped one day at the Mormon city *en route*. After seeing something of the vast preparations for the great Panama Exhibition, and viewing the site, paying an interesting visit to Chinatown, and inspecting the few remaining relics of the old Spanish occupation, I made my way to Golden Gate Park, where, quite on the outskirts, near the shore, I found *Melitæa chalcedon*, Doubl. Hew., local but common; *Pyrameis atalanta*, Linn., *cardui*, Linn., and *carye*, Hübn., a

skipper, not unlike our *sylvanus*, *juba*, Seud. *Autographa ou*, Guen., was flying about in the day-time just like Gamma at home; *Xylomiges patalis*, Grote, was found on a tree trunk; also a pale Geometer, *Lithina imitata*, Druce; a small Emerald with white hind wings, *Merochlora fasolaria*, Guen., was kicked up; a Geometer something like a dark *Lobophora carpinata*, *Amathia fusifasciata*, Walker, at rest; a Noctua, great rarity at home, *Spodoptera exigua*, Hb. Of course, *Nomophila noctuella*, Schiff, occurred; *Tortrix franciscana*, Wals., was common among Conifers; also *Evetria pasadenana*, Kearf., *Argyroplote zelleriana*, Fern.?, *Argyresthia franciscella*, Busek, and *pilatella*, Braun.

I left San Francisco on Thursday, May 14th, by the Pacific mail steamship 'Mongolia.' The rival Japanese steamer left for the same destination at the same hour, and kept us such close company that we landsmen were not a little concerned about it. She dodged from port to starboard, and crossed our bows. If she desired to rile the crew and passengers, particularly the crew, she was most successful. Honolulu was reached on May 19th with our Japanese friend well in front. As our stay ashore was limited to a few hours, there was, after a visit to Waikiki beach for the surf bathing along a road lined with stately palms, and a short turn in the aquarium, very little time to look after Lepidoptera. I took *Polyommatus bæticus*, Linn., half a dozen specimens, *Callicista thiis*, Hübner, four, and the same number of *Zinckenia fascialis*, Cràm., a widely-distributed species. Much did I regret leaving so hurriedly the appropriately named "Garden of the Pacific."

May 31st, reached Yokohama.

June 1st, at Kamakura. *Biston recursaria*, Wlk. (*superans*, Butler), on a tree trunk near the Daibutsu.

June 3rd, to Anjin-zuka and Yokosuka, important Government dockyard. I had some little difficulty in finding Anjin-zuka and the grave of Will Adams, the first Englishman that ever landed on the shores of Japan. On the return journey I took specimens of *Neope goschkevitschii*, Ménétrés.

At Nikkō, after visiting the various temples and the mausoleum of Jeyasu, I went by jinricksha to the mountain lake of Chūzenji, and got some very interesting collecting on the way. I had one disappointment: *Papilio maacki*, Ménét., was settled near the Sacred Red Bridge, but I failed to get it. *Papilio machaon*, Linn., made various stoppages in its course through a small village. It was very wary, and I was getting tired of following it, when it settled on the crown of the road in front of an approaching cyclist, who ran over it, injuring it to so small an extent that it makes quite a presentable specimen. *Limenitis sibylla*, Linn., *Lycæna ægon*, Schiff, *Ypthima philomela*, Johanssen, *Argynnis anadyomene*, Felder, *Lethe diana*, Butler, *Heteropterus unicolor*, B. & G., *Ganoris melete*, Ménétrés, and *rapæ*, Linn., *Colias hyale*, Linn.

(*poliographus*, Motsch.), *Neope goschkevitschii*, Ménétriés; *Nola confusalis*, H. Sch., on a tree trunk; *Panagra petraria*, Hüb.; *Ectropis excellens*, Butler, very like our *consonaria*, *Cidaria nipponica*, Butler; *Diasemia litterata*, Sc., *Eucosma exquisitana*, Christ., *Ancylis mitterbacheriana*, Schiff, and *Eucosma arcuella*, Cl. The hotel bathroom at Nikkō yielded *Diacrisia levisi*, Butler, *Parasa sinica*, Moore, *Pydna pallida*, Butl., not unlike our *Pterostoma palpina*, and *Heemerophila charon*, Butler, very like our *Boarmia gemmaria*.

June 10th to Miyanoshita, a delightful spot with an excellent hotel. I started by jinricksha for a day at Lake Hakone; had lunch at the hotel, from which a splendid view can be obtained of Fuji. *Ganoris melete*, Ménétriés, and *rapæ*, Linn., *Libythea lepita*, Moore, close to the colossal image of Jizō, which stands back a few yards above the road, *Papilio alcinous*, Klug., *Neptis curynome* (*sangaica*, Moore), *Terias hecabe*, Linn., *Colias hyale*, Linn. (*poliographus*, Motsch.), and *Pionea inornata*. Between Miyanoshita and Yumoto I found the following: *Papilio demetrius*, Cramer, not uncommon, *Caduga tytia*, Gray, one only, *Augiades sylvanus*, Esper, *Mycalesis gotama*, Moore, *Lethe diana*, Butler, *Halpe varia*, Murray, *Ypthima philomela*, Johanssen, *Daimio tethys*, Ménétriés, common, *Caltoris colaca*, Moore, *Miltochrista miniata*, Forst., *Diacrisia nebulosa*, Butler, and *unilinea*, Roths., *Euaspidates mandataria*, Cram., *Auzata superba*, Butler, *Erastria fasciana*, L., *Thyris usitata*, Butler, *Epione advenaria*, Hübn. (I had not previously seen this species alive), *Cidaria mactata*, Felder, *Idæa pudicaria*, Motsch., *Tyspanodes striata*, Buctler, *Dichromia amici*, Butler, and *Speiredonia martha*, Butler.

June 19th at Kōbe. A trip to Mayasan, the name of one of the highest peaks (2446 ft.) behind Kōbe—very steep in parts. I had the pleasure of meeting a Japanese collector, Mr. Takata, who was kind enough to give me a specimen of *Zephyrus sepestriata*, Hewitson, which he had just netted. I took the following: *Cyaniris argiolus*, Linn. (*ladonides*, de l'Orza), *Zizera maha*, Kollar, *Chrysophanus phleas*, Linn. var. *cleus*, *Terias hecabe*, Linn., *Ypthima philomela*, Johanssen, *Colias hyale*, Linn. (*poliographus*, Motsch.), *Padraone dara*, Kollar, var. *flava*, Murray, *Syntomis fortunei*, de l'Orz. in Cop., *Psychostrophita melanargia*, Butler, *Arichanna jaguarina*, Guen. (with this moth in my net I thought I had got a fine form of *Abraxas grossulariata*), *Epione advenaria*, Hübn., *Cidaria mactata*, Felder, *Semiothisa pluviata*, Fab., a variable moth. This is the form *maligna*, Butl., the type of which is in the National Collection, *Idæa pallida*, Warren, and *ignobilis*, Warren, *Pionea inornata*, Butler, and *Glyphipteryx* ? species.

Note the number of palæartic forms in the above list.

June 23rd. A good deal of mist this morning. Fortunately

it cleared after holding us up for four hours, and our passage through the beautiful Inland Sea was not spoiled. Before we reached Nagasaki we passed through miles of heavily clouded, yellowish sea, due, so our captain said, to the presence of fish-spawn, an explanation which very few of us regarded as satisfactory.

July 2nd in Hong Kong. After visiting Canton and Macao I devoted the rest of my too short stay to working the Peak and Happy Valley for Lepidoptera. On my way up to the hotel I had seen several *Papilio polytes* flying near the cathedral, and was very hopeful of a good time with the net, which I certainly had. Near the Peak I took the following, mostly at flowers of *Lantana* :

Papilio demoleus, L., *dissimilis*, L., *paris*, L., *polytes*—one very fine female of the form *cyrus*, F.; also *Danais similis*, L., abundant, *plexippus* (*genutia*, Cram.), *Euplœa midamus*, L., common, *Mycalesis mineus*, L., *Lethe confusa*, Auriv., *Ypthima avanta*, Moore, *Ergolis ariadne*, L., *Cupha erymanthis*, Drury, *Junonia almana*, L. (*Asterie*), *Neptis urynome*, Westwood (*sangaica*, Moore), *Neptis columella*, *Argynnis hyperbius*, Joh., *Symbrenthia hippoclus*, Cr., *Zemeros fleggas*, Cram., *Abisara echerius*, Stoll., *Zizera maha*, Kollar, *Terias hecabe*, L., *Notocrypta feisthamelii*, Boisd., *Parnara bada*, Moore, *Caltoris colaca*, Moore, and *contigua*, Mabille.

The following also occurred near the Peak :

Euproctis flava, Fab., *Syntomis Muirheadi*, Feld., *Clelea sapphirina*, Walker (quite a gem), *Chrysartona stipata*, Walker, *Hyposidon talaca*, Walker, *Proleptis delphiuria*, Guen., the fine Emerald *Agathia lycænaria*, Koll., *Sauris olivacea*, Warren, *Craspedia propinquaria*, Leech, *Idea* ? *pallida*, Warr., *Scirpophaga patulella*, Wlk., *Cnaphalocrocis medinalis*, Guen., and *Heortia vitessoides*, Mocre.

Near the Happy Valley I took at flowers of *Lantana camera*, *Danais limniace*, Cram., *similis*, L., *plexippus* (*genutia*, Cram.), *Euplœa midamus*, L., *Ergolis ariadne*, L., *Junonia orithya*, Linn., *Ganoris canidia*, Sparr., *Papilio helenus*, L., *polytes*, L., *sarpedon*, L., *agamemnon*, L., *paris*, L., common, but difficult to get in good condition, and *bianor*, Cram.

July 14th, at Manila; ashore for two or three hours only. I netted several *Junonia almana*, L., (*Asterie*) *lemonias*, L., *Danais chrysippus*, L., and a few *Zinckenia fascialis*, Cram.

July 21st, at Port Darwin; ashore for a couple of hours. *Terias hecabe*, L., *Elodina perdita*, Miskin, *Hypocista irius*, F. (not unlike our *Cœnonympha pamphilus*), *Danais affinis*, F., a small Skipper, *Padraona Walkeri*, Heron, and two *Lycænids*, *Lycænesthes* ? species which agree with two unnamed examples in the National Collection taken at Port Darwin by Commander Walker.

July 25th, at Thursday Island, with a shorter stay than at Port Darwin. *Junonia orithya*, L., was the only butterfly seen. At several points on the way down to Cairns large Termitaria that appeared from the steamer to reach a considerable height were observed. I don't think the highest of them could have exceeded 9 or 10 feet. There are, I believe, records of Australian Termitaria reaching 16 feet in height.

July 27th, at Cairns. I was able to get a couple of miles along the railway track. The first insect to appear was *Deiopia pulchella*, Linn., in bred condition; the next was *Zizera labradus*, God. (*alsulus*, Herr Sch.), a few *Eurycus cressida*, F., and *Terias hecabe*, Linn.

August 3rd, Sydney, where the war excitement was intense.

August 12th, in Melbourne, the present home of the Curtis Collection. One of my most cherished possessions is a copy of 'Curtis' British Entomology,' Needless to say that when I paid my visit to the museum I asked the curator to permit me to see the Curtis cabinets, a favour which he very courteously granted. For a collection which is, I understand, just as its original owner left it, the excellent condition is astonishing.

August 16th, at Brighton Beach. Eupithecia? *Pasiphila catastreptes*, Meyr., *Idea optivata*, Walker, *Calothysanis perlata*, Walker, and *Tortrix indigestana*, Meyr., a case of the bag-worm *Oiketicus elongatus*, and a smaller case something like that of our *Proutia betulina*.

August 18th, at Toorak. On fences *Eucosma triangulana*, Meyr., and *Strathmopoda melanochoera*, Meyr. I have never taken our *Strathmopoda pedella*, but when I saw this insect sprawling on the fence I was reminded of *pedella* as figured on the cover of one of the 'Entomologists' Annuals', that of 1867.

August 19th, to Studley Park, an interesting Eupithecia, *Chloroclystis laticostata*, Walker, *Epyaxa subidaria*, Guen., *Plutella maculipennis*, Curt., and the case of a Psychid, *Hyalarcta huebneri*.

August 20th, at Kew, *Nomophila noctuella*.

August 21st, on a fence in the Domain, *Phelotis excursaria*, Guen.

August 22nd, at Fern Tree Gully, *Selidosema lyciaria*, Guen.

August 23rd, in the Domain, twelve specimens of *Narycia heliochaeres*, Meyr.

(To be continued.)

NOTES AND OBSERVATIONS.

NOMIADES SEMIARGUS: A THIRD EMERGENCE.—It may not be generally known that in exceptionally warm autumns there may be a third emergence of *Nomiades semiargus* on the continent. The late Mr. Tutt in 'British Butterflies,' vol. iii, p. 296, hints at a partial third

brood at Grésy-sur-Aix Haute-Savoie, towards the end of August—in my experience by no means a very late date for the normal second brood at this elevation. But in the 'Ann. Ent. Soc. France,' 1869, M. Girard reports a definite third emergence during the first half of October, a hot month that year, at La Brie, a district in the Department of Seine-et-Marne situated not thirty miles south-west of Paris. In the second half of the same month in that year there was also a third brood of *Limenitis camilla*.—H. ROWLAND-BROWN; Harrow Weald, May 7th, 1916.

GEOTRUPES PYRENEUS IN NEW FOREST.—In a most interesting and inexpensive volume on British Coleoptera, by Mr. W. E. Sharp,* I note that with regard to *Geotrupes pyrenæus* the author states that the species is rarely found on heaths in the south of England. This beetle has certainly been recorded from Hampshire, but I do not know whether exact localities have been given. Anyway it may perhaps be well to mention that when working for Lepidoptera on Black Knowl, Brockenhurst, I netted a specimen on June 10th, 1915.—RICHARD SOUTH; 4, Mapesbury Court, Shoot-up Hill, London, N.W.

A FEW NOTES FROM DORSET.—As a change from munition work I had the pleasure of a few happy hours collecting in "Dorset Dear" this Easter. In sauntering through the old hunting grounds I found larvæ of *Arctia villica* sunning itself in fair numbers, and *A. caia* feeding greedily in the sheltered corners; some of these latter were fully half grown, but the majority had apparently only just come out of hibernation. A few larvæ of *P. plantaginis* which I put down last summer I noticed were on the move, also that larvæ of *M. galatea* were beginning to develop appetites. *P. rapæ* and *V. urticae* were on the wing, but flying very weakly as the wind was rather cold. I had a nest of robins under observation, and I noticed that the parent birds were in and out every few seconds feeding their young with the larvæ of a noctua, which looked to me like *Phlogophora meticulosa*. If so these larvæ must have been very plentiful, for the birds evidently had no difficulty in finding them.—LEONARD TATCHELL; 71, Clova Road, Forest Gate, E.

ABUNDANCE OF CELASTRINA ARGIOLUS.—During the glorious weather of the last week in April there was an unusual abundance of this butterfly; in fact, I captured more specimens in one week than I have taken in the previous twenty-five years. I believe the reason was that, owing to the war and scarcity of labour, the ivy on the houses in the town has not been trimmed during the last two years, and consequently has bloomed.—W. GIFFORD NASH; Clavering House, Bedford.

ABERRATION OF RUMICIA PHLEAS.—From a ♀ taken in Haslemere on September 4th, 1915, which oviposited on September 8th, I reared a fine ♀ specimen of *ab. subradiata* on December 18th. As far as I remember, the parents were both quite normal, and the rest of the brood were not in any way remarkable.—F. A. OLDAKER, M.A., F.E.S.; The Red House, Haslemere, May 19th, 1916.

* 'Common Beetles of Our Countryside' (S. W. Partridge & Co.).

ABUNDANCE OF LARVÆ OF *LYCÆNA BELLARGUS*.—While staying in the neighbourhood of Ranmore during the latter part of April and the beginning of May I spent some time in searching for the larvæ of *Lycæna bellargus*. Almost every day, and especially when the sun was shining directly on the ground, I found them hurrying across the road in considerable numbers, and when the wind was at all high, as it frequently was, they were blown along and covered with grit and dust. They were in their last instar, but not quite full fed. I searched carefully among the food plant (*Hippocrepis comosa*) and found a few low down among the stems and roots in the loose soil, but I saw no trace of ants anywhere near. Those I took began to pupate on May 5th, and the last one turned on May 17th.—F. A. OLDAKER, M.A., F.E.S.; The Red House, Haslemere, May 19th, 1916.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 23rd*, 1916.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. E. A. Syms, of Wanstead, was elected a member.—The Rev. F. M. B. Carr exhibited a large number of species of Lepidoptera taken at Tolima, some 6000 ft. high, in the Colombian Andes, including species of *Morpho*, *Papilio*, *Catagramma*, *Mechanitis*, *Danaus*, *Peridroma*, *Colenis*, *Dismorphia*, *Heliconius*, *Hymenitis*, *Megaleura*, *Dynamine*, etc. Mr. Carr also showed aberrations from N. Staffordshire, including dwarf *Euchloë cardamines*, dark forms of *Hydriomena impluviata*, a series of pale and dark forms of *Tephrosia crepuscularia* with one example having three dark wings and one pale wing, and a series of *Adscita geryon*.—Mr. Leeds, *Acronicta leporina*, type and var. *bradyporina*, a black-banded form of *Agriopis aprilina*, an extreme dark form of *Xylophasia monoglypha*, *Dicyclaoo* from Hunts. including ab. *renago*, etc.—Mr. Stallman, a living specimen of the beetle *Rhagium bifasciatum* with the elytra devoid of dark pigment and unicolorous pale. It was not an immature specimen.—Mr. Edwards, several species of the genus *Papilio* from S. America.—Mr. Curwen, a box of European Lepidoptera showing extremes in size.

April 13th, 1916.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Sperring exhibited an interesting and unique aberration of *Spilosoma mendica*, a male of the dark colour with the central area of the fore wings of a lighter shade with scattered and definite spotting on it as in the female.—Mr. Edwards, *Papilio telearchus* with its mimic *Euplœa midamus*, *P. rhetenor* with its mimic the moth *Epicopeia polydora*, and other *Papilios*.—Mr. Newman, a living *Pyrameis atalanta* bred in September, 1915, and kept in a warm room through the winter. It had been fed at intervals, and seemed none the worse for hibernation.—Mr. Frohawk, a twig gathered at Addington upon which were the remaining portions of a chrysalis of *Colias edusa*.—A discussion took place as to the present season. The following species had been seen recently: *Sesia stellatarum*,

Aglais urticae, *Celastrina argiolus*, *Pieris brassicae*, and *Gonepteryx rhamni*.—HY. J. TURNER.

DERBYSHIRE ENTOMOLOGICAL SOCIETY.—The Annual Meeting of the Society was held on Saturday, March 11th, at Smiths Bank Chambers, Market Place, Derby, when the Annual Report and Statement of Accounts were presented and passed. The following officers were elected for the ensuing year: President, Mr. James Douglas; Treasurer and Librarian, Dr. Winstan StA. StJohn; Secretary, Mr. G. Hanson Sale, Coxbench; Members of Council, Dr. Claude F. Druitt and Messrs. H. C. Hayward, W. H. Sankey, and W. W. Wallis.—The Council is at present engaged in dividing the county into districts with a view to keeping systematic records and tabulating the distribution of the various species.—Mr. H. C. Hayward contributed the following list of Lepidoptera taken at Repton in the decade 1905–1915 and not recorded in the list in the Victoria County History. RHOPALOCERA: *Limenitis sibylla*: One specimen taken in 1910 by a village lad who knocked it down with his hat. No doubt seems to attach to this capture, but the presence of the insect would seem to be in some way accidental, possibly a bred specimen released by some collector in the neighbourhood. Very careful inquiries were made at the time, but the mystery is still unsolved. SESIIDÆ: *Sesia cynipiformis*: Abundant in 1911, 1912, and again in 1915. Larvæ and pupæ in stumps of felled oak. *Sesia formiciformis*: In osier beds in 1905, 1909, and 1910, but it is a very shy insect and easily escapes observation. NOCTUIDÆ: *Helotropha leucostigma (fibrosa)*: One in a garden in 1912. Presumably a survival amongst the remnants of former fens in the Trent valley. *Miana furuncula (bicoloria)*: One at sugar in 1905. I can offer no explanation of the occurrence of an isolated specimen of this species. *Tæniocampa opima*: One at sallow bloom in 1909. The possibility of transport by train was suggested for this specimen, but the occurrence of two more in 1912 in an osier bed a mile from the railway establishes the species as a native. *Hecatera serena*: One taken flying over thistle heads by day, 1914. Though frequent in the eastern counties this is a scarce species in the Midlands. *Plusia moneta*: Now common in gardens; first observed in 1906. GEOMETRIDÆ: *Boarmia abietaria*: One taken amongst yew trees in 1911. Apparently indigenous, as there is no possibility of the escape of a bred specimen. I believe the known range of the species does not extend further north than Gloucestershire and Berkshire. *Ephyra (Zonosoma) omicronaria (annulata)*: One taken about maple in 1915. I can find no record for this for the whole of the Midlands.—G. HANSON SALE, *Hon. Sec.*

RECENT LITERATURE.

1. *Fifteenth Report of the State Entomologist of Minnesota, for 1913 and 1914.*

BESIDES articles of less importance to Entomologists, there are: "Some Important Tree Insects" (A. G. Ruggles); "Some New

Suggestions in Fly-control" (C. W. Howard); "Warble-flies" (C. W. Howard); "Truck Crop Insects" (Wm. Moore); "Wireworms" (Warren Williamson); "Preliminary Notes on the Odonata of Southern Minnesota" (A. D. Whedon); "The Acridiidae of Minnesota" (M. P. Somes). The last two are papers of importance. One or two details in connection with odonate nymphs seem not quite to agree with our experience; for instance, our single *Cordulegaster* appears to oviposit quite at random, and not to attempt to place its eggs in plant-tissues. The papers are illustrated by a number of excellent plates, some being beautifully coloured.

2. *Indian Forest Insects of Economic Importance—Coleoptera.* By E. P. STEBBING. London. 1914. Pp. xvi + 648.

THIS is a comprehensive quarto volume, well printed and fully illustrated with lxiii plates (some being coloured), and 401 figures in the text. Written primarily for economic purposes, it is nevertheless sufficiently general and scientific in its treatment to be of great use to any Coleopterist.

W. J. LUCAS.

OBITUARY.

BERNARD PIFFARD.

ON March 28th, 1916, at Christchurch, Hants, there closed the long and eventful life of Bernard Piffard, elder brother of that well-known coleopterist, the late Albert Piffard.

Of French Huguenot descent, he was born at Tottenham in 1832, and was the son of James Guerard Piffard, who was himself an entomologist of some repute. Under the tuition of their father both Bernard and Albert Piffard commenced the study of insects in their very early years, and the love of Nature so implanted never left them. Some of Bernard Piffard's first collecting was done in the New Forest in the company of his father.

Educated partly in London and partly at Nyon in Switzerland, he was intended for the medical profession, for which he studied at University College, London, and, though he never qualified, his knowledge of medicine proved of great use to him in his travels.

Soon after leaving college, impelled by that "wander lust" which, he admitted, was always with him, he journeyed to the then almost unknown mountains of Armenia, narrowly escaping from the country with his life after having been robbed of all his belongings, including botanical and entomological collections. In 1854 he was up the Demarara river, living for some months in an Indian village, collecting plants and insects and studying the folk-lore of the natives; while in 1855 we find him attached to the Turkish Army in the Crimea as an interpreter, a post which, no doubt, he filled admirably on account of his intimate knowledge of the Turkish language. After the fall of Sebastopol he returned to this country,

and at once made arrangements for a trip to the Amazons, being fired by the descriptions contained in the articles then appearing in the 'Zoologist' from the pen of the celebrated naturalist, W. H. Bates. He visited Bates and collected with him for a time, afterwards journeying further up the river, and returning to England in the following year.

His wanderings now ceased for a time, as he married and settled down, first at Tottenham, then at Epping, where he became intimate with Henry Doubleday and Dr. H. G. Knaggs, and afterwards at Hemel Hempstead.

During 1886 or 1887 he lived at Gâp, where he made a collection of Alpine insects, and soon afterwards spent a season in the backwoods of Nova Scotia. His last trip abroad was in 1896, when he voyaged to the Rio Negro. Some two or three months after reaching the interior, however, he was attacked by fever, and lack of attention and strain caused by being obliged to watch continually his two mutinous followers, who attempted to murder him, brought on an illness from which he did not recover for many months.

In 1901 Mr. Piffard took up his residence in the New Forest, where he continued until a few years before his death, being well known to the many collectors who visit that (to use his own expression) "Mecca of the Entomologist." Always willing to lend a helping hand to the novice or show a good locality to any "brother of the net," the almost boyish enthusiasm with which he arranged an excursion or greeted the capture of a rare specimen was most refreshing.

During the following years he amassed a considerable collection of the local coleoptera, diptera, and hemiptera, but unfortunately did not preserve data, except of a somewhat fragmentary description. He founded at Brockenhurst the "New Forest Natural History Society," which still flourishes, and of which his daughter, Miss C. Piffard, is now Honorary Secretary.

Bernard Piffard contributed little or nothing to scientific literature, which seems strange, his knowledge being great and his pen ready, as is witnessed by the many scholarly articles written by him for the local papers.

In politics an advanced Radical (he was at one time editor of a paper called the 'West Herts Radical'), by religion a Baptist, though of very unorthodox views, a fluent preacher, writer of hymns, student of chemistry, archæology, Greek, and many other subjects, inventor of a method of electro-plating, also of a liquid smoke for curing hams, etc., author of a book of poems (some of which, though not the best, deal with entomology, viz. "Sugaring," "The Fly Catcher," "Lament of a Dipteron," etc.), also of a book, entitled 'The Abode of Departed Saints'—his was indeed a versatile mind. As a *raconteur* he was at his best, dry and often rather caustic humour, coupled with an easy flow of language and wealth of gesture, rendering it a delight to listen to his stories of adventurous collecting in many lands.

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JULY, 1916.

[No. 638

NOTES ON NEW AND LITTLE KNOWN BRITISH APHIDES.

II.

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

11. *Macrosiphum hibernaculorum*, Boyer de Fonscolombe ('Anns. d. l. Soc. Ent. d. France,' x, p. 181, 1841).

Alate viviparous female.—Green to yellowish-green; thoracic lobes pale brownish; antennæ longer than body, first and second segments yellowish-green, third dark brown except at the base, fourth and fifth pale yellowish-brown, dark apices, sixth brown. Eyes large, dark. Proboscis yellowish-green, dusky at apex. Legs yellowish-green, apices of femora and tibiæ dark brown, tarsi dark brown. Cornicles long, cylindrical, moderately thick, yellowish-green basally, pale brown on apical half, rather darkened at the apices. Cauda pale yellowish-green. Basal segment of antennæ longer and wider than the second; third segment longer than fourth, with 24–30 sensoria, extending nearly to the apex, densest basally and mostly on one side of the segment, fourth segment about as long as the fifth, sixth with a long flagellum, all faintly imbricated, especially the sixth, sensoria on fifth and sixth normal. Proboscis not quite reaching the second pair of legs; apical segment bluntly acuminate, narrower, and very slightly longer than the penultimate. Cornicles somewhat constricted just before the apex, which has marked reticulations, faint imbrication below. Cauda large, about half as long as the cornicles, bluntly acuminate, with six pairs of long pale lateral chætæ and two dorsal median ones near the apex, finely spinose. Anal plate yellowish, finely spinose. Femora and tibiæ with fine, moderately long pale hairs, especially the latter. Wings with yellowish insertions and brown veins, yellowish-brown stigma.

Length, 2.5 to 3.5 mm. *Wing expanse*, 9 mm.

Apterous Viviparous Female.—"Green. Antennæ less than the length of the body, darkened towards the apex. Cornicles very long, green; cauda also very long. Legs green, dark at the knees and tarsi" (Fonscolombe).

Locality.—Stouting, near Hythe, Kent, June 12th, 1914.

Food Plant.—*Daphne* sp.?

ENTOM.—JULY, 1916.

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This is evidently Boyer de Fonscolombe's *Aphis hibernaculorum*, found by him on *Daphne indica* in February in an orangery in France. He describes the antennæ as being less than the length of the body in the apterous female; they are usually as long or longer in *Macrosiphum*, but in a few species they may be slightly shorter. The long cornicles and cauda undoubtedly place it in this genus, and I feel confident that the alate described here are Fonscolombe's *Daphne* species. It comes in the *psi* group, and so in Mordwilko's new genus *Acyrtosiphon* ('Fn. d. l. Russe.', i, p. 75, 1914).

12. *Macrosiphum piceælla*, nov. sp.

Alate viviparous female.—Green; head brownish-green; pronotum greenish; thoracic lobes brown; abdomen with four black lateral spots before the cornicles. Antennæ longer than the body, dark brown except the two basal segments and the base of the third; the first segment larger than the second; the third a little longer than the fourth; the fourth a little longer than the fifth; sixth a little longer than third, its flagellum about five times as long as the basal area; third segment with 10 sensoria along one side nearly extending to the tip of the segment. Proboscis pale, reaching to nearly the second coxæ, dusky at the tip, apical segment narrower and longer than the penultimate. Legs green, black at apices of femora and tibiæ, and with black tarsi; very short hairs on the tibiæ. Cornicles long, cylindrical, narrow, green, dark at apex; markedly imbricated, with a few irregular reticulations at the apex, reaching nearly on to the apex of the cornicles. Cauda pale yellowish, with three pairs of lateral hairs and one dorsal apical one; very spinose. Anal plate pale yellowish; finely spinose. Wings with brown veins; the stigma, costa, and cubitus yellowish-brown.

Length, 2 mm.

Locality.—Woking, Surrey, March 17th, 1913.

Food Plant.—*Picea excelsa*.

Described from a single alate female, which was found surrounded by several pale green larvæ on a Spruce needle.

The cornicles have marked large imbrications and the antennæ are characteristic, but they arise from smaller frontal tubercles than in *Macrosiphum* proper. However, as the frontal tubercles are present, although short, I still place it in *Macrosiphum*, owing to the non-vasiform cornicles of *Rhopalosiphum* and the uncertain status of the genus *Myzus*.

This is the only other Spruce *Aphis* I have seen or known of described except Walker's *Aphis abietina*, which it certainly is not.

13. *Rhopalosiphum tulipælla*, nov. sp.

Alate viviparous female.—Head and thorax jet black and very shiny; a pale narrow anterior pronotal band and a pale dull yellowish one behind the black pronotum. Abdomen shiny dusky

ochreous to pale ochreous or dirty greenish-brown with black median bars, which more or less merge into a mass before the cornicles, and with black lateral spots. Venter of abdomen and prothorax dusky green; meso- and meta-sternum black. Antennæ dark, almost black, but to some extent paler basally; longer than the body; frontal lobes prominent; first segment much larger than second, third longer than fourth, with 10-13 rather large sensoria along one side in a line; fourth a little longer than the fifth; hairs short and blunt. Cornicles very markedly vasiform, dark with paler areas in places, with corrugations on the basal thin region and a few broad reticulations at the apex. Cauda dusky, spinose, with two pairs of lateral chætæ and one median near apex. Proboscis

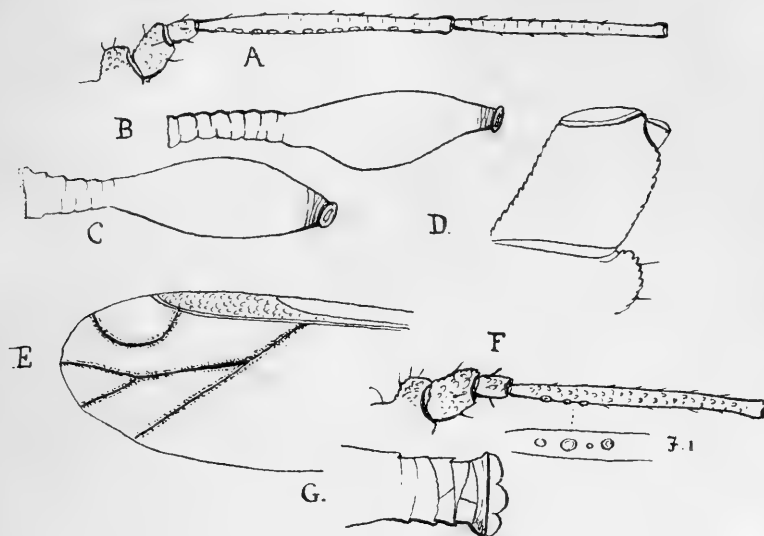


Fig. 1.—*Rhopalosiphum tulipælla*. A—E. Alate ♀; F, G. Apt. ♀.

A. & F. Antennæ; B, C. & G. Cornicles; D. Basal segment of antenna; E. Apex of wing.

reaching second pair of legs, dusky yellowish-green in the middle, black at base and apex. Legs dark, basal half of the femora dusky green. Wings with pale insertions and dark brown, almost black veins and deep grey stigma; the veins have a thin dusky area on each side due to staining of the membrane, a very marked character.

Length, 2 to 2.5 mm.

Apterous viviparous female.—Dark shiny greenish-brown. Head dull yellowish; pronotal band dark and a dark band on meso- and meta-notum. Dark median transverse bars on the abdomen, more or less fused into a dark mass on the region cephalad to the cornicles, and a dark bar or two behind; a line of small black spots in a groove on each side. Antennæ as long or a little longer than the body, paler dull greenish-brown, the apex dusky and the apices of the segments; frontal processes and eyes dark. Cornicles much

swollen and dark at base and apex, greenish-brown in the middle, shiny, rather long, the apex with some reticulation. Cauda rather small, acuminate, pale brownish-green, slightly spinose with three pairs of lateral chaetae. Legs shiny, long and thin, pale brownish-green, dusky at apices of femora and tibiae and with dusky tarsi; tibiae sometimes pale greenish-yellow. Venter paler brownish-green, shiny. In some specimens the dark brown areas are almost black and the whole insect has a general shiny dark appearance, until examined under a lens. The antennae, which arise from large frontal processes, have the basal segments much larger than the second; the third a little longer than the fourth, with 3-4 basal sensoria; fourth a

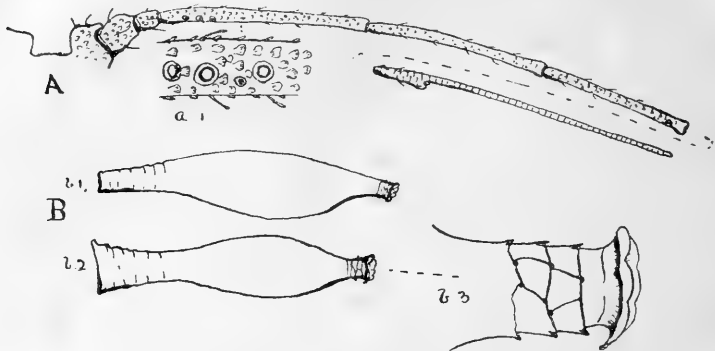


Fig. 2.—*Rhopalosiphum tulipella*. Apt. ♀.

A. Antenna; a1. Enlarged surface; B. Two forms of cornicles; b3. apex still further enlarged.

little longer than the fifth; sixth about as long as fourth and fifth. Frontal processes, first to third, and partially the fourth and fifth segments, with marked ornamentation and small lateral blunt processes (Fig. 2, A, a 1); hairs blunt or slightly rounded at the apex.

Length, 1.5 to 2 mm.

Food Plants.—Cultivated tulips and violets.

Localities.—Swanley, 14th November, 1913; Canterbury, 9th-28th February, 1914; Goudhurst, 10th March, 1914.

I first found this Aphid at Swanley, and later in a nursery at Canterbury, where many apterous females were scattered about on tulips under glass, and again on violets in frames. Here and there the plants were covered with the young, which were bright green or yellow, mostly feeding inside on the upper surface of the leaves, but now and then below them. The young are very sluggish, but the apterous females run about rapidly, especially when the food supply is becoming low. I obtained the alate females from the same nursery on February 24th. They soon became busy depositing green young. I noticed that the lice from the apterous female were mostly yellow and thus easily told from those produced by the alate female. The alatae

were very sluggish. The markings show up much more plainly when placed in alcohol. The dusky staining at the sides of the black veins is very characteristic and resembles in this respect Pergande's *Rhopalosiphum violæ* ('Canad. Ent.' p. 30, 1900) and Essig's *R. violæ* ('Pomona Journ. Ent.' i, no. 1, p. 4, 1909), but there is no clouding of the vein endings, the colour is not 'dark wine-red,' the cornicles are much more vasiform in this new species, and the sensoria of the antennæ are quite distinct. Thomas' *Rhopalosiphum tulipæ* has been shown by Davis to be only Schrank's *Rhopalosiphum (Aphis) dianthi* ('Bull. Illinois State, Lab. Nat. Hist.' x, art. ii, p. 106, 1913). There is also a general resemblance to my *Neotoxoptera violæ* ('Bull. Ent. Res.' vi, pt. ii, p. 131, fig. 23, 1915), but the wing venation is quite distinct in the African insects, which all showed the marked Toxoptera venation. Davis, however, in a recent letter, thinks my latter species may be the same as Pergande's *R. violæ* and refers to Chittenden's account ('Bull. 27, N.S., U.S. Dept. Agri. Div. Ent.' pp. 42-47, 1901), where the inconstancy of the wing venation is pointed out. The species described here is, however, very distinct from Pergande's, Essig's, or my *violæ*, both on account of antennal structure and wing ornamentation and colour. Boyer de Fonscolombe also describes an *Aplin tulipæ* ('Anns. d. l. Soc. Ent. Fr.' x, p. 167, 7, 1841). The apterous female is yellowish or grey-green and slightly pulverulent; cornicles very short and black; antennæ half the length of the body.

This species I have not yet found in Britain.

The species described here is subject to some variation in the amount of dark markings and also in the general colour of the body, some being deep green, others dull but shiny yellow-green, others almost brown.

Specimens bred from violets from Goudhurst showed the following slight variations: The body was somewhat darker, being entirely dusky brownish with two greenish bars in front and somewhat paler on the last segments, and the four pairs of black lateral spots have paler areas around them; the tibiæ are also paler, except at the apex, and the subcostal vein is yellowish and the vein stainings are not so marked.

(To be continued.)

NOTES ON SOME SPRING AND AUTUMN BUTTERFLIES OF CANNES AND THE NEIGHBOURHOOD.

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

(Continued from p. 132.)

LYCENIDÆ (continued).

P. baton.—There is a somewhat remarkable note on this butterfly in Millière's 'Catalogue,' part i.

"*Hylas*, S. V. var. *panoptes*, Hb.—The type wanting in our neighbourhood, but the var. *panoptes* flies commonly in April on rocky calcareous land where the wild thyme grows."

The habitat he particularises further ('Icon.,' fasc. ii, p. 332) as "principally the borders of the pine woods situated on the Le Cannet road, where it is certain to be met with in profusion." But he continues that it is not easy to define in words the different characters of variety and type. One decisive difference, however, had been clearly noted by Duponchel ('Cat. Méthod. des Lépid.,' 1844, p. 32) as follows:—

"Var. *panoptes* H., without the tawny spots," i. e. on the under side of the hind wings, corresponding with Hübner's excellent figures 670-3.

I do not think Millière could have seen these figures, or that he had referred to Duponchel. In the beautiful plate of the 'Iconographie' (fasc. ii., pl. 85), on which the larva and pupa are figured on the food plant with exquisite fidelity, he presents a figure of the upper side of a typical Riviera *baton*, showing thereby that he had not grasped the distinguishing characters. In my series from this region I have not a single *panoptes*, and Mr. Wheeler ('Butterflies of Switzerland,' etc., p. 40) observes that "collectors well acquainted with these parts assure me that genuine *panoptes* is not found there, except as an occasional ab." Evidently, then, Millière thought that the small dark form was Hübner's variety; and the legend grew apace. Esper (pl. liii., fig. 1) renamed the species *amphion*, and fixed the type as that having a band of bright and well-developed orange-red spots forming the ante-marginal border on the underside of the hind wings. Mr. Morris describes *baton* as locally common at Cannes under normal conditions, but from a recent letter I am afraid that what is left of it in these once thyme-haunted spots is in danger of complete extinction. "Acres of wild thyme in the district have almost disappeared, and the cause is this. Every day peasants with sacks come and drag it up by the roots for rabbits, on which they are subsisting, as meat is so expensive. When asked why they do not cut it, and let it grow again, they reply that it is more easily pulled up now after the excessive rains of March, but that it will grow again of itself." Let us hope so; meanwhile, *baton* tends to become decidedly rare hereabouts, and, I fancy, all along the Riviera, if the same disastrous practices are generally adopted.

P. orion.—Very local, and a few only where it occurs. A much commoner insect in the lower Piedmontese Alps. Var. *ornata*, Stgr. Mr. Morris reports on April 10th this year, "five females in lovely condition, scarcely dry, at white heath on very wet rocks in a little gully towards Mougins. Hitherto, our several localities have produced only one or two of the small

form in a season, but here we found a brood of this fine form in a district quite new to us."

Plebeius (ægon) argus.—A large form; scarce.

Everes argiades, gen. vern. *polysperchon*.—Rare; April and May. Mr. Bromilow ('Butterflies of the Riviera,' p. 32) asserts that it is triple brooded.

Lampides baticus.—October to January. "Larvæ in peapods bought in the market for table at the end of October, and in November; ? imported from Algeria." Mr. Morris's observation is suggestive of a possible, and not improbable means whereby "British" *baticus* have been conveyed to our shores from the Channel Islands, or the warm lower Loire valley, where the species abounds, and whence, I believe, I believe, garden produce is exported. And perhaps it is from this region also that the migrations proceed which spread over Brittany. For M. Oberthür is of opinion that it is not an indigenous species there any more than in Britain, but renewed every year from the south after the fashion of *Colias edusa* and *C. hyale*.

Tarucus telicanus.—October to December. Rarely in good condition. "Boxed a very fine female, just emerged, on *Inula viscosa*, October 17th, 1915."

Callophrys avis.—Rare. In a recent letter Mr. Morris says he has not taken it this year (1916). There were examples in the Giesecking (regional) collection. Dr. Chapman, in his monograph "On *Callophrys avis*, Chpm." ('Trans. Ent. Soc. Lond.,' 1910, pp. 85-106), does not mention Cannes as a locality. The food plant at Amelie-les-Bains, Pyr. Or., is *Coriaria myrtifolia*, but this does not grow at Hyères; and the author surmises, therefore, in view of the known haunts of the butterfly there, that on the Riviera it affects *Arbutus unedo* (*loc. cit.*, 1912, pp. 409-411).

Læsipis roboris.—A few taken in the environs of Cannes in 1913, and three examples in the Giesecking collection. This butterfly appears to be much rarer in the Alpes Maritimes than in the Basses Alpes and Eastern Pyrenees, and to belong rather to the higher levels; as, for example, St. Martin-Vésubie. It may not be generally known, for Staudinger does not give the reference, that M. Chrétien, who has worked out so many of the life histories of French and Algerian lepidoptera, published a detailed account of the metamorphoses of *L. roboris* in 'Le Naturaliste,' vol. xii, p. 102 (1890), with a poor woodcut of larvæ and egg. It has been unfortunately named, for it has no more to do with oak than *T. acaciæ*, a sloe feeder, with acacia. It feeds exclusively on ash.

Zephyrus quercûs.—Abundant in the larval stage in the oak woods on mountain slopes, but "quite 70 per cent. are ichneumonated."

Z. betulæ.—Larvæ beaten in May.

Thecla w-album.—Very local.

T. ilicis.—Millière insists that the type occurs, but all examples I have seen are var. *cerri*, and Mr. Morris mentions no other.

T. æsculi.—Rare. I have already dealt with the specific differences of this and the preceding species (*cp.* 'Entomologist.' vol. xlviii, 203–208). Mr. Morris sent me for identification a water-colour drawing of a very fine female taken near Cannes last year.

T. spini, ab. *lynceus*.—I have a very large example in my collection from St. Martin-Vésubie taken as long ago as 1881 by a friend who, I think, must have been the first British collector to tap the treasures of the now famous Lantosque valley.

T. acaciæ.—Not in Mr. Morris's list, and I cannot find that it has been taken in the immediate neighbourhood of Cannes, though it is hardly likely to be absent altogether.

LEMONIIDÆ.

Hamearis lucina.—Very local, and restricted to a few areas in cool mountain valleys, where primrose and cowslip are not very common.

(To be continued.)

LEPIDOPTERA COLLECTED ON A TRIP ROUND THE WORLD.

BY F. G. WHITTLE.

(Concluded from p. 139.)

August 27th, at Adelaide, *Nomophila noctuella* in the railway carriage. On the railway platform at Adelaide Outer Port I found *Proteuxoa euglypta*, Lower, not in the National Collection. It gave me very much pleasure to hand this specimen to Sir George F. Hampson.

August 28th, at the lights of the s.s. 'Malwa,' eight specimens of an Agrotid, *Euzoa radians*, Guen., and one fine *Heliothis armigera*, Hb.

September 9th, arrived at Colombo. Seven German merchantmen moored in the harbour. On to Kandy. Having visited the magnificent Botanic Gardens at Peradeniya, the Temple of the Tooth, and other places of interest, I started with the net for Lady Horton's Drive. During my stay at Kandy I took the following butterflies: *Danais aglea*, Cramer, *ceylanica*, Feld., *core*, Cram., *Mycalasis patnia*, Moore, *Orsotriena merla*, Fab., *mandata*, Moore, *Lethe daretis*, Hewitson, *Ypthima heubneri* (*ceylonica*, Hewitson), *Apatura parisatis*, West-

wood (*Rohana camiba*, Moore), *Euthalia garuda*, Moore, *vasanta*, Moore, *Parthenos virens*, Moore, *Moduza calidasa*, Moore, *Neptis eurynome* Westwood (*varmona*, Moore), *Neptis jumba*, Moore, *Rahinda hordonia*, Stoll (*sinuata*, Moore), *Junonia iphita*, and *laomedea*, *Vanessa canace*, Johanssen (*haronica*, Moore), *Hypolimnas bolina*, L., in ragged condition, *Cethosia nietneri*, Feld., *Cynthia asela*, Moore, *Atella phalantha*, *Cirrochroa thais*, Fab., *Cupha placida*, Moore, *Ergolis merione*, Cram., *Telchinia viole*, Fab., *Abisara echerius*, Stoll (*prunosa*, Moore), *Papilio polymnestor*, Cramer (*parinda*, Moore). This grand species and *darsius*, Gray, a truly magnificent insect, are fairly common, but a long-handled net is necessary for *darsius*. *Papilio polytes*, L. (*romulus*, Cramer), *crino* var. *montanus* (a lovely insect, and not uncommon), *agamemnon*, Linn., *sarpedon*, L. (*teredon*, Feld.), *Delias eucharis*, Drury, *Huphina nerissa* (*phryne*, Fab.), *Appias paulina*, Cramer (*galene* and *lankapura*, Moore), *Catopsilia pyranthe*, Linn., *Terias hecabe* and *silhetana*, *Megisba malaya*, Horsfield, *Nacaduba ardates*, Moore, *prominens*, *Lampides bochus*, *coruscans*, *elpis*, *celeno*, *Catochrysops strabo*, *Castalius rosimon*, *decidia*, Hewitson, *Polyommatus bæticus*, L., *Balamia exclamationis*, Fab., *Parnara cingala* (?) *Mathias*, Fab., *Taractocera mævius*, Fab., and *Tagiades distans*, Moore. The following were also taken: *Cephonodes hylas*, L. (at flowers of Lantana), *Syntomis thoracica*, Moore (not uncommon), *Chalcosia thallo*, L. (a rather common day-flying moth), *Leucoma submarginata*, Walker (Wace Park), *Pangora crosa*, Walker (on a tree trunk), *Nyctemera lacticinia*, Cram., *Nepita conferta*, Walker, *Epiplema obscuraria*, Moore, *Craspedia actuararia*, Walker, and *aspilataria*, Walker, *Timandra aventiaria*, Guen., *Euschema palmyra*, Stoll, *Lophomachia picturata*, Hmps., *Dichrocrocis evaxalis*, Walker, and *Pachyzancla licarsisalis*, Walker. *Fulgora maculata*, Oliv., a fine lantern fly, was not uncommon. I saw one at rest on a tree, and it seemed the simplest thing in the world to take it in a large glass-topped box, but it disappeared as if by magic. *Eumenes flavopicta*, Blanch., and *Chrysocoris dilaticollis*, with the Orthopteron *Aularches scabiosæ*, Fab., were netted.

I was sorry to leave Kandy without paying even a single visit to that great place for butterflies, Haragama.

September 16th, to Nuwara-Eliya. Made the ascent of Pidurutalagala, and very disappointing it was. There appeared to be a total absence of insect life. The only butterflies seen, and they were at the base of the mountain, were *Danais fumata*, Butler, and *Lethe daretis*, Hewitson. On the Moon Plains I found *Vanessa canace*, Johanssen, *Cyaniris lanka*, Moore, and the Skipper *Baracus vittatus*, Feld., the last in some plenty.

In the Ramboda Pass I found *Cyaniris puspa*.

The following moths were taken: *Eupterote vialis*, Moore, a fine Lasiocampid, with yellow-tipped thoracic hairs, at rest on

a curtain in the hotel; *Miltochrista solita*, Wlk. (something like our *Setina irrorella*), *Leucania denticula*, Hmps., in the Ramboda Pass, *Chusaris figurata*, Moore, *Macaria emersaria*, Wlk., *Boarmia adamata*, Feld. (Ramboda Pass), *Cidaria fluviana* (in the hotel), *Craspedia intonsata* (a few on a wall near the hotel), *Platytes acropenalis*, Hmps. (in a mossy ditch), *Eschata xanthocera*, Hmps. (dead and mutilated in a puddle), *Musotima accleralis*, Walk. (rather commonly in a mossy ditch), *Scoparia? murificalis*, Walker, *Adrapsa abnormalis*, Swinhoe (presented to the B. M.), *Nomophila noctuella* (Moon Plains), *Frisilia rostrata*, Meyr., *Eucosma isogramma*, Meyr., and *Autosticha petrotoma*, n. sp., named by Mr. Meyrick and now in his collection. The regularity with which heavy afternoon rain followed a fine morning was very marked during my short stay at Nuwara-Eliya.

September 29th, at Anuradhapura, *Rathinda amor*, Fab., settled on my coat as the train approached the station. I was fortunate in obtaining the services of a good Tamil guide. He gave me much information as to the wonderful remains of this buried and once extensive city. When paying a visit to the temple and viewing the sacred Bo-tree, he rather startled me by remarking that I was not to mistake the sacred Bo-tree for the Banyan. One was *Ficus religiosa*, the other *Ficus elastica*. On the visit to Mihintale, when *Papilio euripylus*, L. (*telephus*, Feld.), was settling on the road in scores, with an occasional *nomius*, Esper., he was particularly urgent in requesting me to go for the pale ones, tailed ones, the others being of little account. He gave me hints in manipulating my small camera, and bribed the monkeys with bananas to descend so that I might get a picture.

The heat at Anuradhapura is trying. I believe I felt it more here than at Bombay. I refer to it merely because I had to pay the penalty for rashly engaging in a butterfly hunt at a time when I should have been sheltering under an umbrella.

I saw a good deal of jungle, and although constantly on the look-out for snakes, saw very few indeed.

I took the following butterflies: *Danais chrysippus*, L., *septentrionalis*, Butler, *core*, Cram., *Hypolimnas bolina*, L.—a rag, *Papilio demoleus* (*erithonius*, Cramer), *polytes*, L. (*romulus*, Cramer), *hector*, L. (at flowers in the hotel grounds), *Catopsilia crocale*, Cramer, and *Appias paulina*, Cramer.

Nyctipao macrops, L. This fine noctua was found in the jungle by one of the hotel servants and brought to me.

The following occurred at light: *Deiopia pulchella*, L., *Mimeusemia ceylonica*, Hmps., *Bryophila postochrea*, Hmps., *Hyblæa puera*, Cram., *Polydesma umbricola*, Boisd., *Trigonodes regalis*, Moore, *Fodina stola*, Guen., and *cuneigera*, Butler, *Dirades theclata*, Guen., *Craspedia actuarina*, Walker, *Somatina anthophilata*, Guen., *Chlorodontopera pannosa*, Moore, *Agathia intercissa*, Walker, *Sameodes cancellalis*, Zell., *Argyroploce mosaica*, Low.,

Poujadia parviplumella, Hmps. n., and *ochridorsella*, Rag., *Ephestia cautella*, Walker, *Nymphula diminutalis*, Snell. Tijd. v. Ent., *Oligochroa asbolalis*, Hmps. n., *Thalassodes obnupta*, Swinh., *Eublemma brunnea*, Hmps. n., *Spodoptera pecten*, Guen., and *Boarmia leucodontata*. I reached Bombay on October 10th on the ill-fated P. & O. ss. 'Maloja,' which went down last Sunday morning, February 27th, off Dover. We made a very short stay at Bombay. The following were taken on the ship: *Euchloris quantula*, Swinh., *Pionea leucanalis*, Swinh., *Leucania howra*, Moore (*basilinea*, Swinh.), *Diatræa aculeata*, Hmps. n., *Glyphodes laticostalis*, Guen., *Earias fabia*, Stoll., and *Schœnobius bipunctifer*, Walker, and so ended my collecting for 1914.

Apart from travelling all the way from Australia without deck lights, passengers were not put to much inconvenience. There was, of course, a certain amount of anxiety, as the career of the 'Emden' had not then been brought to a close.

In concluding these notes I have the pleasant duty of acknowledging my indebtedness to Mr. E. Ernest Green, Mr. Meyrick, who has named my micros, the British Museum officials, Sir G. F. Hampson's 'Moths of India,' and Dr. Longstaff's 'Butterfly Hunting in Many Lands.'

DESCRIPTION OF A NEW SPECIES BELONGING TO THE FAMILY CICADIDÆ.

BY W. L. DISTANT.

Kobonga clara, sp. n.

Head black: base of front, a marginal spot on each side before eyes, a larger spot at inner margins of eyes, and a central basal spot between the ocelli, ochraceous; pronotum dull castaneous, a central black fascia widened anteriorly and rounded posteriorly, the incisures and the inner basal margin also black, the inner area of the central black fascia and two central subbasal spots, ochraceous; mesonotum black, a large rounded spot in front of the cruciform elevation and connected to the anterior margin by three longitudinal fasciæ (the two outermost strongly furcate) and a submarginal longitudinal spot, ochraceous, the central basal spot containing two transverse black spots; abdomen black, above with somewhat obscure and broken segmental ochraceous fasciæ, the anal segment (♀) ochraceous with longitudinal black fasciæ and spots; legs black, longitudinal streaks and apices to femora, apices and subbasal annulations to intermediate and posterior tibiæ and the tarsi (more or less) ochraceous; tegmina and wings hyaline; tegmina with the veins black and the costal membrane brownish-ochraceous; wings with the venation fuscous, and the extreme bases of both tegmina and wings bright ochraceous; body above sparsely and shortly pilose; head basally sulcate between the ocelli; pronotum centrally longitudinally carinate, the fissures

profound; face longer than broad, the central sulcation and transverse carinations, profound; rostrum about reaching the posterior trochanters; tegmina with the ulnar areas about half as long again as the apical areas; wings with six apical areas.

Long. excl. tegm. ♀ 60 mm. Exp. tegm. 74 mm.

Hab. New South Wales; Hay (W. W. Froggatt).

Mr. Froggatt informs me that this species was taken at Hay, "one of our Western districts on the great plains," found on "the red gum and box timber that fringe the River Murrumbidgee, and taken in our tent at the experiment station."

NEW AND LITTLE-KNOWN BEES.

BY T. D. A. COCKERELL.

Ceratina dupla, Say.

A series of four ♂ and four ♀ from Garrison, N.Y. (*Eleth Cattell*) is puzzlingly variable. One very small male has entirely dark tubercles, and belongs to the form named *calcarata* by Robertson. Two females are without light face-marks, and are regarded as females of *calcarata*. One female has only a longitudinal white band on clypeus, and falls close to *C. dupla halophila*, Ckll., differing, however, by being smaller, olive-green instead of blue-green, and having a fulvous spot on tegulæ. The other female and three males are true *C. dupla*. I believe that all are forms of a single species; but the matter should be further investigated.

Andrena lewisii, Cockerell.

Tolland, Colorado, at flowers of *Frasera*, July (*L. A. Kenoyer*).

Andrena pertarda, sp. n.

♀. Length nearly 12 mm.; black, with abundant pale ochreous hair, forming broad and very conspicuous bands on hind margins of abdominal segments 2 to 4, but fifth segment and apex with reddish-black hair; head broad, facial quadrangle much broader than long; face thinly hairy; process of labrum rather narrow, thick, truncate; malar space scarcely developed; clypeus closely punctured, shining between the punctures, but with a narrow, dull, median line; facial foveæ white-haired, moderately broad, not distinctly separated from orbits, ending broadly a short distance below level of antennæ; occiput and cheeks with much long hair; antennæ black, the flagellum with an obscure, coffee-brown tint beneath; third antennal joint about 480 microns long, a little longer than the next two together; thorax with much long hair at sides, but disc of mesothorax exposed, its surface dull and appearing minutely granular; scutellum faintly shining, the region behind it with long hair; area

of metathorax granular, poorly defined; tegulae piceous, minutely roughened; wings dusky, the apex broadly fuliginous; stigma well developed, bright orange-fulvous; nervures fuscous; second s.m. broad, receiving first r.n. beyond beginning of last third; legs black, with pale hair, that on inner side of tarsi black or very dark fuscous; hind tibial scopa sparingly plumose, the hairs straight; middle and hind basitarsi broad; surface of abdomen black, minutely roughened, without evident punctures; hair in the regions between the pale bands wholly pale.

Hab.—Boulder, Colorado, October 4th, 1915 (*Cockerell*). Visits *Compositae*, as shown by the abundant bright yellow pollen carried. Related to *A. asteris*, Rob., but easily separated by the dark apices of wings and broad, dense, abdominal bands. There is a strong superficial resemblance to *A. colletina*, Ckll.

Chelostoma rubifloris edwardsii, subsp. n.

♀. Length about 6 mm.; mandibles long, strongly bidentate at apex; second recurrent nervure joining second submarginal cell a considerable distance (about equal to length of vertical portion of outer transverso-cubital nervure) from apex.

Hab.—Amador County, California (*H. Edwards*). British Museum. Readily known from *C. rubifloris* (Ckll.) by its small size, but in other respects so similar that it can hardly rank as a distinct species.

Coelioxys genalis, sp. n.

♂. Length about 7.5 mm.; black, coarsely punctured; head broad; eyes with abundant yellowish hair; face densely covered with pale tan-coloured hair, and on sides of front it is even paler; vertex dull, with very large, irregular punctures, the region on each side of ocelli nearly impunctate, except that it is crossed by a line of large punctures; upper part of cheeks with an elongate-subquadrate patch of pale tan hair, but below this and separated from it is a broad, bevelled or grooved band along posterior orbits, densely filled with felt-like hair, which appears pure white at one angle and pale tan-colour at another; mesothorax with very large punctures, more or less in rows, the disc between the punctures moderately shining; scutellum with larger punctures than those of mesothorax, the posterior margin broadly rounded (faintly subangulate), the basal margin with two small spots of white hair; axillar spines short; tegulae piceous with a dark rufous spot; wings with the apical half deep fuliginous, the basal hyaline; legs black, inner side of tarsi with fulvous hair; abdomen shining, polished, with large punctures, on fourth segment smaller basally; hind margins of segments with narrow white hair-bands, linear and weak in middle; fifth segment with a dentiform tubercle on each side; sixth with six sharp spines, the lateral nearly as long as the upper apical, lower apical longest; anterior coxæ with rather short spines.

Hab.—Mt. Makiling, Luzon, Philippine Is. (*Baker*, 5242).

Very distinct by the peculiar marking of the cheeks. Superficially it looks like a small example of *C. luzonicus makilingensis*, Ckll., from the same locality, but *genalis* has no triangle of white hair on mesothorax anteriorly, the disc of the mesopleura is not densely covered with hair, the b.n. falls a considerable distance short of the t.m. (meets it in *makilingensis*), the armature at the apex of the abdomen is quite different, and there are many other differences, showing that the two species are not closely allied.

Nomia longitarsis, sp. n.

♂. Length about 10 mm.; black, with the clypeus (except sides above), labrum and greater part of mandibles pale testaceous; tongue linear, very slender; face narrow, densely covered with pale golden hair; front dull and densely punctured; ocelli large, the lateral ones with a small shining space lateral of them; antennæ long and slender, the scape and base of flagellum, and whole lower side of flagellum except apex, bright ferruginous; thorax with pale fulvous hair, dense in tubercles, postscutellum and greater part of mesopleura, but mesothorax and scutellum, seen from above, appearing bare; mesothorax dull, densely punctured; scutellum bigibbous, the prominences shining; postscutellum unarmed; base of metathorax with a narrow arcuate shining channel, crossed by little ridges; tegulæ rather large, light fulvous; wings greyish, stigma (which is rather small) and nervures dull ferruginous; legs slender; femora at apex and largely beneath, tibiæ entirely, middle and anterior tarsi, and extreme base of hind tarsi, all light ferruginous; hind femora slender, hind tibiæ arcuate, hind tarsi very long (a little over 4 mm.); the hind tarsi are mainly black, but the last joint is red; abdomen well punctured on first two segments, weakly on the others; hind margins of segments (including first) with orange-fulvous tegumentary bands; second segment ferruginous basally; apex very broad, broadly emarginate.

Hab.—Mt. Makiling, Luzon (*Baker*, 5000). A distinct and peculiar species, which runs in my table of Philippine *Nomia* ('Entomologist,' August, 1915, p. 179) to 5, and runs out on account of the colour of the bands. (In this table, at 4, read "not covered with hair," instead of "but," etc.)

In the paper just cited the type locality of *N. palavanica* is omitted; it is P. Princessa, Palawan (*Baker* coll., 3848). Additional specimens from Baker enable me to add some localities for two species:

Nomia takauensis philippinensis, Fr. Mt. Makiling.

Nomia incerta, Grib. Mt. Makiling; Mt. Banahao; Dapitan (Mindanao).

Nomia hippophila, Cockerell.

Two females from Yarrowin, N.S.W. (*Froggatt*, 233 c, pt.; 249 c) are referred here, as they are somewhat smaller and less robust than *N. flavoviridis*, with the tegulæ fulvous, and the

hind tibiæ and basitarsi (except apically) clear ferruginous. The general colour is dark olive-green. The mesothorax, with the punctures of disc distinct and separate under a lens, is very different from that of *N. flavoviridis phanerura*. The scutellum also has a pair of black shining impunctate elevations, not present in *phanerura*. It is very likely that when the male is known this insect will be subspecifically separable.

Trigona carbonaria, Smith.

Kenthurst, N.S.W., October 9th (Froggatt, 153 c).

Megachile tarsatula, Cockerell.

Both sexes come from P. Princesa, Palawan (Baker coll., 3842, 3843). The female is new; it is about 8.5 mm. long, narrow, with the form of the American *M. exilis*, facial quadrangle longer than broad; mandibles quadridentate, broad, coarsely striato-punctate; clypeus densely and coarsely punctured, the lower margin shining, gently concave; tarsi black, obscurely reddish apically, but middle and hind femora clear bright ferruginous, with the knees black; abdomen parallel-sided; ventral scopa thin, clear white, very short and black on last segment. This female, on account of the colour of the middle and hind femora, resembles *M. vigilans*, Sm., and *M. moera*, Cam.

Megachile abluta valdezi, subsp. n.

♀. Differs from typical *abluta* (from Formosa) as follows: Mandibles longer; clypeus more coarsely punctured, with a more or less distinct smooth median line; greater part of supraclypeal area smooth, polished, and impunctate; sides of vertex with punctures of different sizes; middle of mesothorax with punctures distinctly separated, the surface between shining; abdominal hair-bands white or creamy white. The ventral scopa is white, black on last segment, and there is a patch of long black hairs on each side of penultimate segment. This differs from *M. abluta subrixator*, Ckll., in the colour of the ventral scopa, but is otherwise nearer to it than to true *abluta*. The males, from the same locality, agree with *M. abluta*.

Hab.—Mt. Makiling, Luzon (Baker coll., 5236, 5235). Males from Mt. Makiling (Baker coll., 5234, etc.). We must apparently conclude that typical *M. abluta* does not inhabit the Philippine Islands, but is represented by *valdezi* and *subrixator*.

A small male of the *abluta* type comes from P. Princesa, Palawan (Baker coll., 3840).

Megachile philippinensis, Friese, n. sp.

This species, named by Friese in manuscript, and now published with his permission, is the Philippine representative of the Formosan *M. tranquilla*, Ckll., of which it might be considered a subspecies. The lower margin of the clypeus is shallowly subemarginate in the

female, with only the faintest suggestion of the crenulation seen in *M. tranquilla*. The species greatly resembles the Philippine forms of *M. abluta*, but there is black hair on the head and thorax above. The ventral scopa is white at the base, black on last segment and sides of penultimate, but otherwise orange-fulvous. The female is therefore to be compared with *M. abluta subrixator*, from which it is readily distinguished by the shorter mandibles, with very much smaller apical teeth and the long black hair on the scutellum. The males are best distinguished from *abluta* by the black hair on the vertex. The anterior coxæ have rather short spines.

Hab.—Los Banos, Luzon (*Baker*, 309 = type). Mt. Makiling, Luzon (*Baker*, 1799, 5237, 5239, 5241); Dapitan, Mindanao (*Baker* coll., 3146); P. Princesa, Palawan (*Baker* coll., 3841). Readily distinguished (♀) from *M. robbii*, Ashm., by the black tegulæ, and face without fulvous pubescence.

Nomada bakeri, Cockerell.

A new locality is Mt. Banahao, Luzon (*Baker* coll., 4998). In the key in 'Ann. Mag. N. Hist.,' March, 1915, p. 265, under 4, read "basal half of second abdominal segment yellow."

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

(Continued from p. 125.)

SECTION 1.

Solitarius, Ratz.*

A rather robust species having the first three segments of the abdomen rugulose (the third, however, is sometimes almost smooth) and the hind femora more or less testaceous; the belly at the base is also testaceous. A solitary parasite attacking young larvæ, generally of Bombyces or Noctuæ. There seem to be several generations in the year, the first appearing in April, after having passed the winter within the body of the host, probably in the ova state. This insect remains within its cocoon from eight to twenty days according to the weather, cold retarding and heat hastening emergence. Cocoon pale lemon colour, attached to a leaf or twig of the food plant.

Bred from *Triphnæa fimbria* several times between April 4th and 29th, and also, doubtfully, from *Tæniocampa stabilis*,

* 'Ich. d. Forst.', i, 73.

June 3rd, 1911. In August, 1915, Mr. Waterston, of the British Museum, sent me specimens which had emerged from young larvæ of *Orgyia antiqua* taken in one of the London Parks where both host and parasite were numerous.

Salebrosus, Marsh.*

Very similar to the preceding species, though probably distinct; the hind femora are entirely black and the belly at the base is piceous, in which it differs from *solitarius*. It seems also to be very near *melanocelus*, Ratz,† and may possibly be the same.

Described by Marshall from two females bred by Bignell from larvæ of *Oporabia dilutata* taken in Scotland.

Cocoon similar in shape and colour to that of *solitarius*.

I have always found this species to be a solitary parasite and have bred it from *Oporabia dilutata*, June 20th, 1910; *Anticlea badiata*, June 19th, 1912, and June 26th, 1914; and from *Cheimatobia brumata*, June 21st, 1915.

Tetricus, Reinh.‡

I possess a single insect bred by Major Robertson, September 1st, 1914, from a larva of *Parasemia plantaginis* taken near Salisbury, which I must refer to this species, though with some little doubt. The metathorax is very coarsely rugose, but the third abdominal segment is almost smooth.

Ruficrus, Hal.§

Seems to be a rather common gregarious parasite. It is easily distinguished by the testaceous fore coxæ. I possess sixteen, part of a large brood obtained by Tonge from a larva of *Leucania impura* taken at Wye, Kent. Cocoons white, irregularly clustered, with considerable loose flocculence.

Vestalis, Hal.||

This species does not appear to have been recognised since Haliday's time. Reinhard¶ considered the insect described by Haliday to be the same as *difficilis*, Nees, for which I can see no reason; unfortunately Marshall accepted this synonymy, as in other cases brought forward by Reinhard, without question.

No doubt the types were in Haliday's own collection, which is now in the Dublin Museum. Mr. J. N. Halbert, of that

* 'Trans. Entom. Soc.,' 1885, p. 164.

† 'Ich. d. Forst.,' i, 72.

‡ 'Berl. ent. Zeit.,' 1880, p. 367.

§ 'Ent. Mag.,' ii, 253.

|| 'Ent. Mag.,' ii, 253.

¶ 'Berl. ent. Zeit.,' 1881 p. 35.

Museum, has most kindly spent some time in searching for these types, but without success. I cannot do better than quote his remarks: "This extensive collection . . . came into the possession of our Museum in the early eighties and was then overhauled, when it was found that many specimens had been destroyed by mites and mould. Notwithstanding this, the greater part of the collection is still in a wonderful state of preservation. The trouble is, however, that the specimens have been often altered from Haliday's original arrangement, and a great many of them are unlabelled."

In 1884 some of Haliday's specimens were deposited in the Hope Museum, Oxford, and, in reply to my inquiries as to whether Haliday's types were there, Professor Poulton was good enough to send me for inspection three specimens which have been in the Oxford collection for many years under the name of *vestalis*; these, however, on examination, proved to belong to the genera *Microgaster* and *Microplitis*.

The following is Haliday's description:

"Mas et Fem. Thorace punctatissimo; squamulis et tibiis ferrugineis, harum posticis apice fuscis; alis hyalinis, Fem aculeo brevissimo. Fem *M. intricato** simillimus; mesothoracis scutum et scutellum tota confertissime punctata opaca; alæ hyalinæ, stigmatibus dilutius ferrugineo; squamulæ ferruginæ."

I give a description taken from thirty specimens in my own collection:

Black; palpi pale, belly at base and fore and middle tibiæ testaceous; hind tibiæ testaceous, infuscate at apex, fore femora testaceous with the base dark, middle femora fuscous except at apex, hind femora blackish, hind coxæ above subrugulose, basally smoother and more shining; wings hyaline, stigma fuscous; antennæ of female as long as the body, of male somewhat longer; mesothorax and scutellum densely punctate, almost rugulose; metathorax rather coarsely rugulose, subcarinated; first and second segments of the abdomen rugulose, 2 rather shorter than 3, the rest smooth and shining; terebra short; valvula ventralis large; length $2\frac{1}{2}$ -3 mm., expands 6-6½ mm.

In all my specimens the stigma is rather darker than mentioned by Haliday, but this is not an important character. Differs from *congestus* and *simulans* in the totally punctate mesothorax and scutellum and larger valvula ventralis.

The cocoons are the palest cream colour and have a silky appearance; those I possess are in bunches loosely connected by a few threads, but were constructed under unnatural conditions. In May, 1911, Alfred Hedges sent me a number of cocoons from which the imagines emerged on June 6th; these were obtained, gregariously, from larvæ of *Melitæa aurinia* taken in Berkshire.

* *Intricatus*, Hal = *congestus*, Nees.

Major Robertson also gave me a bunch of cocoons, which on June 7th, 1914, produced thirteen males, from the same host, in this case taken in Co. Fermanagh, and from May 16th to 23rd, 1915, I bred large numbers of both sexes from cocoons sent me by L. W. Newman and obtained by him from larvæ of *M. aurinia* from Bude, Cornwall. *Apanteles bignelli*, Marsh,* was bred by Bignell from this host; the female is very similar to *A. vestalis*, though the male appears to be widely different.

Congestus, Nees.†

This is the *Microgaster globatus* of Bouché,‡ and the *M. intricatus* of Haliday.§ It may be distinguished by the hind coxæ being very distinctly rugulose above. The curious, fluffy, yellowish ball in which the gregarious larvæ envelope their cocoons is a well-known object; this ball is usually attached to a blade of grass some distance above the ground, the host, no doubt, taking up such a position before the parasites emerge (fig. 7). The cocoons themselves are thin, white, and placed side by side in a cake, arranged almost as regularly as in the case of *A. fraternus*, the cake being covered by a thin white web. The usual number of insects in a brood appears to be from sixteen to twenty, though more have been recorded. It has usually been bred from larvæ of Noctuæ and is common and widely distributed. I have found the cocoons several times in the New Forest, and specimens have been sent to me from Burnley, Bury St. Edmunds, Crook's Peak, Deal, Reigate, Yeovil, etc.

(To be continued.)

NOTES AND OBSERVATIONS.

TORTRIX BELLANA (PENZIANA) IN DURHAM.—In July, 1911, I took a specimen of *Tortrix bellana* at light at Barnard Castle. This, I believe, is a new record for Durham County.—J. P. ROBSON; Vane Road, Barnard Castle.

AGRIOPIS APRILINA, ETC., IN DURHAM.—In August and early September, 1915, I dug up 150 pupæ of *A. aprilina*; over seventy of them at roots of three trees (thirty at one, twenty-six at another, and fifteen at a third). The resulting imagines varied from pale bluish-green to almost black. Some had the ground colour, a yellowish-green, quite distinct from the bluish-green type. Whilst digging for *A. aprilina* at Barnard Castle, 1915, I came across a male specimen of *Noctua depuncta* amongst the dead leaves at the base of

* 'Trans. Entom. Soc.,' 1885, p. 171.

† 'Mon.,' ii, 405.

‡ 'Naturg.,' 1834, p. 155.

§ 'Ent. Mag.,' ii, 252.

a tree. On June 19th, 1915, I found a batch of *Macrothylacia* (*B. rubi*) ova on the trunk of a Scots pine about 18 in. from the ground. I took the larvæ in profusion feeding on grass the year before in the same plantation on a local moor.—J. P. ROBSON; Vane Road, Barnard Castle.

IRREGULAR EMERGENCE OF *PIERIS BRASSICÆ*.—On February 27th, 1915, I brought seventeen *P. brassicæ* pupæ into the house hoping to persuade the butterflies to emerge early in the season. They were placed in one box on the kitchen mantelpiece, and they emerged as follows; April 22nd (2), 23rd (1), 24th (1), 27th (2), May 4th (1), 8th (1), 11th (1), 17th (1), June 13th (1), 16th (1), 22nd (1), 26th (1), 28th (1), July 2nd (1), 20th (1). All were fine perfect specimens, except one, which only developed three wings; the left hind wing was very rudimentary.—J. P. ROBSON; Vane Road, Barnard Castle.

XANTHIA GILVAGO IN DURHAM.—I took a female specimen of this species from a street lamp on October 6th, 1915. Appears to be a new record for Durham.—J. P. ROBSON; Vane Road, Barnard Castle.

SATURNIA PYRI ON ACTIVE SERVICE.—On July 6th last year, I obtained in Lemnos a larva of *S. pyri* (Great Peacock Moth), which were common on the island. The larva pupated next day, the cocoon being at first pure white, but this soon changed to brown. The pupa remained with me throughout the campaign in the Gallipoli Peninsula, at Cape Helles, Anzac, and finally at Suvla Bay, being kept in a small tin in my dug-out. It came home with me in December, packed in a suit-case in its tin, and the moth, a fine male with an expanse of $5\frac{1}{2}$ inches, emerged on May 11th.—R. G. BURTON, Colonel, Indian Army; 7, Suffolk Square, Cheltenham.

A PLAGUE OF CATERPILLARS.—With reference to what has appeared in the public press relative to the devastation caused by caterpillars to the oak trees at Ashted, you may be interested to know that some three or four years since a similar occurrence took place in the oak plantations in Richmond Park. The denudation of the trees was so severe that in the spring of 1913 H.M. Office of Works consulted Mr. Maxwell Lefroy, the famous entomologist of the Royal College of Science, with a view to stamping out the pest. Eventually it was decided to spray the trees with chromate of lead at such a time that the young caterpillars, on hatching out, should have only poisoned food. The spraying operations were carried out by portable high-pressure pumping apparatus loaned by myself, self-supporting telescopic ladders being provided to reach the tree-tops, some 40 feet from the ground. This was, I believe, the first occasion on which attempts were made to spray such large trees, and there is not much doubt that the oaks at Ashted could be treated in a similar manner. It is, of course, now too late in the season to undertake preventive measures, but if spraying were undertaken early next May, I have not much doubt that the pest could be eradicated.—J. COMPTON MERRYWEATHER; 4, Whitehall Court, S.W., June 7th, 1916.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, April 5th, 1916.*—Special Meeting.—Dr. C. J. Gahan, M.A., D.Sc., Vice-President, in the chair.—The Chairman having read the notice summoning the meeting, the proposed alterations in the bye-laws were submitted to the Fellows present, which were adopted with slight verbal emendations.—Ordinary Meeting.—Dr. C. J. Gahan, M.A., D.Sc., Vice-President, in the chair.—Mr. Charles Hanslope Bocoek, The Elms, Ashley, Newmarket, was elected a Fellow of the Society.—The Secretary announced that the Council had, in accordance with the bye-laws, co-opted Mr. H. Willoughby Ellis as a member of Council, in the place of the late Mr. G. Meade-Waldo.—Mr. H. Main exhibited a new observation cage for the study of earth-boring insects, especially *Geotrupes* species.—Prof. Poulton exhibited further examples of this species from the same locality in Madagascar as the fifty-one shown by him last year.—Prof. Poulton said that in the spring of last year Mr. Dodd had sent him a number of interesting observations on various insects in N. Queensland, together with examples of the species on which they had been made. He now brought forward some of these observations and showed the insects concerned. He also read a letter from Dr. R. C. L. Perkins on the nest-building instincts of bees of the genera *Osmia* and *Anthidium*, and exhibited the specimens to the meeting.—Dr. C. J. Gahan read the following letter on Mimetic Grouping in Insects, which had been addressed to him by Mr. F. G. Stokes, and said it was very interesting as a quite independent account of a phenomenon which had been discussed more than once at meetings of the Society.—Mr. G. Talbot exhibited two species of butterflies from Waziristan on behalf of Mr. J. J. Joicey, viz *Synechloe lucilla*, Butl., and *Ypthima bolanica*, Marshall.—Dr. H. Eltringham gave a short abstract of his paper on "Specific and Mimetic Relationships in the Genus *Heliconius*," illustrated by several coloured lantern slides; in connection with this exhibit Mr. W. J. Kaye showed four large cabinet drawers of *Heliconius* species, three of which contained what might ultimately be proved to be forms of the extraordinarily variable species *melpomene*.—Dr. F. A. Dixey showed upon the screen outline drawings of scent-scales and genitalia from various forms of *Pieris napi*, L., and remarked on them.

Wednesday, May 3rd, 1916.—The Honble. N. Charles Rothschild, M.A., F.Z.S., F.L.S., President, in the chair.—Messrs. Leonard Charles Box, F.R.H.S., Dominion Experimental Station, Fredericton, New Brunswick, and Leonard Spencer Tatchell, Heathwood Road, Bournemouth, were elected Fellows of the Society.—Mr. Bacot gave in brief outline an account of some experimental work carried out in Freetown, West Africa, dealing with the hatching of eggs of the mosquito *Stegomyia fasciata*.—Dr. T. A. Chapman exhibited living specimens of the sawfly *Trichiosoma tibialis*, Steph., and eight eggs laid in the cuticle of hawthorn leaves, and read notes; also a teratological specimen of a beetle with additional tarsal joints, and read notes.—Mr. E. E. Green exhibited various species of *Cassidida*, preserved in 2 per cent. formalin, displaying their natural metallic colours which are lost on desiccation.—Professor Poulton, a living

male *Celastrina argiolus*, L., which had recovered after having been stunned for nearly three days by a fall.—Mr. H. Willoughby Ellis, a rare British beetle, *Amara nitida*, Stm., taken at Knowle, Warwickshire.—Mr. Champion, specimens of *Mascauraxia cyrtica*, Desbr., from the Landes and Monte Video, an American weevil related to *Dorytomus*, apparently recently introduced in some way into France. The following papers were read: "Butterflies from Southern Kordofan, collected by Captain R. S. Wilson, Lancashire Regt.," by G. B. Longstaff, M.A., M.D., F.E.S., etc.; "New Chrysidids from Egypt and Algeria," by the Rev. F. D. Morice, M.A., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—May 11th.—Mr. Hy. J. Turner, F.E.S., Vice-President, in the chair.—The annual exhibition of "other" orders.—Mr. Ashdown exhibited a long series of aberrations and variations of three species of *Coccinellidæ*, *Adalia bipunctata*, *Coccinella 10-punctata*, and *C. hieroglyphica*.—Mr. West (Ashtead) a living larva of the stag-beetle, *Lucanus cervus*.—Mr. Pierson a cocoon of *Samia cecropia* from Brooklyn, N.Y., cut open to show the mass of pupæ of a hymenopterous parasite.—Mr. West (Greenwich), five drawers containing his fine collection of *Coccinellidæ*, *Chrysomelidæ*, etc.—The Society, by Mr. West, drawers showing collections of Diptera, Odonata, and some of their Coleoptera.—Mr. H. J. Turner, specimens of several groups of Rhynchota, including *Scutellaridæ*, *Pentatomidæ*, and the *Flatinæ* section of the *Fulgoridæ*.—Dr. Chapman, specimens of the sawfly, *Trichiosoma tibialis*, with their ova *in situ* in hawthorn twigs, examples of the carrot fly, *Psila rosæ*, and the rare fly *Pegomyia hyoscyanii*, with its parasite and puparia bred from *Datura stramonium*.—Mr. Ashby, several drawers of his finely mounted British Coleoptera, including the *Scarabidæ*, *Buprestidæ*, and *Elateridæ*, and the genera *Agabus*, *Pterostichus*, *Polydrusus*, *Phyllobius*, etc.—Mr. H. Moore, cockroaches and earwigs, species taken in a city warehouse with Japanese goods, nest of the weaver-bird, and the eggs of the tropic-bird.—Mr. Edwards, several boxes of exotic Coleoptera, *Mantidæ*, *Phasmidæ*, etc.

May 25th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. H. Moore exhibited specimens of *Catocala paleogama* from the U.S.A., and *C. nupta* from France.—Mr. A. E. Gibbs, species of New World and Old World *Catocalinæ*, including *E. nobilis* and *E. desdemona* from the former area, and *M. dilecta*, *C. elocata*, *C. promissa* and a British bred *C. frazini* from the latter, and gave notes on the species.—Mr. Hy. J. Turner, numerous species of Palearctic and Nearctic *Catocalinæ*, and read a short paper on the exhibit. An aberration of *C. promissa* was exhibited in which the crimson of the hind wings was replaced by a beautiful cream colour. A discussion followed, Messrs. Frohawk, Gibbs, Wolley-Dod, Dr. Chapman, etc., took part.—Mr. Gibbs, an aberration of *Pararge megæra*, taken in Devon by Dr. Perkins, in which the two central transverse lines were united by a dark patch. It was taken in September and was possibly of a third brood.—Mr. Ashdown, a further series of aberrations of *Coccinellidæ*, including black forms of *Adalia bipunctata* and *A. obliterata*.—Mr. Frohawk, a female form

of *Celastrina argiolus* in which several small streaks of male colour ran through the marginal dark area, and an underside of the same species in which there was a dark streak from base to hind margin. He also showed an aberration of *Argynnis adippe* (*cydippe*) in which some of the black markings were coalesced to form a narrow transverse band across the disc.—Mr. Curwen, a series of forms of *Cænonympha pamphilus* from the Mediterranean area, including var. *lyllus*, ab. *marginata* and var. *thyrsides*.—Dr. Chapman, leaves of hawthorn and birch to show the method of oviposition of the sawflies *Trichiosoma tibiale* and *Cimbex sylvarum*.

June 8th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. W. J. Ashdown exhibited male and female specimens of *Cryptcephalus coryli* to show the sexual dimorphism, and also a male example of the Tipulid *Ctenophora flavcolata* (?) from Surrey.—Mr. H. Main, (1) A small cockroach from among bananas, the colour of which it closely resembled. (2) Male and female of the burying beetle, *Necrophorus ruspator*, covered with Acari. A discussion took place as to the relations between the host and the Acari. (3) Nearly full-fed larvæ of the firefly *Luciola italica* from ova laid in 1914.—Mr. Dunster, cocoons of *Plusia moneta* on Delphinium at Southgate.—HY. J. TURNER.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquitt Street, Liverpool, March 20th, 1916.—Dr. John Cotton, President, in the chair.—Mr. Henry T. Carter, of the Liverpool University, gave a lecture, entitled "Mosquitos." Mr. Carter, being a specialist on this group of the Diptera, was able to hold the close attention of the meeting while he described the peculiarities of these interesting little creatures. Taking the term "mosquito" in the broad sense to include the blood-sucking gnats, of which we have several species in England, the lecturer traced the life-history and development of the insect from the ovum to the imago; he showed how particular species had adapted themselves to climates varying from the Equator to the Arctic Circle, and from torrid to frozen conditions, where, in the one case, the moisture supply necessary for the larval life was fugitive and uncertain, to the other extreme where the water, although plentiful, was almost continually frozen. An exhibit, comprising all the known species of mosquito, was much admired and discussed; and lantern slides, in many cases from Mr. Carter's own drawings, admirably done, were freely used to illustrate the chief points of the lecture.

April 17th, 1916.—Mr. William Mansbridge read a paper, entitled "Suburban Collecting." Principally with the object of showing how much useful work can be done in the immediate neighbourhood of one's own home, the author instanced many local insects which can still be found in the suburbs of our large towns, in the old gardens and parks, on railway banks, and in the old lanes, which, in many instances, still exist as vestiges of a vanished countryside. The melanic variations of *Odontopora bidentata*, *Polia chi*, and *Hemerophila abruptaria*, being good examples of this phase of variation, and practically confined to suburban localities; while anyone with access to an old

garden can obtain many prizes in the scarce forms of *Abraxas grossulariata*, as well as from a scientific point of view contribute to our knowledge if he cares to breed from selected parents. In lanes bordered with old hawthorn hedges the common but variable tortrices, *Peronea variegana*, *Tortrix ribeana*, and *Teras contaminana*, often absolutely swarm, and furnish many beautiful specimens for the cabinet. Among the warehouses of our manufacturing towns many species are to be obtained in profusion, and scarcely in any other way. Many of the genera *Ephestia*, *Blabophanes*, and *Tinea* are thus to be found; and where electric lamps can be worked such are a veritable mine of insect wealth as at Chester, where, some time ago, a species new to science, *Scoparia vafra*, Mey., was so captured. At the present time, however, such a method as collecting at light is practically out of the question, yet it is surprising to what a small light moths will sometimes be attracted. The paper was followed by an animated discussion, and it was resolved to make suburban insects a feature of the exhibitional meeting at the opening of the next session in October.—WM. MANSBRIDGE, *Hon. Sec.*

RECENT LITERATURE.

The Practical Principles of Plain Photo-micrography. By G. WEST.
4s. 6d. net. Dundee: Campbell and Sons, 1916.

THIS is a rather sumptuous quarto of 146 pages, printed in good type on good paper, but withal in a paper cover. Our author commences very suitably with suggestions and hints on photography in general, and proceeds to the apparatus required for the subject in hand. While he discusses the making of some of the apparatus, the description of his own fittings seem to savour of somewhat unnecessary expense. Next we are favoured with the author's arrangement for work (i) with a landscape camera, (ii) without a camera, and (iii) with a vertical photo-micrographic camera. Thus far the illustrations are a solar spectrum and colour chart, three pictures of microscopes, one of a vertical camera (four of Baker's advertisements, we fear), and plans of the arrangement employed by the author for his first and second methods. In a number of places illustrations and diagrams are called for, and their absence detracts (we are bound to say) from the many merits of the book. True there are twelve very interesting photographs (described in the text) of the results of the author's work, which add considerably to the appearance of the book, but scarcely help a novice, as simple diagrams would have done, in his struggles to produce a good negative. The interesting dialogue between "Old Surefoot" and "Young Castlebuilder" should be of much value to the latter, though perhaps the method of question and answer is somewhat out of date. The chapters on photographic necessities and chemicals, which look formidable but contain many superfluties, will well repay study, while the formulæ and list of text-books will be very convenient for reference. The book is a most useful one, and carefully written, as we should expect from a lecturer in Botany at St. Andrew's University. If this were not the case it would not be worth while referring to points in which we think it could be improved.

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III

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NOTE ON A SPECIES OF LYCÆNID NEW TO THE
PALÆARCTIC LEPIDOPTEROUS FAUNA—*AGRIADES*
ARAGONENSIS, VERITY.

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

IN some notes on a butterfly hunt in France in 1910 ('Entomologist,' vol. xliii, p. 325), I mentioned the occurrence of two broods of *Agriades corydon* in the first week of July at Nyons, Drôme, apparently overlapping—"very broken, and old females flying with quite fresh male examples," the former, as I thought, properly referable to gen. *meridionalis*, Tutt. Since then I have not come across a similar case of overlapping; and it has been reserved for Dr. Verity of Florence, in the Annals of the Society of France, to clear up what was to me a complete mystery.*

At a time when the variation of *A. corydon* is receiving considerable attention in England (certain British collectors apparently are bent on exterminating one of the more recently discovered forms in its very restricted locality), it may be useful to summarise the results of Dr. Verity's observations. Dr. Chapman has already accomplished so much good work in the differentiation of the Lycænids that we are not surprised to learn that, as *Polyommatus icarus* and *A. thersites* are specifically distinct; *Everes argiades*, *E. coretas*, and *E. decoloratu*; so certain "forms" of *A. corydon* resolve themselves into two separate and distinct species; though at present their respective life histories remain to be published in the same complete way as Dr. Chapman has given us the bionomics of the several Lycænids investigated by him; and this Dr. Verity promises to do in the near future.

Having observed in the first place worn examples of *corydon apennina* on the Tuscan hills flying with what now turns out to be a second emergence of the double brooded

* Sur deux *Lycæna* confondus sous le nom de *L. (Agriades) corydon* Poda, par le Dr. Roger Verity. 'Ann. Soc. Ent. de France,' vol. lxxxix, 4^{me} Trimestre, pp. 514-520.

aragonensis rezniceki—just as, without recognising the difference of species, I had seen the first generation of *aragonensis rezniceki* (= *meridionalis*, Tutt) overlapping typical *corydon*—Dr. Verity, by further and careful observation of both emergences, is able to establish the fact that *corydon*, Poda, is a single-brooded species preceded and succeeded seasonally by a separate though closely allied species having a superficial resemblance to *corydon* which has deceived entomologists from the days of Rambur and Gerhard onwards, into belief of their identity.

The deductions drawn by Dr. Verity are presented in tabular form as follows :

| | | | | | | | | |
|---|---|----------------------------|---|--------------------------------|----------------------------|------------------------------|---|---------------------|
| A. <i>corydon</i> , Poda. | { | <i>corydon</i> , Poda | { | <i>apennina</i> , Z. | | | | |
| | | <i>apennina</i> , Z. | | <i>superapennina</i> , Verity. | | | | |
| A. <i>aragonensis</i> (Gerh.), Verity. | { | <i>græca</i> , Ruhl | { | <i>apuanica</i> , Verity. | | | | |
| | | <i>hispana</i> , H.-S. | | <i>sibyllina</i> , Verity. | | | | |
| | | <i>albicans</i> , Bdv. | | | | | | |
| | | <i>corydonia</i> , H.-S. | | | | | | |
| | | <i>caucasica</i> , Led. | | | | | | |
| A. <i>aragonensis</i> (Gerh.), Verity. | { | <i>aragonensis</i> , Gerh. | { | <i>florentina</i> , Verity | { | <i>altera</i> , Verity. | | |
| | | rezniceki, Bartel | | { | | rezniceki | { | <i>florentina</i> . |
| | | | | | constanti, Rev.* | | | { |
| | | | | | | marginata-viridescens, Tutt. | { | |
| | | constanti | | { | <i>reverdini</i> , Verity. | | | |

Incidentally Dr. Verity's discovery throws light upon another doubtful chapter of my experiences with "*corydon*." On October 17th, 1902, I found myself unexpectedly at Digne returning from a late autumn visit to Beaulieu in the Alpes-Maritimes. On the one afternoon available, a warm and sunny day with indescribable beauty of autumn foliage still vivid in memory, I strolled along the footpath on the right bank of the Bléone, familiar to most Digne collectors, though I have never found it a very productive locality, and usually have had to

* *Agriades coridon*, var. *constanti*, gen. *precox*, by Dr. J. L. Reverdin, 'Entomologist's Record,' xxii, pp. 60-61 (1910).

Lycæna corydon, Poda, var. *constanti*, gen. *precox*, par le Dr. Jaques L. Reverdin (Avec la Planche 4, *pro parte*). 'Bull. Soc. Lépid. de Genève,' vol. ii, fasc. 1, pp. 17-22. Planche 4, figs. 1, 2, *constanti*, Rev; figs. 8, 9, *rezniceki* Bartel.

Lycæna corydon, Poda, Var. *constanti*, Reverdin, et aberrations diverses. Id. (Avec la Planche 3), *op. cit.* vol. iii, fasc. 1, pp. 32-34.

The Rivieran races, as then known, are examined and discussed at length in Tutt's 'British Butterflies,' vol. iv, pp. 45-51 (1910). They include var. *meridionalis*, Tutt, first described, but as Dr. Verity insists without reference to the true distinguishing coloration of the underside, in the 'Entomologist's Record,' vol. xxi, 290 (1909).

Var. *rezniceki* predates *meridionalis* by five years ('Ent. Zeits.' Guben, vol. xviii, p. 117. 1904), but Tutt's criticism of Bartel's comparisons of his variety with other forms of the species, as it was then supposed to be, deserve careful consideration. In my opinion he rightly evaluates Bartel's conclusions.

retrace my footsteps half-way along before the red flag of the butts, and the bullets of the *Classe* engaged across the stream in firing exercise. Only two Lycænidæ were about; *P. icarus*—or maybe a third brood of *thersites*, for we knew it not then as a separate species, and I took none to identify—shared the lucerne with *Colias edusa*, and the stony pathway adjacent yielded not a few "*A. corydon*." I appear to have taken only two males on this occasion, evidently attracted by their perfect condition. These are unquestionably Dr. Verity's *aragonensis reverdini* in the form it assumes in the Alpes-Maritimes and Basses Alpes at the lower elevations where the mean temperature is rather of the Midi than of the Central Alps.

Looking over previous captures I do not appear to have observed *aragonensis* at Digne earlier than June 13th, 1899; and this on the same pathway where the October emergence was flying somewhat further away from the town. But I possess examples from Brantes, Vaucluse, in May, received from my friend Mr. Henry Brown of Paris. On referring to my diary, not having then seen the real thing from Albarracin, I find that I regarded these Vaucluse specimens as of a transitional form to var. *albicans*, Bdv.

As might be expected then, we have the form now separated as *veznickei*, Bartel (= *meridionalis*, Tutt) beginning to emerge in April and May on the lower spurs of Mt. Ventoux, and in the first half of June at the somewhat higher altitude of Digne. The occurrence of a worn female *aragonensis* at Digne on August 14th, 1908, simultaneously with perfectly fresh *corydon* shows that, as in the Tuscan hills, *corydon* affects the neighbourhood of Digne also; and the August examples of *corydon*, superficially at all events, are inseparable from those of the higher Basses Alpes. My series hence being extremely limited I am not prepared to dogmatise on the subject; yet the extraordinary freshness of the October *aragonensis* lends colour to the assumption that there may actually be a third emergence of *aragonensis* in the Basses Alpes, just as I have recorded (*antea*, p. 139), in exceptional seasons much further north a third, of *Nomiades semiargus*. Indeed, the continuity of *Lampides bœticus* from year's end to year's end in sheltered corners of the Riviera suggests that others of the Lycænidæ, unlike *N. melanops*, tend to preserve an unbroken series of emergences, and are only deterred by unfavourable weather, and the consequent necessity for hibernation, not invariably imposed by the disappearance of pabulum.

I need not reproduce here the several superficial and organic characters by which Dr. Verity differentiates the two species *A. corydon* and *A. aragonensis*, and apportions to each the varieties and geographical forms hitherto grouped under one major species. Readers of the 'Entomologist' interested will find the whole of them set out clearly in the work to which I have referred, and

it only remains to congratulate most warmly the author on the skill and perspicacity by which he has added yet one more species to the happily growing list of western palæarctic butterflies. My sole regret is that these species-within-species, so to speak, have not hitherto disclosed themselves among our island Rhopalocera. But it is not altogether impossible that such a result may be achieved in an altogether unexpected quarter by pursuing the lines of investigation successfully traversed by students of the meridional fauna. The nearest approach we have, superficially speaking, to *A. aragonensis* in this country is *A. corydon*, var. *fowleri*, South, which is beautifully figured in the 'Entomologist,' vol. xxxiii, pl. iii, figs. 4 and 5. The female, however, in contour and colouration shows unmistakeably that it is a true variety, or aberration of *corydon*, and has no connection with *aragonensis*; while the fact that it flies in England simultaneously with the former and type form confirms this identification.

Harrow Weald, July, 1916.

COCCIDÆ AND ALEYRODIDÆ IN NORTHUMBERLAND, DURHAM, AND NORTH-EAST YORKSHIRE.

BY J. W. H. HARRISON, M.Sc.

THE following species are either new to my local list of Coccidæ, etc., or recorded for additional localities:—

COCCIDÆ.

Aspidiotus britannicus (Newstead).—This rare species has only been taken locally on ornamental hollies in Middlesbrough Park, and then only in very small quantity. I have searched wild hollies at very many points in Durham and Northumberland for it without any result.

Chionaspis salicis (L.).—Abundant everywhere (including both divisions of Northumberland); only recorded because of its extraordinary effect on some sapling ashes near Birtley, Durham. They were very curiously and somewhat regularly pitted and flattened.

Eriopeltis festucæ (Fons.).—On grass near Wolsingham, Co. Durham, on grass on an open moor facing south, altitude over 1000 ft. Also at Ninebanks, Northumberland.

Asterolecanium variolosum (Ratz.).—Near Birtley, on oaks in one of the oldest established woods in the neighbourhood—certainly not in any of the other oak woods of the vicinity.

Lecanium ciliatum (Douglas).—In searching for *Asterolecanium*

variolosum in the lower portion of the same wood mentioned above, I had the good fortune to find a few specimens of this insect, thereby extending its range very considerably.

Physokermes abietis (Geoff.).—I have previously searched for this insect for several years without success. This year, when once I had discovered how it feeds, I have found it almost everywhere on spruce. Yorks: Marton, Ayton, Nunthorpe. Durham: Wolsingham in an isolated spruce wood at over 1000 ft. Northumberland: Haydon Bridge and up the West Allen as far as Whitfield, not ascending further in spite of the number of suitable woods.

Dactylopius hibernicus (Newst.).—Sparingly in the saltmarsh at Greatham in Easter week.

Eriococcus devoniensis (Green).—Found not uncommonly wherever deliberately searched for on *Erica tetralix* on the Cleveland Moors.

Fouscolombia fraxini (Kalt.).—In abundance on a single isolated ash in a field a few miles from Middlesbrough and in a wood near Nunthorpe; is quite common, although local, in S.E. Durham.

Ortheziola vejtdorskyi (Sulc.).—Before I knew about this species I had taken it, and had referred to it in my list of "Coccidæ of North Yorks and Durham" as a new species. It occurs both in Durham and in Cleveland. I got it in Durham, near Lamesley, on oak roots exposed by overturning a huge boulder when I was in search of spiders and other arachnids. In Cleveland I got it on Great Ayton Moor; under what circumstances I cannot at present recall.

Orthezia cataphracta (Shaw).—Practically everywhere in all three districts ascending to the highest points examined, but not yet found at sea level. Prefers *Sphagnum* and *Polytrichum*, but almost as common in dead leaves, bases of rushes, grass, etc.

Orthezia urticæ (L.).—I discovered this insect in immense quantities in Greatham Saltmarsh, in Durham, in September. It occurred in all stages on thrift (*Armeria maritima*), sea lavender (*Statice limonium*), and grass in places covered by the sea at high tide; not seen elsewhere. [Since writing this I have found the curious winged male in swarms on various plants in the marsh; it is only to be found for a few days.]

Newsteadia floccosa (De Geer).—Almost as abundant and in the same places as *Orthezia cataphracta*, but apparently preferring the drier spots I find it on heather on Eston Moor (Yorks). In Durham, on what fifty years ago was Beamish Moor, although heather, *Sphagnum*, *Polytrichum* are practically gone and the moor almost a mere name. I find it on honeysuckle roots, for honeysuckle appears to be invading the uncultivated parts, and, with the sycamore, has obtained a firm hold.

ALEYRODIDÆ.

Aleurochiton aceris (Geoff.).—In great numbers at Gunnergate, near Middlesbrough, on maple.

Aleyrodes loniceræ (Walker).—In huge quantities at Birtley, Durham, and in much less numbers near Stainton and Nunthorpe, Yorks, on honeysuckle.

Aleyrodes prolitella (L.).—Rare at Great Ayton.

Aleyrodes rubicola (Douglas).—Certainly not rare, but local near Birtley.

Aleyrodes brassicæ (Walker).—Formerly at Birtley common; not seen recently.

Asterochiton vaporariorum (Westwood).—Taken by my friend Mr. Chas. Robson very plentifully on tomatoes, in South Northumberland.

A PUZZLE IN THE NOMENCLATURE OF THE HYMENOPTEROUS FAMILY *STEPHANIDÆ*, LEACH.

By E. A. ELLIOTT, F.E.S., F.Z.S.

I SHALL be glad of a solution of the following puzzle.

The genus *Fœnatopus* was erected by Smith ('Journ. Proc. Lin. Soc.' v, p. 58, 1861), and a species, *ruficeps*, described. In 1887, Cameron ('Biol. Cent. Amer.' Hym. i, p. 420) described *Megischus ruficeps*, and finally, in 1904, Saussure ('Mission Pavie,' iii, p. 201) describes another *Megischus ruficeps*. *Megischus* is an acknowledged synonym of *Stephanus*.

In 1889, Schletterer in his Monograph on the genus *Stephanus* ('Berl. Ent. Zeit.' xxxiii) states that, since the genus *Fœnatopus* was withdrawn as synonymous with *Stephanus*, the name *ruficeps* is preoccupied by Smith, and he renames Cameron's species, *capitatus*. In the same monograph he makes Smith's *ruficeps* synonymous with *Stephanus indicus*, Westw. (1841). Further, W. A. Schulz ('Berl. Ent. Zeit.' li, p. 322) renames Saussure's *ruficeps*, on the ground of the name being preoccupied by Cameron! He calls it *Saussurei*.

The genus *Stephanus* has since been subdivided. *Fœnatopus* has been rightly revived, but *F. ruficeps*, Smith, falls, being a synonym of *Fœnat. indicus*, Westw.

Meg. ruficeps, Cam. = *capitatus*, Schlett, appears to be a *Parastephanelus* or *Hemistephanus*, while *Meg. ruficeps* Sauss. = *Saussurei* Schulz, is a genuine *Stephanus*.

What are the correct names of the two latter species?

16, Belsize Grove, N.W. : April 24th, 1916.

[Mr. Ernest Elliott has been so good as to request my opinion touching the above matter. I have no doubt Sir Edward Coke

would have said—if Sir Francis Bacon or Thomas Tusser, gent., had consulted him upon a similar point—that there emerge three good species thus :

(1) *Fænatopus (Stephanus) indicus*, Westw. 1841 = *F. ruficeps*, Smith, 1861.

(2) *Parastephanellus (Megischus) ruficeps*, Cam. 1887 (*nec* Smith) = *capitatus*, Schlet. 1889.

(3) *Stephanus (Megischus) ruficeps*, Sauss. 1904 (*nec* Cam.) = *saussurei*, Schul.

N.B.—The second species may or may not be includible in the subgenus *Hemistephanus* of *Parastephanellus*: the question is not put.

CLAUDE MORLEY.

Monks' Soham House, Suffolk: April 25th, 1916.]

NOTES ON SOME SPRING AND AUTUMN BUTTERFLIES OF CANNES AND THE NEIGHBOURHOOD.

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

(Continued from p. 152.)

PAPILIONIDÆ.

[In the 'Naturalista Siciliano,' Anno v. 1886, under date "Cannes, June 23rd, 1886," Millière published a note on the occurrence in June, 1883, of *Papilio (Euphocades) troilus*, *P. (Iphiclides) ajax*, and *P. cingras*, Cramer, in a sheltered valley close to the port of Monaco. There is little doubt that they had been introduced by an American timber trader unloading in the harbour. Mr. Flöersheim, in his interesting account of breeding experiments with Papilionidæ in Britain, discusses the chances of acclimatising the first-named two species ('Entomologist,' xlvii). The climate and the flora of the south of France suggest that, had the entomologists responsible for the discovery allowed these fine Papilios the liberty accorded desirable aliens, a race of Papilionids new to France might have been added to the already, palæarctically speaking, rich Papilionid fauna of the Mediterranean. The ground where the captures were made does not appear to have been re-visited for the purpose in subsequent years. I include this note in my remarks on the local butterflies as Millière's account in the 'Sicilian Naturalist' has not received the same measure of publicity from later French authors as those elsewhere dealing with immigrant lepidoptera. The Millière separata, from which I have transcribed, are bound up with a number of others now in the Library of the Entomological Society of London, and on

the title page is written: "M. Stainton, affectueux souvenir, Pierre Millière."]

Thais polyxena, var. *cassandra*.—Mr. Morris, writing on April 11th, mentions that on the preceding day this butterfly was met with in perfect condition in the direction of Mougins. It is, however, one of the species liable to intermittent scarcity, as I pointed out in my note on *M. cinxia*, etc. (*antea*, p. 12). The supply of the food-plant, *Aristolochia rotunda*, being limited, overproduction means a food famine for the larvæ, and disastrous results the following year for the race. I have never seen typical *polyxena* from the South of France, but there is evidently a form intermediate between it and the var. *cassandra*, as Mr. Morris has observed something of the kind in certain localities where it occurs. He also reports the ab. *ochracea*.

T. rumina, var. *medesicaste*.—Apparently less persecuted by dealers in the neighbourhood of Cannes than elsewhere, especially at Digne, where it has disappeared from many of its former haunts owing to ruthless over-collecting of the larvæ for chance ab. *honoratii*. I remember some years ago an individual, in the garb of Adam before the Fall, emerging from the bucketful of warm water which in summer does duty for the river descending from the Dourbes where it joins the Eaux Thermales just outside the town, to inform me that I was actually on the spot where the last *honoratii* had been bagged that season. He was not an entomologist, but was well up in the current prices of the Digne speciality.

Euchloë ausonia (*belia*, auct.) *gen. vern. matutia*, Turati, and *gen. æst. turatii* (*ausonia*, auct.) Rothsch.—Both common. The change of nomenclature is discussed in my review of Lord Rothschild's paper in the 'Novitates Zoologicae,' xxi (1914) ('Entomologist,' xlvi, pp. 152-153), and the Cannes forms would be those described as "occurring along the Riviera to Genoa." The *Euchloë* we have known for many years as *eupheno*, L., is actually *belia*, L. = *ausonia*, Hb.

E. euphenoides.—Enjoys the beautiful popular name of "Aurore de Provence," and rightly deserves it. I have taken it from the sea level in April to as high as above St. Martin-Vésubie (about 3110 ft.) at the latter end of July, and early in July in the Eastern Pyrenees up to 5000 ft. Mr. Elwes ('Trans. Ent. Soc. Lond.,' 1887, p. 389) says that he is almost positive that he saw it at the Port d'Espagne at 7000 ft. Mrs. Nicholl also met with it on Mont Genève, Hautes-Alpes, above 5000 ft., all of which records are noteworthy as showing the wide vertical distribution of what is regarded as essentially a southern and low level species.

Leptidia duponcheli.—Rare. Mr. Morris says that he was very pleased to take it this year for the second time during seven years' collecting in the same locality, a few miles from

Cannes, where Mr. Tucker took a single female example in 1913. It does not appear in Millière's Catalogue until the second Supplement, and then on the authority of Dr. Coulon for Monaco only in June, which date would in an ordinary season be late at so low an elevation. The distinguishing characters of the *gen. aest.* var. *æstivalis*, Bellier, are admirably set out by Mr. W. G. Sheldon in his paper on "Var. *Æstiva* at Digne" ('Ent. Record,' xxiv (1912) pp. 148-150). But possibly, when he wrote, Mr. Sheldon was unaware that Bellier de la Chavignerie had anticipated by many years Staudinger's "discovery" and naming of the summer *duponcheli* (*cp.* 'Ann. Soc. Ent. France,' 1869, pp. 513-514, and 'Lépid. Comparée,' fasc. iii, p. 157). Curiously enough in the Catalogue Bellier's notice of the type is cited, but his *æstivalis* is completely ignored. Bellier followed Duponchel in giving the type the name of *lathyri*, but anyone familiar with Duponchel's excellent figures will entertain no shadow of doubt that *lathyri*, Dup., is not the *lathyri* of Hübner's figuration—a well known form of *L. sinapis*. There seems, indeed, no good reason why the name *duponcheli*, Stgr., should not fall before *lathyri*, Dup., unless it was specifically occupied at the time. At all events, *æstiva*, Stgr., gives way to *æstivalis*, Bellier.

The life history of the species appears never to have been worked out, though Duponchel, in the Supplement of his work on Butterflies, expresses a hope that M. Fonscolombe, of Aix-en-Provence, from whom the original examples were received, would shortly supply the details for the later published 'Iconographie des Chenilles.' Sand's "chenille en mai sur la gesse-des-près" (= *Lathyrus pratensis*) is a wild guess based on Duponchel's synonym "Papillon de la Gesse," and requires confirmation as badly as his locality for the species in Cantal—Murat, June 20th ('Cat. des Lépid. du Berry et de l'Auvergne,' p. 3).

Gonepteryx rhamni.—Rare.

G. cleopatra.—Mr. Morris suspects a partial second emergence in the late autumn. He has taken fresh examples, male and female, as late as October, 1913, and I have a record of a male in good order observed by myself between Puget-Théniers and St. André (de Méouilles) on October 16th, 1902. My own idea is that the one emergence, which begins in July, is spread out over some months, and that all summer and autumn captures in the Alpes-Maritimes are the offspring of the hibernated individuals, the first of which this year, 1916, a male, was seen at Le Cannet on February 19th.

Var. ♂ *massiliensis*, Foulquier.—I am at a loss to understand why Staudinger identified this form of *cleopatra*, described by M. G. Foulquier in 1879, with *gen. aest. italica*, Gerh. (1882). Apart from a breach of the law of priority in nomenclature, it looks as though Staudinger had not taken the precaution to read

the original author's description: "the underside of all the wings very decidedly uniform greenish yellow, instead of whitish green, the normal colour." Whereas *italica* is described in the Catalogue as "subtus sulphureus"—underside orange. A comparison of the Marseilles *massiliensis*, kindly sent me by M. Foulquier, with males from Albarracin in Miss Fountaine's collection and my own, is conclusive that *massiliensis*, so far as it varies in coloration from the type, is at least as deserving of a varietal name as *italica*.

NEW SPECIES OF LEPIDOPTERA FROM FORMOSA.

BY A. E. WILEMAN AND RICHARD SOUTH.

ARCTIADÆ.

NOLINÆ.

Celama kanshireiensis, sp. n.

♀. Fore wings greyish white, powdered with ochreous brown and freckled with darker on basal and terminal areas; an inwardly blackish line on outer edge of basal area, and a blackish sinuous line limits the terminal area; fringes grey, paler at base. Hind wings whitish, suffused with ochreous brown towards termen. Under side whitish freckled with brownish, a blackish mark about middle of costal area.

Expanse, 20 millim.

Collection number, 1279.

A female specimen from Kanshirei (1000 feet), April 9th, 1908.

Nola taiwana, sp. n.

♂. Antennæ ciliated. Fore wings greyish white, faintly clouded with brownish; antemedial line black, curved; postmedial line black, serrate, inwardly oblique; terminal dots black, on the veins. Hind wings whiter than the fore wings, and rather silky.

♀. Whitish with brownish grey, cloud-like fascia between the transverse black lines; a short black streak from the base near costa; terminal area clouded with brownish grey, some black dashes on the veins between postmedial and termen. Hind wings as in the male.

Expanse, 27 millim.

Collection numbers, 242B, 1276.

One example of each sex from Rantaizan (7500 feet), May, 1909, and a female from Arizan (7300 feet), August 20th, 1908.

Somewhat resembles *N. major*, Hampson.

Necugoa, gen. n.

Proboscis developed. Palpi upturned, ascending to just above

vertex of head. Tibiæ (hind) spurs long. Fore wings rather narrow, costa slightly arched, termen almost straight, apex blunt, tornus rounded; vein 3 from before angle, 4 and 5 from lower angle, 8 and 9 stalked. Hind wings: vein 3 from middle of cell, 3 from near angle, 4 and 5 from lower angle, 6 and 7 from upper angle, 8 from just before the middle of cell.

Type, *N. kanshireiensis*, sp. n.

Neuegoa kanshireiensis, sp. n.

♂. Fore wings pale grey-brown faintly suffused with darker, a pale dot at lower angle of cell, fringes whitish. Hind wings pale fuscous, fringes whitish. Under side similar to above, but suffusion on fore wings heavier.

♀. Rather darker on fore wings, but otherwise as in the male. Expanse, 20 millim. ♂, 23 millim. ♀.

Collection number, 693.

One example of each sex from Kanshirei, June 15th, 1906.

Somewhat similar in appearance to *Asura fulvmarginata*, Hampson, from S. India.

NOCTUIDÆ.

Archanara striata, sp. n.

♂. Fore wings brown, veins streaked with darker along costal area, a dusky streak from middle of the base expanding towards termen; postmedial line black, slender, wavy, indistinct towards dorsum; reniform stigma pale, outlined in dusky; orbicular pale, indistinct; terminal dots black, quadrate, placed between the veins; fringes pale marked with darker. Hind wings fuscous, fringes pale. Under side pale brown; fore wings streaked with dusky along the median vein and branches, discoidal lunule and postmedial line blackish; hind wings have a black discoidal spot and small but distinct black marks on termen.

Expanse, 40 millim.

Collection number, 1760.

A male specimen from Rantaizan, May 8th, 1909.

Cerynea arenacea, sp. n.

♂. Fore wings pale ochreous brown, mottled with a slightly darker shade; costa edged with brownish, interrupted by the ground colour towards apex; a black dot in the cell and two black dots at end of the cell; a brownish cloud on terminal area towards apex; terminal dots black; fringes paler. Hind wings pale ochreous brown, discoidal and terminal dots black, fringes pale. Under side similar to upper side.

Expanse, 22 millim.

Collection number, 1391.

A male specimen from Kanshirei, May 3rd, 1908.

Comes nearest to *C. contentaria*, Walk.

Metacausta (?) *punctilinea*, sp. n.

♀. Head and collar dark brown, thorax and abdomen greyer brown, the abdomen sprinkled with whitish. Fore wings greyish brown sprinkled with whitish; antemedial line black, bluntly angled below costa, interrupted, edged with ochreous brown; postmedial line formed of black points edged with ochreous brown; excurved from costa to vein 2; reniform and orbicular stigmata partly outlined in silvery white; a black dot, partly white-edged, in the lower part of a brown apical spot; subterminal line indicated by dusky marks on the veins; terminal lunules ochreous brown, with black dots between veins. Hind wings similar to fore wings, but antemedial line is only in evidence near costa, and the postmedial line is biangulate and not curved. Under side as above, but darker in colour.

Expanse, 25 millim.

Collection number, 264B.

A female specimen from Kanshirei, August 14th, 1908.

Amyna (?) *sordida*, sp. n.

♂. Fore wings brown, striated with darker and sprinkled with greyish scales, three pale dots on costa near apex; antemedial and medial lines blackish, almost parallel; postmedial line dusky and diffuse, parallel with termen; fringes dark brown. Hind wings fuscous, without marking; fringes darker fuscous, paler at tips. Under side greyish with slight ochreous tinge, chiefly on apical area of fore wings; without marking except three pale costal dots as above.

Expanse, 28 millim.

Collection number, 263.

A male specimen from Takow (plains), August 13th, 1904.

Hypercodia *rubritincta*, sp. n.

♂. Head greyish brown, thorax and abdomen pale brown, left of abdomen greyish brown; antennæ ciliated. Fore wings pale brown with a pinkish tinge, terminal area faintly clouded with darker; antemedial line indicated by black dots on some of the veins; postmedial line black, almost straight, most distinct towards dorsum, where it is outwardly edged with pale ochreous brown; a small black mark edged with pale brown on the dorsum between the transverse lines, nearest to the postmedial; terminal line dark brown, fringes pale brown. Hind wings pale fuscous, discoidal dot blackish; terminal line dark brown; fringes pale greyish, ochreous tinged at their base. Under side pale fuscous, rather glossy, the fore wings suffused with blackish, except on dorsal area and the termen; a black discoidal dot and a dusky curved transverse line on the hind wings.

Expanse, 27 millim.

Collection number, 1727.

A male specimen from Rantaizan, May 6th, 1909.

Micræschus (?) terminipuncta, sp. n.

♂. Whitish, with distinct marks on termen. Fore wings powdered with brownish; antemedial and postmedial lines indicated by indistinct brown dots; a black apical streak preceded by a reddish brown mark on costa; a black spot on termen just before middle; terminal line blackish, interrupted: fringes whitish, marked with blackish at apex and before middle. Hind wings whitish, clouded with fuscous towards termen. Under side of fore wings fuscous, fringes white, marked with blackish at apex and before middle. Hind wings as above, but with dusky discoidal mark.

Expanse, 18 millim.

Collection number, 1299.

A male specimen from Kanshirei, July 18th, 1904.

Ozarba ochritincta, sp. n.

♂. Antennæ ciliated; head and thorax white tinged with ochreous, front of thorax dark brown. Fore wings white, ochreous tinged; antemedial line black, wavy; postmedial line black, double, filled in with white broadly before dorsum, outwardly oblique to vein 6, thence inwardly oblique to dorsum; stigmata ochreous; space between antemedial and postmedial lines greyish; some dusky clouds spotted with black on terminal area; terminal line black, interrupted. Hind wings fuscous. Under side white, brown tinged and rather shining; basal two-thirds of fore wings, except on dorsal area, blackish brown; hind wings freckled with dark brown, discoidal dot rather darker.

Expanse, 18 millim.

Collection number, 1323.

A male specimen from Kanshirei, July 12th, 1908.

Lithacodia subcœnia, sp. n.

Very like *L. cœnia*, Swinhoe,* from which it may be separated at once by the dark, almost black, hind wings. On the fore wings the transverse lines are less irregular in contour and less clearly defined, the costal patch is blacker and has more sharply cut edges, and the basal area is uniform in colour with the rest of the wing.

Expanse, 24 millim. ♂, 26 millim. ♀.

Collection number missing.

A male specimen and two females from Kanshirei. The male taken May 10th, 1908, and the females April, 1907, and July, 1908.

A specimen, also from Formosa (Wileman), is in the British Museum.

Selepa (?) striata, sp. n.

♀. Head and thorax pale brown, the latter shaded with darker brown; abdomen brown, paler at base. Fore wings pale brown,

* Hampson, 'Phalænæ,' vol. x, p. 550, Atlas, pl. clxv. fig. 13 (1910).

clouded with purplish brown along the costal area; a diffuse purplish brown streak from base to termen below apex; terminal and dorsal areas below the streak purplish brown traversed by an oblique line of the ground colour; discoidal dot and terminal line black, the latter dotted with pale brown at ends of the veins; fringes pale brown marked with darker. Hind wings fuscous, fringes pale brown.

Expanse, 30 millim.

Collection number, 1424.

A female specimen from Kanshirei, May 21st, 1908.

(To be continued.)

NOTES ON NEW AND LITTLE KNOWN BRITISH APHIDES.

II.

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

(Concluded from p. 149.)

14. *Siphocoryne alboapicalis*, nov. sp.

Alate viviparous female.—Pale yellow; head brown to black, with a dark median line; eyes and stemmata dark. Thorax with dark brown lobes, scutum, metanotum and a dusky pronotal band. Abdomen with a dark dorsal irregular patch behind, sometimes showing as three broad irregular bands, two dark transverse bars in front and traces of two behind the dark patch; four to five obscure dusky spots on each side. Cornicles and cauda pale yellow. Antennæ with the two basal segments pale brown; third, fourth, fifth, and base of sixth dark brown, the flagellum white to creamy white or very pale brown. The third segment a little longer than the fourth,



Fig. 3.—*Siphocoryne alboapicalis*, nov. sp. (alate ♀).

with 18–26 sensoria over its whole length; fourth and fifth equal, the former with 18–20 sensoria over its whole length; the pale flagellum longer than fourth and fifth; the fifth with 1–3 sensoria and the normal sub-apical one. Legs pale yellowish, with black apices to the tibiae, and black tarsi. Proboscis yellow, dark at the tip, not reaching the second pair of legs. Wings with yellowish insertions and brown veins.

Length, 1.8 to 2 mm.

Food Plant.—*Malva* spp.

Locality.—Wye, Kent, June 7th, 1913.

Described from several alate females. It is easily distinguished by the pale flagellum. A few small green larvæ surrounded some of the females. It bears some resemblance to Koch's *Rhopalosiphum staphyleæ*, but can be distinguished by having, in addition to the white apices of the antennæ, four, not five, lateral abdominal spots, and no dark apices to the femora.

15. *Aphis plantaginis*, Schrank.

This aphid, described by Schrank in 1801 ('Fn. Boica,' ii, p. 106), seems to be widely spread over England. It lives on the roots and leaves of all plantains (*Plantago* spp.). On October 3rd, 1915, I also received this species feeding on the roots and on the neck of carnations just above ground from Sheerness. This colony contained many nymphæ, and alatæ appeared from October 10th until November 4th. It has also been found in the umbels of *Daucus carota* and on *Viola* spp. and *Chrysanthemum leucanthemum*, above ground and on the roots of *Bellis perennis*, *Achillea millefolium*, *A. ptarmica*. I have also found it on the lower leaves, and rarely on the flower stalks, of *Leontodon taraxacum* and on the roots of *Lychnis dicuna*, *Rumex* spp., and parsnips. It is largely attended by ants, and has been found by Donisthorpe, Britton, and others in the nests of *Lasius niger*, *L. flavus*, *Formica rufa*, *F. fusca*, and *Myrmica ruginodis*. Recorded from Cambridge, 17, v, '88; Kingston-on-Thames, 7, vi, '84; Maidstone, 7, ix, '15; Wye, 2, ix, '12, 2, x, '15 (Theobald); Bradgate Park, Leicestershire, 3, v, '09; Kew Gardens, 24, ii, '10; Rossbeigh, co. Kerry, vi, '02; Weybridge, 1, x, '10 (Donisthorpe); Wan Fell, Cumberland, 22, ix, '12 (Britton). The *oviparus* ♀ occurs in October, and was found in the earth with ants, who look after the black ova. This ♀ is greenish, legs with femora, apical third of tibiæ and all the tarsi of fore and mid legs dark; hind legs all dusky, the tibiæ broadly expanded, narrower near apex, with many sensoria on the basal two-thirds. Antennæ of five segments, shorter than the body, last two segments dusky; third the longest, nearly as long as the last two; fourth about half the length of third; fifth with a long thin nail, rather more than twice the length of the basal portion. Cornicles dark and short, about the same length as the dark cauda. Anal plate dark. *Length* 1·2 mm.

I am not aware that the oviparous female has been described. The male I have never seen.

Fabricius' *Aphis dauci* ('Ent. Syst.,' iv, p. 217, 33) is synonymous. Neither Walker nor Buchton recorded it from Britain.

16. *Brachycolus stellaris*, Hardy.

This Aphid was described by Hardy as *Aphis stellaris* in vol. ii of the 'North British Agriculturalist,' p. 788, and later as *Aphis holci*. Buckton ('Mono. Brit. Aph.' ii, p. 146) created a new genus for it—*Brachycolus*—and as one of the characters gives "Vertex rather flat, frontal tubercles none." He describes only the apterous viviparous female. Hardy refers to the oviparous females on the terminal shoots of *Cerastium triviale* depositing their minute, black, oblong-oval eggs. The only other record I know of is Schouteden's ('Mem. d. l. Soc. Ent. Belg.' xii, p. 212, 1906), who found it on *Holcus*, *Agrostis alba*, etc., at Brussels and Petite-Espinette. Van der Goot ('Zur Syst. d. Aphiden. Overged. u. het. Tijds. v. Ent.' lvi, p. 107, 1913) refers to Buckton's genus. Specimens were sent to Mr. Rymer Roberts taken by Mr. Western at Darwen on the Great Stitchwort (7th December, 1915). The specimen, the only perfect one, sent me proved to be an oviparous female. This stage answers in general form to the apterous viviparous female, but the head is not as Buckton describes, but has lateral and a median swelling. The colour noticed by Mr. Rymer Roberts was green. The antennæ are as Buckton describes, of six segments, less than half the length of the narrow body, the two basal segments small, the third longer than the fourth, the latter and the fifth nearly equal, the sixth a little longer than the third, the flagellum only a little longer than the basal area. Eyes large, dark, cauda fairly prominent, black, spinose. The hind tibiæ slightly swollen, with rather long hairs on one side, shorter on the other, and a line of about eleven sensoria on one side, some projecting from the surface. The specimen contained three ova. It is found on *Stellaria holostea* and *S. graminea*, on which "it is found within a hollow pod fabricated from the leaves, each side of the leaf being brought together above to form a canopy. It checks the growth in such a manner that the leaves cluster into rigid tufts." According to Hardy it migrates to *Holcus mollis*, where it lives in a similar manner and returns to the Caryophyllaceæ in autumn. This genus is certainly a very marked one, but it shows that the character of the configuration of the head is of no valid importance, as we see in other genera, when the various stages are examined.

17. *Lachniella nigrotuberculata*, Del Guercio.

This marked Lachnid described by Del Guercio, 'Redia,' v, p. 306, Tav. xvi, figs. 186-194, 1908) was sent me by Mr. Rymer Roberts from Bishop's Wood, Windermere. A single alate viviparous female taken with others on *Larix leptolassa* on June 14th, 1914.

Del Guercio found it in numbers on one to two-year-old shoots of *Larix* in the Park at Pratolino in the spring of 1907. It is quite distinct from any others seen by this Italian Aphidologist and is certainly not Walker's *Larix* species. I record it under Del Guercio's generic name.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

(Continued from p. 163.)

SECTION 1.

Simulans, sp. nov.

Black; palpi pale, bolly at base, all the tibiæ and fore and middle femora testaceous; hind femora testaceous with apices above dark; tarsi pale fuscous; all the coxæ black or blackish, the hind pair subrugulose above. Antennæ of the female as long as the body. Mesothorax subrugulose, almost as deeply marked as the first and second abdominal segments; scutellum smoother; metathorax rather coarsely rugulose; wings somewhat clouded; stigma and nervures pale fuscous; first segment of the abdomen truncate, at the apex almost as broad as 2, narrowed towards base, 2 slightly shorter than 3, first and second rugulose, the remainder smooth and shining; spurs of the hind tibiæ shorter than half the metatarsus; *terebra* shortly exerted. Length $2\frac{3}{4}$ mm., expands 6 mm.

Described from two males and twelve females.

Cocoons white, woolly, affixed to a stem of grass in a rather compact, irregular bunch without external covering (fig. 4). Differs from *congestus* in that the *terebra* is twice as long and the cocoons totally different; from *vestalis* in that the scutellum is smoother, *terebra* longer, and ventral valve smaller; from *ruficornis* in having the fore coxæ dark and not testaceous, etc.; and from *tetricus* in that the *terebra* is longer, third abdominal segment not rugulose, and legs much lighter.

During the first week in July, 1908, I found a bunch of some twenty cocoons firmly attached to a stout stem of grass some six inches above the ground; from these, on the 11th of the month, I obtained imagines of a species which I at first took to be *congestus*, though I could not account for the difference in the cocoons; careful examination, however, revealed several differences in structure, etc. I have never met with the species since.

Writing of *congestus*, Rheinhard* mentions that when the insect inhabits larvæ of *Melitæa* the cocoons are without an external covering. It seems possible, therefore, that he was acquainted with *simulans*, but did not suspect it to be distinct from *congestus*, though, judging from the host, he may have had specimens of *vestalis* before him.

Rubecula, Marsh.†

A robust species, seemingly very near to *solitarius*, but differing therefrom in having infumated wings. A solitary parasite bred from young larvæ of *Hemaris fuciformis*, August 1st, 1903, and July 18th, 1911; also bred August 8th, 1911—in this case I found the cocoon attached to a cabbage-leaf. Bignell bred two from small larvæ of *Pieris rapæ*.‡ The larva of this parasite completes its metamorphosis within the cocoon in a period of seven or eight days. The cocoon is pale cream colour smooth, and somewhat wrinkled longitudinally; it is firmly affixed to a leaf of the food plant. I have known the host larva (*H. fuciformis*) to remain by the side of the cocoon, living but moribund, until some days after the emergence of the imago of the parasite.

Præpotens, Hal.§

A rather large species, distinguished by the short antennæ of the female (shorter than the body) and subexserted terebra and ventral valve. Length $2\frac{1}{2}$ – $3\frac{1}{2}$ mm., expands 6–8 mm.

In 1835 Haliday described the species as *præpotens*, and, in 1837, Wesmael, as *brevicornis*.|| We must, therefore, accept Haliday's name, though that given by Wesmael seems to fit the species the better. Marshall appears to have confused it with *sericeus*, Nees, owing probably to an unfortunate error made by Reinhard (see under *juniperatæ*). Haliday knew only the female, his description being as follows:

“Thorace subtilissimè punctulato; tibiis ferrugineis, posticis apice fuscis; alis limpidis; aculeo perbrevis. *M. glomerato* major et adhuc robustior, antennis brevibus crassioribus; palporum et pedum coloris fere quales *M. intricato*, lætiores modo; alæ latæ apice rotundatæ (ut *M. glomerato*), limpida, stigmatè crasso nigro-ferrugineo, nervis disci nonnullis ut in illo interrupte ferrugineis, reliquis decoloribus, costa interius flavicante; squamulæ nigræ; thorax nitidus subtilissimè punctulatus; scutellum læve; metathorax brevissimus punctato-reticulatus; segmenta 2 anteriora ut in sequentibus latitudine subæqualia, aciculata; aculeus magis exertus quam illis.”

* ‘Berl. ent. Zeit.,’ 1880, p. 369.

† ‘Trans. Entom. Soc.,’ 1885, p. 175.

‡ ‘Trans. Dev. Ass.,’ xxxiii, p. 670.

§ ‘Ent. Mag.,’ ii, p. 252.

|| ‘Nouv. Mem. Ac. Brux.,’ 1837, p. 50.

The first and second abdominal segments are rugulose, and there are generally some scattered punctures on the third.

The male does not differ in colouring or sculpture from the female: the antennæ, however, are as long as the body.

A solitary parasite having, it would appear, a partiality for larvæ of the genus *Eupithecia*.

The cocoon is a pale, dull, orange colour, almost smooth and slightly wrinkled; it is found firmly attached to a leaf or flower of the food plant.

In October, 1914, Major Robertson gave me a considerable number of the cocoons of this species, the makers having preyed upon larvæ of *Eupithecia expallidata* taken by him at Chandlers Ford. One imago emerged on November 11th, four on December 2nd, the remainder appearing between March 9th and April 28th, 1915. I have also bred the species from the larva of *E. nanata* (October 17th, 1914).

(To be continued.)

NOTES AND OBSERVATIONS.

CALLOPHRYS AVIS AT CANNES.—In his notes on this species in the current number of the 'Entomologist' (1916, p. 151), Mr. Rowland-Brown refers to my papers of 1910 and 1912, and quotes them correctly, but almost implies that I include Cannes with Hyères as not furnishing *Coriaria myrtifolia*. This plant, however, is, according to my observations, and as stated in my 1912 paper, abundant at Cannes (or was), and I thought *C. avis* ought to occur there, but expressed my belief that nevertheless it did not, because it had never attracted any attention there; although Millière, Constant and many less notable entomologists had worked there. I had spent several spring seasons at Cannes and ought myself to have seen it, if there. Mr. Rowland-Brown's note is the first I have seen reporting the butterfly as occurring at Cannes; yet he quotes two authorities for it, but without any further details. My not knowing of the Gieseke collection may be due to my not having visited Cannes for, now, a good many years, but I am probably not alone in this ignorance. I should feel pleased if Mr. Rowland-Brown would tell us about it, and especially the data it supplies as to *C. avis*. Mr. Morris's observations, as being, I suppose, more recent and more fully and carefully made, it would also be very desirable to have on record. It would appear that my belief that *C. avis* does not occur at Cannes was erroneous, I think, it is obvious that I ought to have applied to this locality and the various entomologists that have collected there, the same views with which I began my paper in 1910, as to this very distinct and widely spread, if very local, butterfly having so long escaped notice.—H. CHAPMAN; Betula, Reigate, July, 1916.

NOTE ON DR. CHAPMAN'S REMARKS UPON CALLOPHRYS AVIS AT CANNES.—Certainly I assumed from Dr. Chapman's remarks on the food plant of *Callophrys avis* that he considered *Arbutus*, and not *Coriaria myrtifolia*, to be the food plant of the species on the Riviera.

Commenting on a letter on the subject from Mr. Powell of Hyères (*op. cit.*, p. 411), he writes: "This seems to give the required confirmation to the conclusion I drew from my observations that the food plant of *C. avis* on the Riviera is *Arbutus*." I conjecture, judging by Millière's exploits in the matter of identification of butterflies, that he would not have been able to separate *C. avis* and *C. rubi*, while I am doubtful whether even Constant would have been more successful, after seeing certain species named by him in the collection of a French entomologist which I looked over some years ago. Indeed, before Dr. Chapman brought his patient scientific methods to bear on the bionomics of this and other lepidoptera, no one I believe since Rambur would have had the skill to detect by superficial differences only the specific characters of the two, and I do not think that Rambur ever collected on the ground where they are both known to occur to-day, unless *C. avis* turns up at Montpellier. With regard to the Giesecking collections, my information is drawn wholly from Mr. Morris's account thereof, and the species therein which were on view at the sale. The younger Giesecking, I believe, preferred to put the Alps between himself and Cannes when war was declared; his father remained, and, as I understand, his property, the collections included, was sequestered and sold by order of the Court in March last. I see no reason whatever to doubt that Giesecking's *C. avis* were taken in the neighbourhood of Cannes as defined in the opening paragraph of my paper, or that Mr. Morris has properly identified the captures recorded by him in the list of local butterflies with which he has been good enough to supply me for the basis of my notes. Mr. Morris is familiar with the localities where Giesecking worked, and has profited by the knowledge to some extent to get together a representative collection of the regional lepidoptera also.—II. ROWLAND-BROWN; Harrow Weald, July 13th, 1916.

LARVAL STAGE OF *HEPIALUS HUMULI*.—There appears to be considerable uncertainty as regards the duration of the larval stage of this insect. Mr. Hellins (in Buckler's 'Larvæ') "inclines to think that *one* year would suffice for the whole life of this species." Barrett appears to adopt the same view. L. W. Newman in his text-book gives the larval stage as from July to the following May. In July, 1914, I captured in the Shetland Isles a female, which gave me a number of ova. These hatched on August 14th, and I placed the young larvæ on some potted-up plants of dock. As July, 1915, passed and no insects appeared, I turned out the pot, to find the larvæ still small—certainly not more than half grown. In October I again inspected the larvæ, which were then evidently approaching full growth. About the middle of April this year I again looked at them. They were full grown and one apparently preparing to pupate. The first insect emerged on June 23rd. This settles the point then that, so far at all events as the Shetland variety is concerned, the larval stage occupies nearly two whole years.—PERCY C. REID; Feering Bury, Kelvedon.

VANESSA ANTIOPA IN SCOTLAND.—On April 29th last, when my son and I were cycling in from Bearsden, near Glasgow, he called my attention to a large butterfly which flew over us across the

road. Dismounting, we saw it fly over into a field by the roadside and settle on a brick which was lying by the side of an inner fence. To my surprise I saw that it was a large specimen of *V. antiopa*. It remained where it settled with its wings spread out, basking in the sunshine, which was very hot, it being about 12.15 p.m., and I climbed the palings and went round so as to get to it from the other side to the sun. It allowed me to get quite close. Unfortunately I had nothing but my cap to try and capture it with, and I got almost above it, but, being over anxious, I struck too soon, and it rose at a sharp angle a few inches from my cap. The butterfly went over the road again into a private garden, where I followed as quickly as possible, but did not see it again, there being a number of trees around the grounds. We hung about for some time, and also visited the spot next day in the hope of seeing it again, but with no success. It was a very large specimen, larger than those I have in my collection (which were purchased). The border was very wide and very white. The blue spots were hardly noticeable. I was close enough to see that its fore wings were worn in some parts, the veins showing almost bare here and there; otherwise the colouring was very rich and good. Is this not rather unusual for *antiopa* to be encountered so far north? Though my friend Mr. J. J. F. X. King informs me he has seen a specimen in Shetland.—WM. A. R. JEX LONG; 13, Hamilton Crescent, Partick, Glasgow.

OVIPOSITION OF *CERURA FURCULA*.—Last summer (1915) I devoted a good deal of my spare time looking for the ova of *Cerura furcula* in Carmarthenshire, and found them in every instance except one on the *underside* of the sallow leaves; as this is contrary to what is generally stated in books, I looked on it first as an accident, but eventually came to the conclusion that the insects prefer to deposit their ova under the leaf, although they are not so particular that they will not lay them almost anywhere. Females of this species will lay quantities of infertile eggs all over a breeding cage.—FREDERICK GILLETT (Major); Sundridge, Sevenoaks, Kent.

ON REARING *CALLIMORPHA DOMINULA*.—It may interest some of your readers to know that in breeding *C. dominula* this year I found they required certain treatment to bring them successfully to the imago stage. The females lay very freely in captivity; the larvæ feed up well on nettle, but at first they require careful counting when the food plant is changed, as they are very easily overlooked. When old enough to be put into a breeding cage, some dry moss should be placed on the floor, as they like to hide amongst it. About October they began to hibernate, and continued in that state until January 9th, when they commenced to move about. They took readily to dead nettle, and continued feeding on this until the common nettle was available. On March 24th they began to spin up. I had hardly lost a single larvæ up to this date, but as the weather got warmer I began putting them in the sunshine. This I found they did not like, and as the sun did not make up for the warmth they had had, most of them began to shrivel up and gave up feeding. I put them back on the

mantelpiece over the fire, and so saved the lives of the majority, and found it was necessary to keep them there even through May, when nearly all had pupated. The second point to remember is that the pupæ require a certain amount of dampness. Those put in a box came out more or less crippled, whereas those put on damp moss under a glass shade were all perfect.—FREDERICK GILLETT (Major); Shootfield House, Sundridge, Sevenoaks, Kent.

EARLY EMERGENCE OF BOMOLOCHA FONTIS (CRASSALIS).—Pupæ of *B. crassalis*, from larvæ which I fed up last autumn, and which had been fully exposed all through the winter and spring, emerged from May 28th to June 12th. I have generally taken this insect in a wild state early in July.—PERCY C. REID; Feering Bury, Kelvedon.

CHROISIS LITTORALIS, CURT., AT WANSTEAD.—Insects sometimes turn up in the most unexpected places; here is a good instance. Whilst standing in the garden, in the dusk, on Midsummer Day, I noticed a small tortrix settle on the underside of a leaf, and upon boxing it I thought it was merely one of the lighter forms of the common holly feeder, *Eudemis nevana*, and was about to turn it out when it struck me that June 24th was an extremely early date to find it in the perfect state, so I took it into the house to a brighter light, and was astonished to find it was a typical specimen of *littoralis*! The saltmarshes are a good many miles from here, so how did it get to Wanstead? The next day I noticed some thrift growing in a neighbour's garden, and upon inquiry I found that the plants were bought of a local nurseryman nine or ten years ago. Where *he* got them from I am unable to say, but presumably from the presence of *littoralis* they came from the Essex salt marshes.—A. THURNALL; Wanstead, Essex, June 29th, 1916.

ANCYLIS UPUPANA AND PAMMENE GERMARANA, ETC., IN THE NEW FOREST.—I secured a beautifully fresh specimen of *A. upupana* on June 18th last, at Holmsley, in the New Forest. It fell from a birch tree into the beating-tray. Some time was afterwards spent in the examination of that birch tree, and others around, but no more *upupana* were obtained. A single specimen of *Pammene gemmarana* (*puncticostana*) was captured on the edge of a small plantation between Sandy Down and the Lymington river, but nearer the latter. It was flying rather high when netted. Of *Steganoptycha rubiginosana* I also took but one example. This was flying over the top of some young pines growing on Pound Heath. Tortricina generally were not plentiful in June last, or in the same month of 1915; even the usually common species were but poorly represented.—RICHARD SOUTH; 4, Mapesbury Court, Brondesbury.

LARVÆ OF POLYPLOCA (CYMATOPHORA) RIDENS IN THE NEW FOREST.—In June, 1915, larvæ of *P. ridens* were fairly plentiful on oak in many parts of the forest, but last June these larvæ fell from nearly every oak tree to which one applied the beating-stick. In some of the enclosures, notably at Wilverley, the oaks were almost completely denuded of foliage by the commoner spring larvæ, but larvæ of *P. ridens* were obtained from the lower branches of even these devastated trees.—RICHARD SOUTH.

TABANIDÆ IN THE NEW FOREST.—In the list of Diptera given in "A History of the County of Hampshire" ('Vict. Hist. Count. of Engl.'), thirteen species of Tabanidæ are enumerated. So far I have met with ten of them (except in one case females only) in the Brockenhurst area. In June, 1915, *Hæmatopota pluvialis* was abundant generally, whilst *Tabanus bromius* and *T. maculicornis* were very common locally, chiefly in one of the grass rides leading to the rhododendrons. Last June very few species of either of the three species just mentioned were seen, but *Therioptectes tropicus* was plentiful on Pound Heath, and *T. solstitialis* occasionally put in an appearance. A few *Chrysops cæcutiens* were noted, and a male of this species was swept from *Myrica gale* on boggy ground near by. *Atylotus fulvus* was not encountered last June, but I captured one or two in June of last year and also in 1914. This species, and also *C. cæcutiens* are really brilliant insects when alive, but as cabinet species they are not so attractive.—RICHARD SOUTH.

ACRONYCTA ACERIS IN ABERDEENSHIRE.—A correction.—In the January issue of the 'Entomologist' (vol. xlix, p. 22), I recorded *A. aceris* as occurring in Aberdeenshire. On the emergence of the moth I find I am in error, and, as suggested to Mr. South by an interested correspondent anent the record, they turn out to be *A. leporina*. I regret that I did not make a greater effort to have the larvæ identified, more so as it is difficult, locally, to get anything off the beaten track properly classified; therefore, I take the earliest opportunity of rectifying my error.—G. E. HARTLEY; 12, Union Grove, Aberdeen, N.B.

BARATHRA (MAMESTRA) BRASSICÆ AND PHLOGOPHORA METICULOSA LARVÆ ON DELPHINIUM.—About the middle of last July I noticed several larvæ of two species of lepidoptera feeding on the flowers and green seed pods of delphinium. On emergence these proved to be the above. I can find no mention of this as a food plant for either.—PERCY C. REID; Kelvedon.

ABUNDANCE OF SPRING LARVÆ.—In the Epsom and Leatherhead districts, the oaks at the end of May were almost entirely defoliated. *T. viridana* was the main culprit, but *C. brumata* and *P. pilosaria* were also plentiful. I noticed the same thing round Hatfield to the north of London, but strangely enough, in Sherwood Forest nothing of the sort was noticeable.—PERCY C. REID; Feering Bury, Kelvedon.

A PLAGUE OF CATERPILLARS.—In a note on this subject in the July number of the 'Entomologist' (*antea*, p. 164), Mr. Merryweather appears to assume that the cessation of the plague was directly due to the spraying of the trees; that is, that had the trees not been sprayed in the spring, the caterpillars would have been equally harmful to them in the second year. This is a point on which I am very sceptical, and for the following reasons. Many years ago, in my most active collecting days—I should fix the time as the late sixties—the oak trees in a large portion of West Wickham Wood were denuded of their leaves, and at the end of May were practically as bare as in January. The depredators were chiefly the larvæ of

Hybernia marginaria and *H. defoliaria*, with a fair number of *Oporabia dilulata*, and a few Noctuids, but in the following spring the oaks were just as green as ever and the larvæ of these species unusually scarce. In 1877 I was at Deal, and the hawthorn hedges in the surrounding neighbourhood, and the sea-buckthorns (*Hippophae rhamnoides*) on the sand-hills, were devastated by the larvæ of *Euproctis chrysorrhœa*. I was not able to visit these localities again until 1881, but at that date I was unable to find a single larva of the species, although diligent search was made. Later, the horn-beams in a considerable tract of Epping Forest were leafless owing to the ravages of *Cheimatobia brumata*, and in this case some, although slight by comparison, damage occurred in the following spring, but that was the last of it, at any rate for the time being. Still more recently the larvæ of *Tortrix viridana* so punished numbers of the oaks in Chattenden Roughs that they had the appearance of having been scorched. The species is always a common one there, but in the next spring it was certainly no more so than usual, and was no noticeable disfigurement to the trees. It is quite certain that in these cases no artificial means were taken to check the ravages of the larvæ, yet they all died down to, or below, normal numbers very rapidly.—ROBERT ADKIN; Eastbourne, July 15th, 1916.

SPHINX CONVULVULI IN SUSSEX.—A fine specimen of *S. convulvuli* was caught on the wing at Burgess Hill, Sussex, on July 12th last.—F. G. S. BRAMWELL; 1, Dyke Road Drive, Brighton.

A SPIDER'S SAGACITY.—The other morning while waiting for a train at a suburban station in the bright sunshine, I felt a tickling sensation on my face, and, putting up my right hand to brush away the cause of irritation, I caught on my forefinger a shimmering gauzy filament at the end of which swung a tiny spider. Out of curiosity I held it up on a level with my head and the insect made one or two ineffectual attempts to reach my finger. Apparently realising then that this means of escape was hopeless, he swung inert for a few seconds, and then he suddenly shot out in a horizontal direction, spinning furiously as he went. This continued until he was six or nine inches from my finger, when another gauzy filament was rapidly dropped downwards at almost right angles to the first, attaching itself to a copy of the 'Scotsman,' which was projecting, unheeded by its owner, from under my left arm, and the clever little spider then slid down to what was comparatively solid ground and absolutely complete safety, for who could then have had the heart to harm such a brilliant little logician?—W. SAUNDERS; 102, Comiston Road, Edinburgh.

OBITUARY.

With much regret we have to record the death, on May 26th, of Mr. Frederick Enoch. A memoir will be published in our September issue.

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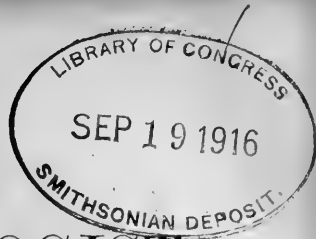
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AGRIADES CORYDON, PODA, AND DR. VERITY'S DISCOVERY.

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

IN reference to Mr. Rowland-Brown's interesting announcement of Dr. Verity's discovery of a new *Lycænid* allied to *A. corydon*, which he calls *A. aragonensis*, I understand that the grounds on which Dr. Verity claims the new species are, apart from "certain superficial and organic characters," that *A. corydon* is a single-brooded species, that the new species, which in certain localities inhabits the same ground as *A. corydon*, has two emergences in a season; and that the single emergence of the one is intermediate in date between the two emergences of the other.

If this is the case, without entering into the question of the validity of the new species, it appears certain that it cannot be named *aragonensis*.

In the first place the spelling of the name is wrong; Gerhard, in giving a name to the central Spanish form of *A. corydon*, spelt it *arragonensis*, and, of course, whether this form eventually is found to be a variety of *A. corydon*, or anything else, Gerhard's spelling must stand.

In the second place, Gerhard's specimens were brought by Lederer from Spain; and the fact that certain superficially similar specimens have been captured in the South of France does not, if there are two species involved, necessarily imply that these latter are identical with the Spanish examples; and, as a matter of fact, so far as I am aware, there is not the slightest reason to suppose that the Spanish race of *A. var. arragonensis* in any locality produces more than one brood, and there is the strongest reason to believe that it has *only* one.

The matter was very fully gone into by Tutt in the last volume issued of 'British Butterflies,' and although there is *possibly* a second brood of *A. corydon* in Andalusia, the form concerned would be *var. albicans*, and not *var. arragonensis*. The sole reason for supposing that *var. albicans* may have a second brood is, that examples have been recorded as early as April 25th, and the normal time of emergence seems to be the end of May or

early June. Still, even in Andalusia, I am not aware that any actual evidence exists of a second emergence.

A. var. arragonensis is, I believe, confined to the central plateau of Spain. In this region the time of emergence is at the end of July and in early August. The locality which most of the specimens in European collections of this form came from is probably Albarracin, where it has been met with abundantly by numerous lepidopterists, including Miss Fountaine, Dr. Chapman, Messrs. Simes and Hoar, and the present writer, always at the above-mentioned time. Moreover, Mr. A. H. Jones and myself were at Albarracin from May 13th to June 30th, 1913, without seeing a trace of *A. var. arragonensis*, although we were almost daily in a locality that would produce hundreds of examples a month after we left. Messrs. Simes and Hoar also were at Albarracin during about the same period the following year without seeing a trace of it. Zapater, who lived at Albarracin many years, and Korb, who collected there the whole of several seasons, in their Catalogue speak of all the forms of *A. corydon* as occurring in July and August.

Dr. Verity places the beautiful form of *A. corydon*, var. *hispana* amongst the varieties of that species, and thus, if his diagnosis is right, it should emerge after *A. var. arragonensis*, but it does not; both forms emerge in the Albarracin Sierra at practically the same date, though I am inclined to think, judging from the condition of the series captured by myself in 1905, that *A. var. hispana* has the priority by a few days or a week.

A. var. hispana, which, so far as I know, occurs only in the Albarracin Sierra, usually frequents a district where the prevailing rocks are metamorphic, whereas *A. var. arragonensis* frequents a calcareous strata. In certain places, however, such as the Guadalupe Gorge, some four or five kilometers below Albarracin, and at Puerto de la Losilla, amongst the hills three or four kilometers from the same town, both forms occur on the same ground, the former rarely, the latter abundantly; where this mixing of forms takes place, and only there, so far as I know, intermediates occur, and it is reasonable to suppose that these are probably the results of crossing between them.

The above facts, I think, show that (1) *A. var. arragonensis* and *A. var. hispana* are forms of one species, and (2) that the name *arragonensis* cannot be applied to Dr. Verity's new species in the event of it being eventually proved to be distinct.

No doubt by a slip of the pen Mr. Rowland-Brown,* at the head of his article, writes of the new species as *aragonensis*, Verity. This should read *arragonensis*, Gerhard.

Youlegreave, South Croydon; August 16th, 1916.

* I copied Dr. Verity's description. See tabular statement.—H. R.-B.

NOTES ON SOME SPRING AND AUTUMN BUTTERFLIES
OF CANNES AND THE NEIGHBOURHOOD.

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

(Concluded from p. 178.)

NYMPHALIDÆ.

As might be expected, the larger Fritillaries have hardly emerged at Cannes before the middle of June; but the following remarks under their respective headings may be useful in comparing the dates of records from elsewhere.

Dryas paphia.—Mr. Morris, in his list of observations, notes that a fine male flew into and settled in his garden at Le Cannet in early June, 1915—"have never heard of it here before." It is, of course, an abundant species in the higher Alpes-Maritimes; and this year Mr. Morris's experience was repeated. Writing from Beauvezer on June 28th he reports: "Just before leaving (June 15th) Le Cannet I took, within a stone's throw of our villa at a large bramble hedge, an example of *D. paphia*, var. (*et ab.*) *immaculata*, Bellier." Staudinger, who had re-named this form *anargyra* in the second edition of the 'Catalog,' restored Bellier's name in the last edition of that work. There used to be a superstition that all *paphia* taken in Corsica were *immaculata*; but I have typical *paphia* in my collection, and M. Oberthür further states that the insular form is by no means always of this variety.

Argynnis aglaia.—Scarce, at least before the middle of June.

Issoria lathonia.—Plentiful in gardens; larvæ on *Viola cornuta*, and more rarely on *V. odorata*.

Brenthis euphrosyne.—Scarce and local. It is very common at Digne in May, and of enormous size compared with the British form.

B. selene.—Occurs rarely; "took it once."

[*B. aphirape*, Hb.—I have been at considerable pains to run to earth the authority quoted by Mr. Kane ('European Butterflies,' p. 78), "marshy mountain meadows in France, Isère and Vosges." Mr. Wheeler repeats this as "S. France"; but, unless Isère be regarded as a southern department, the "south" seems hardly warranted by the reference, though it is true a fragment of the Midi extends into a part of Isère, *e. g.* to Clelles. The legend may be traced to Berce,* tome i, p. 173. In

* The passage in Berce's "Lépidoptères" (1867), provides a clue to the mystery. "I saw," he writes, "several examples in the collection of M. Kröener of Strasbourg which had been taken in the Vosges. The department of Isère is indicated as a locality also, but I have never seen any *aphirape* therefrom." Duponchel (tome ii, p. 72) is the first French writer (1822) to cite the Vosges, adding "I have been told, but without being able to get the information confirmed, that it occurred in the environs of Amiens." Note the past tense. The neighbourhood of Amiens abounds in marshy meadows even to this day.

Frionnet's 'Premiers États des Lépid. Français' we find (p. 187) Isère with a double ??, Vosges; the interrogation is reversed by Goossens (Ann. Leval.-Pierret, 1900, p. 11), where the ? is placed after Vosges, and Isère stands unquestioned. The brothers Speyer (1858) are responsible for "N. France" on the authority of de Selys Longchamps; possibly an allusion to the occurrence of the butterfly in that curious "islet" of alpine flora and fauna, Baraque-Michel in the Belgian Ardennes, treated *passim* in a very interesting paper by M. Léon Fredericq ('Ann. Roy. Acad. Belge, Bull. Classe des Sciences,' No. 12, 1904). The "Vosges" may refer to the present German part of the range. However, though the Isère records must be treated with suspicion pending confirmation, *aphirape* does affect French soil, for I recall M. Oberthür telling me in conversation that he knew of a locality for it on the Franco-Swiss frontier in the department of the Doubs. At all events it is a butterfly of Baden, the northern marshes, and Arctic mountains, and remains to be identified in the Alpes-Maritimes and other similar regions of the South-European system.]

B. hecate.—"Very local, but occurs in one locality not far from Cannes, where it is restricted to a single wood." On the wing from June 10th onward, it is recorded by Millière in his first Catalogue as rare; and this is expanded in the second Supplement (p. 4) to "environs of Vence and Mougins, where in some years it appears commonly among *Dorycnium*."

B. daphne.—Coincides in time of appearance with *B. hecate*; a fine form, very local.

Melitæa aurinia, var. *provincialis*.—Common, and variable. "I have taken a very pretty pale-coloured female like the pale form of *cinxia*" (letter dated May 5th, 1916). Mr. Morris suggests the name ab. *chlorina*.

M. phæbe.—Under this denomination it may be that two species are included. M. René Oberthür long since pointed out to me that certain marked distinctions existed between so-called *M. phæbe* larvæ, as well as differences of habit, pointing to the possibility of a hitherto undetected Melitæid in the group, on the analogy of the Lycænid "portmanteau species" separated by Dr. Chapman and Dr. Verity.

M. cinxia.—In some years in amazing profusion in the larval state at Le Cannet and district. I have already noted the intermittent scarcity and abundance of this butterfly in my short paper in the current volume of the 'Entomologist' (pp. 12-13). There is a charming pale male aberration, of which I took examples at Hyères in April, 1898. The black network tracery of the forewings has almost entirely disappeared, disclosing a clear ochreous, almost clay-coloured ground on the upper side. I expect this aberration has been named, but cannot recall the

authority therefor. It is rather like the *M. parthenie* of the plains in general aspect. Possibly it is Tutt's ab. *obsoleta*.

Eugonia polychloros.—"Very local, and terribly attacked by a small ichneumon. Of a nest of 130 larvæ taken quite young on *Celtis australis*, ninety-seven were infected. As micocouliers are very far to seek, I gave them cherry."

Polygonia egea.—"Rare now; though I understand it was plentiful some years ago."

Limenitis camilla.—Decidedly not common.

APATURIDÆ.

Charaxes jasius.—Abundant in the larval state some seasons. In this connection it is interesting to note that, though usually associated with *Arbutus unedo* and *A. andrachne*, it has been found feeding on rose at Nice by M. Chrétien ('Bull. Soc. Ent. France,' 1904, p. 108), and is locally abundant there also. A butterfly of the littoral, it has been taken as far west as Montpellier, and north-west inland at Nîmes. The westward extension north of the Pyrenees is limited on account of the extreme sensibility to frost of the larva (*op. cit.*, 1899). Attempts to acclimatise in the arbutus woods of the Landes, by the late Dr. Lafaury, of Dax, appear to have been unsuccessful. Mr. Powell is credited by M. Oberthür as the first to discover the larva of *jasius* in the Pyrénées-Orientales in September, 1908; but it must have been known at an earlier date to exist in the department, as it is mentioned by Carteron ('Causeries,' etc., p. 162, 1868), as occurring at Céret. Donzel told Duponchel that he had once taken an example at Lyon, evidently an escape. There is a similar record (1886 or 1887) from Eaux-Bonnes, in the Basses-Pyrénées, chronicled by M. Rondou.

LIBYTHEIDÆ.

Libythea celtis.—Very local, and scarce; a few hibernated individuals. Almost all the micocoulier trees have disappeared.

SATYRIDÆ.

Mr. Morris has left Cannes before the larger Satyrids are on the wing; in September "they are on their last legs, and finished by October." I recall a not very battered female *S. circe* at Beaulieu, on October 9th, 1902, and coming down the Col de Tenda two days previous saw several worn examples.

Erebia epistygne.—Very local, and scarce. It is worth noting, perhaps, that Millière (*op. cit.*, p. 111) records, and is probably the originator of the legend that this *Erebia*, alone of all the genus in Western Europe, is double brooded: "Sur les hauteurs de Grasse une première fois en mars et une seconde en juillet." Millière, who hunted on the spot at all seasons, must surely have

had some data for this surprising assertion. The continuous or retarded emergence theories can hardly be invoked to explain away the anomaly—a butterfly emerging in March in the warm Midi would be extraordinarily belated to turn up fresh four months after the normal date.

Melanargia galatea.—Var. *procida*, and variable.

M. occitanica, Esq.—Plentiful, but local; ab. *hübneri*, a few. Mr. Morris sent me an admirable water-colour drawing of this smoky aberration to name for him; it is figured by Hübner, but until M. Oberthür's attention was called to the form it lacked a distinctive name. The nomenclature of the species has suffered the usual fate; Lord Rothschild ('Novit. Zool.' xxi, p. 307, 1914), restores the original *occitanica* of Esper (1786), which predates Herbst's *syllius* by ten years, and Hübner's *psyche* (1799).

A NEW GENUS OF SCELIONIDÆ FROM THE WEST INDIES.

BY A. A. GIRAULT.

THE following genus differs from *Phanurus* in the greater size, the lateral ocelli are slightly yet distinctly separated from the eyes, the occiput is more strongly margined, the mandibles (female) tridentate, there is a median carina on the scutellum, the lateral margins of the abdomen are acute or sharp, and the male scape is greatly dilated toward apex.

1. *Phanurcpsis semiflaviventris*, n. sp. Genotype.

Female.—Length, 1.65 mm. Ovipositor sometimes distinctly, shortly extruded, black. Eyes naked. Black, the wings subhyaline, the venation, legs, tegulæ, antennæ except the 5-jointed club and the distal half of the abdomen (or somewhat more—from near the distal end of segment 3 to apex, sometimes less), brownish yellow. Head and thorax finely densely punctate, the scutum and scutellum with a soft, close, silvery down. Metathorax with the caudo-lateral angle acute or spined. Abdominal petiole transverse, longitudinally striate; segment 2 (counting the petiole as 1) over thrice wider than long at the meson, striate for its proximal half (more or less); 3 longest, extending to base of distal fourth, five or more times the length of 2, longitudinally striate at proximal fourth except at lateral margin, and rather broadly along the meson. Scutellum with a more or less distinct median carina. A small tooth on mesoventer in front of each middle coxa. Mandibles rather long, with three small, acute teeth. Abdomen depressed, conic-ovate, longer than the rest of the body, glabrous except distad of segment 3, where it is very slightly coriaceous. Lateral ocelli distinctly slightly separated from the eye, the occipital impression strongly margined as seen from above.

Stigmal vein elongate, a little longer than the marginal, the post-marginal very elongate, over twice the length of the stigmal. Club longer and wider than the funicle, 5 a cone, 2 and 3 subequal, 1 largest, wider than long; pedicel and funicle 1 subequal, similar in shape, the pedicel over twice longer than wide at apex; funicle 2 a little longer than wide, 3 wider than long, 4 still wider, shorter than any club joint. Palpi very short. Marginal cilia of fore wing only a little longer than normal (not a seventh the greatest wing width).

The male is similar, but the sculpture (scaliness) of the scutum and scutellum is not hidden by down; the lateral ocelli are still farther from the eyes, the mandibles are moderately, broadly truncate at apex, the scutum bears a delicate median ruga, the scutellum no median carina, the scape dilated (most widely at apex), the pedicel is gourd-shaped and short, funicle joints vase-shaped, 1 larger than the pedicel, also 2 and 3, 4 a little smaller, 5 twice wider than long, its stalk very short; club tapering, 5 longest, conical, 1 a little smaller than funicle 5, the others a little wider than long.

Described from numerous pairs reared from hemipterous eggs, Port of Spain, British West Indies, December, 1914 (F. W. Urich). From Trinidad.

Types.—Catalogue No. 20117, U.S. National Museum, four pairs on tags, a slide bearing a male head and fore wing, female antennæ and a fore wing.

A NEW GENUS OF OPHIONEURINE TRICHO-GRAMMATIDÆ FROM JAVA.

By A. A. GIRAULT.

OPHIONEURINI.

Lathromeromyia, n. g.

Female.—Like *Lathromeris*, Foerster, but the abdomen is not conical and plainly longer than the thorax, but short and obliquely truncate as in *Ufens*, no longer than the thorax, and the marginal cilia of the fore wing are moderately long, the longest about a third of the greatest wing width or somewhat less. Also, the antennæ bear two ring-joints. Mandibles tridentate. Marginal vein not much longer than the stigmal. Similar to *Lathromeroidea*, Girault, but lacking one club joint and the discal ciliation is less regular.

Male.—Not known.

Type.—The following species.

1. *Lathromeromyia perminuta*, n. sp. Genotype.

Female.—Length, 0.30 mm.

Dusky black suffused with yellowish, the fore wings distinctly but not deeply infuscated from base out to end of stigmal vein and from

thence more lightly so to apex. Hind wings narrow, with two distinct rows of discal cilia along cephalic margin, the caudal marginal cilia much longer than the greatest width of the blade but slightly shorter than the longest marginal cilia of the fore wing, the latter with no oblique line of cilia from stigmal knob and bearing about a dozen lines of ciliation which is in more or less regular lines. Funicle a little less than half the length of the club, whose distal joint is longest, subequal to the pedicel, the other three joints plainly wider than long. Tarsal joints of moderate length.

Male.—Not known.

Described from two female specimens labelled "From eggs of *Cicada* sp.?. Pasoeroean. 8/9/1913. On leaves of sugar cane." P. van der Goot.

Habitat.—Pasoeroean, Java.

Types.—The above specimens on a slide. In the Queensland Museum, Brisbane.

A NEW LEAF-CUTTING BEE FROM BRAZIL.

BY T. D. A. COCKERELL.

I have recently received from the British Museum for examination three species of *Megachile* collected in Rio Grande do Sul, Brazil. Two of these prove to be *M. squalens*, Hal., and *M. lentifera*, Vach., but the third is new, and may be described as follows:

Megachile scopulipes, n. sp.

♂. Length a little over 10 mm.; black, with long white hair, which has a creamy tint on face and thorax above; vertex, disc of mesothorax, and a patch on upper part of mesopleura with black hair; mandibles black; antennæ long and slender, entirely dark, not at all dilated at end; mesothorax dull, densely punctured, the punctures well separated on middle of disc; no line of white hair in suture between mesothorax and scutellum; middle and hind legs black or piceous, but anterior ones ferruginous, the femora mainly black behind, the tibiæ with a dusky shade on outer side; coxal spines black, small and sharp, curved, with a patch of stiff orange-red hair in front of each; anterior tarsi simple, but the basitarsus somewhat thickened posteriorly, and having behind a very broad and dense brush of rufo-fulvous hair, of the type seen in species with dilated tarsi; middle tarsi with very long pale fulvous hair; hind tarsi thick with shorter rufo-fulvous hair on inner face; hind femora not incrassate; tegulæ small, piceous; wings brownish, the costal side of the marginal cell with a dark fuscous band; basal nervure meeting transverso-medial (in *M. squalens* it falls some distance short of it); abdomen short and broad, hairy, with distinct hair-bands; fifth segment covered with reddish-brown hair; sixth retracted, not hairy,

the densely punctured surface not at all concealed, the apical keel prominent, shallowly emarginate, with one or two irregular dentiform projections; no ventral armature.

In Schrottky's table ('Rev. Mus. Paulista,' 1913, p. 146). This runs exactly to 33, but differs from *M. parsonsiæ* in colour of pubescence and character of anterior legs. Being intermediate between the two groups based on the tarsi, it may be compared with *M. interjecta*, Vachal, but it differs in many details. It is entirely distinct from *M. brasiliensis*, D. T. (*denticulata*, Sm.), the next species to be compared, following Schrottky's table. I thought it might be the male of *M. squalens*, which it much resembles, but the venation differs, and according to Schrottky the anterior tarsi of *squalens* are black and ordinary. However, Schrottky's description of male *squalens* is a translation of Vachal's of *M. pleuralis*, which is supposed to be a synonym. It is possible that there are several allied species, only readily separable by the character of the males.

Among other bees lately received from the British Museum are *Panurginus atriceps*, Cress., *Andrena kincaidii*, Ckll., and *A. salicifloris*, Ckll., all collected by Miss Ricardo at Vernon, British Columbia, the first two in June, the last on April 17th. Also *Andrena hirticincta*, Prov., from New York, and *A. nubecula*, Sm., from New Jersey, both collected by H. Edwards.

NEW SPECIES OF LEPIDOPTERA FROM FORMOSA.

By A. E. WILEMAN AND RICHARD SOUTH.

(Continued from p. 182.)

Pericyma basalis, sp. n.

♂. Fore wings brown, freckled with darker on costa, area between base and antemedial line darker; antemedial line black, angled below cell; postmedial line black, indented at vein 5, sinuous thence to dorsum; terminal area mottled with darker chiefly towards costa, traversed by two zigzag dark lines; discoidal lunule black with dusky and whitish scales around it; subterminal line blackish, dentate; fringes rather paler, whitish line at base. Hind wings brown, faintly striated with darker; subterminal line black, oblique from termen near costa to dorsum just before tornus, preceded and followed by brownish lines; terminal line black, lunular; fringes as on fore wings. Under side pale grey-brown freckled and powdered with darker brown; a dusky postmedial line on fore wings, almost parallel with termen; a black discoidal dot and traces of a dusky postmedial line on hind wings.

Expanse, 31 millim.

A male specimen from Kanshirei, August 3rd, 1908.

Near *P. glaucinans*, Guen., but transverse lines of fore wings are different.

Oglasa marmorea, sp. n.

♂. Head whitish, thorax and abdomen pale brown, terminal segments of abdomen whitish. Fore wings pale brown, freckled with darker brown, costa edged with blackish, four ochreous brown spots towards apex; antemedial line dark brown edged with pale brown, angled below costa, about middle, and before dorsum; post-medial line black-brown, sinuous, only distinct towards costa and chiefly indicated by the pale brown edging; orbicular stigma black, reniform outlined in pale brown; subterminal line pale, wavy; terminal dots black; fringes dark brown marked with paler at ends of the veins. Hind wings fuscous, discoidal mark blackish, fringes pale. Under side whitish brown, slightly suffused with darker on fore wings; all the wings have a dusky postmedial line and discoidal lunule.

♀. Similar to the male, but the terminal segment of abdomen not whitish.

Expanse, 26-28 millim.

Collection numbers, 1027, 1738, 1897.

Two male specimens from Rantaizan (7500 feet), May, 1909, and a female from Arizan (7300 ft.), November, 1906.

One of the males appears to have a lilac sheen on the fore wings.

Aræognatha (?) *inconspicua*, sp. n.

♂. Fore wings pale brown, powdered and suffused with dark fuscous; antemedial line indicated by a blackish mark on each side of the median nervure; postmedial line dusky, sinuous; reniform stigma slightly paler, a blackish mark at each extremity; median shade and subterminal line dusky, the latter wavy and diffuse. Hind wings pale brown suffused with dark fuscous; two dusky transverse lines beyond the middle, both diffuse, the outer line sinuous. Under side pale brown powdered with darker; fore wings suffused with dark fuscous on the discal area; marking of upper side faintly reproduced, a black discoidal spot on hind wings.

Expanse, 36 millim.

Collection number, 1444.

A male specimen from Arizan (7300 ft.), August 14th, 1908.

Nagadeba brunnealis, sp. n.

♂. Pale brown, all wings powdered and clouded with a darker shade of brown. Fore wings with black dot on costa near base; antemedial line black, inwardly dentate; postmedial black, outwardly whitish edged, serrate, curved round end of cell; orbicular stigma black, punctiform; reniform outlined in black; subterminal line whitish, wavy, interrupted except towards costa, where it is out-

wardly edged with blackish; terminal lunules black, fringes greyish brown. Hind wings have a blackish outlined discoidal mark and a black indented postmedial line, the latter is outwardly edged with white and indistinct towards the costa; subterminal line white, wavy, only distinct towards dorsum; terminal line and fringes as on fore wings. Under side whitish powdered and suffused with brown on costal and terminal areas of hind wings, markings similar to those of upper side, but more conspicuous.

♀. Similar, but rather paler.

Expanse, 22 millim.

Collection number, 268.

One example of each sex from Tainan (plains). The male captured June, 1904, and the female May, 1905.

Comes near *N. curvilineata*, Hampson.

(To be continued.)

ON THE CICADIDÆ FOUND IN THE PHILIPPINE ISLANDS.

BY W. L. DISTANT.

PROF. C. F. BAKER has forwarded me a few species of Cicadas for identification, of which two prove to be undescribed and another, *Purana tigrina*, Walk., was hitherto only recorded from India and the Malay Peninsula. The genus *Psithyristria*, founded by Stål, and in which he described no fewer than five species, all from the Philippines, still appears to remain one of the rarest of genera. The British Museum collection contains a single unidentified specimen, and during the many years I collected and gathered Cicadidæ from many quarters, I never succeeded in obtaining a single example of *Psithyristria*.

Cryptotympana consanguinea, sp. n.

Head black, the ocelli and an obscure curved transverse fascia between ocelli and eyes ochraceous; pronotum castaneous, its basal margin ochraceous, narrowly posteriorly black, a large central, discal, angulate spot, black; mesonotum castaneous, with two anterior central obconical black spots, followed on each side by indications of a larger and more concolorous obconical spot, and with a transverse black spot between the anterior angles of the basal cruciform elevation; abdomen above black, the segmental margins very narrowly ochraceous, and with two prominent white spots on the second abdominal segment; tympanal coverings ochraceous, their inner margins black; body beneath and legs ochraceous; face, clypeus, elongate spots to coxæ and trochanters, and anterior tibiæ and tarsi, black; face with a small central anterior ochraceous spot;

tegmina subhyaline, talc-like, basal area somewhat darkly opaque to a little beyond basal cell, the costal membrane virescent, post-costal area black, basal veins of the second and third apical areas darkly infusate; wings subhyaline, their basal areas ochraceous; face moderately globose, centrally more or less longitudinally sulcate, the transverse ridges well pronounced; rostrum reaching the intermediate coxæ; opercula slightly overlapping at their bases, then inwardly concavely narrowing to their apices, which are subacute, and reach the anterior margin of the fourth abdominal segment.

Long. excl. tegm., ♂, 43 millim.; exp. tegm. 120 millim.

Hab.—Philippine Islands; Mindanao, Davao (C. F. Baker).

This species is allied to *C. acuta*, Sign., from which it principally differs by the much shorter opercula, the apical areas of which are also more convex outwardly and more concave inwardly.

Pauropsalta vernalis, sp. n.

Head, pronotum and mesonotum virescent; abdomen above and body beneath and legs virescent or ochraceous; between eyes a transverse black fascia enclosing the ocelli, which are carmine-red; tegmina and wings hyaline; the venation and costal membrane of the first virescent or ochraceous; wings with five apical areas; head centrally sulcate between the ocelli; pronotum centrally longitudinally sulcate for more than half way from anterior margin; opercula in ♂ small, broad, and convex; anterior femora with three spines beneath; tegmina with the basal cell longer than broad, the upper vein to the lower ulnar area fused with the lower vein to the radial area for nearly the length of the basal cell.

Long. excl. tegm. 12 millim.; exp. tegm. 32 millim.

Hab.—Philippine Islands; Luzon, Mt. Makiling (C. F. Baker).

BRITISH ODONATA IN 1915.

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

IN 1915 the first dragonflies met with were a specimen or two of *Pyrrosoma nymphula*, Sulz., on May 16th, resting in dull weather upon the vegetation at the Black Pond, near Oxshott, in Surrey. They had but recently emerged, one or two being still yellow in colour, or even not fully expanded after leaving the nymph-skin. On May 30th this species was again found at rest on the vegetation at the pond, and with it was *Enallagma cyathigerum*, Charp.; while during transitory gleams of sunshine one or two larger dragonflies were seen—no doubt *Libellula quadrimaculata*, Linn. A male *Anax imperator*, Leach, was seen on the wing near Oxshott on June 12th. In dull weather, at

the Black Pond on July 11th, *Pyrrhosoma tenellum*, Vill., and *E. cyathigerum* were the only dragon flies seen. *Sympetrum* (apparently *Sympetrum sanguineum*, Müll.) were noticed for the first time on July 19th—at a pond on Oekham Common, Surrey.

In the New Forest, May 22nd–25th, three species were noticed: *P. nymphula*, numerous; *Calopteryx virgo*, Linn., frequently seen, but always teneral; *Libellula depressa*, Linn., one female captured on May 24th and another example seen the next day. On June 8th, Mr. R. South took one, *Gomphus vulgatissimus*, Linn., at Boldre River. On June 26th and 27th, *Cordulegaster annulatus*, Latr., was seen in the Forest, and *C. virgo* frequently.

In the New Forest, from July 30th to September 9th, the dragonflies seen were: *C. virgo*; *Platynemesis pennipes*, Pall., *P. tenellum*, and its var. *melanotum*; *Orthetrum cærulescens*, Fabr.; *Agrion mercuriale*, Charp.; *P. nymphula*; *Sympetrum striolatum*, Charp.; *C. annulatus*; *Ischnura elegans*, Lind.; *E. cyathigerum*; *Lestes sponsa*, Hans.; *Agrion puella*, Linn.; *A. imperator*; *Sympetrum scoticum*, Don.; *Æschna cyanea*, Müll. (15 species). On August 5th I paid a visit to Crockford Pond, where, in 1911, I found *Sympetrum fonscolombii*, Selys; but the weather was unfavourable, and no *Sympetrum* were seen. On August 17th I visited the pond again; but, although the sun shone a little while I was there, *S. fonscolombii* was not seen, and there is no doubt that it was not present. Though a strict search was made in the earlier part of August for *Ischnura pumilio*, Charp., in its various habitats in the New Forest, none could be found. I presume it was over, since it is unreasonable to suppose that the species has suddenly disappeared. At Marlborough Deep, near Holmsley, *S. striolatum*, *O. cærulescens*, *E. cyathigerum*, and *L. sponsa* were met with on August 6th; and *S. striolatum*, a male *L. sponsa*, a *C. annulatus*, and *Æ. cyanea* (three males and two females) on September 4th. On August 9th a fairly good female of *Anax imperator* was ovipositing in a pool near Hurst Hill; while an *A. puella* (which I do not often meet with in the Forest) was taken near Rhinefield on August 19th.

On October 3rd I visited the Black Pond and found *S. scoticum* numerous and *S. striolatum* fairly common; one or two *Æschnas* were seen on the wing, but none were secured. Although later visits were made to the pond, no further dragonflies were seen, the weather on these occasions being unfavourable.

In Ireland, near Emyvale, County Monaghan, Mr. K. J. Morton tells me that he found, September 9th–11th, *Æschna grandis*, Linn. (a few taken); *L. sponsa* (in plenty); *I. elegans* (one); *S. striolatum* (very common, some still pairing); *Æschna juncea*, Linn. (one or two seen).

During the season quite a number of Lancashire and

Cheshire Odonata were submitted to me. They were: *Leucorhina dubia*, Lind., May 27th and 31st, Newchurch Common, Delamere (C. H. Brown). *S. scoticum*, one ♂, August 6th, Petty Pool, Newchurch Common, and in September a number, also from Newchurch Common (C. H. B.). *Calopteryx splendens*, August 6th, Petty Pool, Newchurch Common (C. H. B.). *L. sponsa*, August 6th, two large females, Petty Pool, Newchurch Common, and in September a number, also from Newchurch Common (C. H. B.). *P. nymphula* (including three ♀ approaching var. *melanotum*), May 27th, Delamere Forest (W. M. Tattersall). *I. elegans*, May 25th, one from rushes in a pit at Copster Green (J. Smith); about June 22nd, several from Petty Pool, Delamere (a ♀ being var. *rufescens*) (C. H. B.); July 2nd (two ♂, one teneral), flying round disused pits overgrown with rushes, Aspull, near Wigan (E. and H. Arnold). *Erythronna naitas*, Hans. (one teneral ♂), May 27th, Delamere Forest (W. M. T.). *Agrion pulchellum*, Lind., May 27th, Delamere Forest (W. M. T.), and May 31st, Newchurch Common (C. H. B.). *A. puella*, May 27th, Delamere Forest (W. M. T.), and May 31st, Newchurch Common (C. H. B.) *E. cyathigerum*, May 27th and 31st, Newchurch Common (the spot on segment 2 varying considerably in form) (C.H.B.).

Kingston-on-Thames, July, 1916.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

(Continued from p. 187.)

SECTION 1.

Juniperatæ, Bouché.*

This species may always be easily recognised by its curious cocoon; the cocoon proper is pale lemon colour and very similar to that of *solitarius*, but surrounding it is a cradle constructed of woven filaments which Bouché in his original description likens to basket work (fig. 6). Nees described the insect as *sericeus* ('Mon. Aff.,' i, p. 184), which he afterwards ('Mon. Aff.,' ii, p. 404) admitted to be identical with *juniperatæ*. Bouché makes no mention of the colour of the wings, but Nees describes

* 'Naturg.,' 1834, p. 154.

them as hyaline. Reinhard* appears to have gone quite astray, having identified an insect with infumated wings as *juniperatæ*; he remarks that Nees cannot be correct in his synonymy, as *sericeus* has hyaline wings. As I have before noticed, Bouché makes no mention of dusky wings. That Reinhard should have made this error does not seem surprising when we read the following remark made by Marshall in 'Trans. Entom. Soc.,' 1885, p. 184: "The insects sent me as types named by Reinhard were in great confusion, consisting of three species, *juniperatæ*, Bouché, *popularis*, Hal., and *difficilis*, Nees." Most unfortunately Marshall evidently accepted one of the insects sent him, which had infumated wings, to be the true *juniperatæ*; this has led to great confusion, the insect described by Marshall as *juniperatæ* being, I believe, *insidens*, Ratz.

I give below the description of Nees:

"Niger, obscurus, pube adpressa tenui tectus, palpis pallidis, tibiis anterioribus, postisque basi, rufis, abdominis primo segmento, secundoque basi rugulosis et lineis impressis; terebra subexserta; alis hyalinis, stigmatibus cum ramo descendente nigro fuscis, reliquis nervis pallide fuscis."

I should like to add a description taken from nine specimens in my own collection:

Black; palpi pale testaceous; fore femora testaceous except at base, middle femora black, or black with the apex testaceous, hind femora black; fore tibiæ entirely testaceous, middle and hind tibiæ testaceous with the apices dusky; all the tarsi basally testaceous, Wings hyaline, stigma fuscous. Abdomen beneath entirely black or piceous. Mesothorax and scutellum punctate, somewhat shining; metathorax rugulose, with a median carina. First and second segments of the abdomen weakly rugulose, the rest smooth, all shining. Segment 1 truncate, longer than wide (this is more noticeable in the female than in the male), segment 2 shorter than 3, obsoletely impressed with two curved converging lines, wide apart. Hind coxæ smooth and shining. Antennæ of female as long as body, of male longer.

Length 3 mm., expands 7 mm.

The above is the usual form, but the colour of the legs varies greatly, so much so that in some cases even the hind femora are testaceous with only a fuscous stripe above.

Both Bouché and Nees bred the insect from larvæ of *Eupithecia juniperata* and say that it is a solitary parasite. This agrees with my experience, and though I have not obtained it from *E. juniperata*, never having reared that insect, I have bred it from *E. abbreviata*, July 14th and 17th, 1911, and other dates; from *Hybernia defoliaria*, June 16th and 28th, 1915; from *Ephyra pendularia*, March 28th, 1911; from *E. annulata*,

* 'Berl. ent. Zeit.,' 1881, p. 34.

March 3rd, 1912; and from *E. punctaria*, March 20th, 1912. In the last three cases, the larvæ of the parasites passed the winter within their cocoons. I have also obtained it frequently from larvæ of the summer brood of *E. punctaria*.

As hyperparasites I have bred *Panargyrops aereus*, Grav., July 20th, 1911, and June 26th, 1915, and also a very pretty little Chalcid belonging to the genus *Cirrospilus*, Westwood.

Limbatus, Marsh.*

This species seems to be confused with *glomeratus* in some collections, though the punctulate scutellum will distinguish it therefrom at a glance. Also *glomeratus* is smaller and has clearer wings, and, of course, the cocoons are quite different.

A common gregarious parasite of the larvæ of *Abraxas grossulariata*, from which I have obtained numerous broods in May, the hosts having been sent to me by C. W. Colthrup from Dulwich and several localities in Kent and Sussex, and also by my brother from Wandsworth Common. No other host has yet been recorded, though it seems more than likely that there is at least a second generation in the year which cannot prey on larvæ of *A. grossulariata*. So far as my experience goes, the broods consist of from four to nine individuals, the sexes being about equally divided in each brood. Cocoons white with the faintest tinge of lemon colour, attached usually to a leaf of the food plant.

From these cocoons I have frequently reared the hyperparasites *Hemiteles fulvipes*, Grav., and *Mesochorus angustatus*, Thoms.

(To be continued.)

NOTES AND OBSERVATIONS.

BISTON BETULARIUS, VAR. DOUBLEDAYARIA, AT WANSTEAD.—I noticed this var. of our old familiar friend the "Peppered Moth" on a wall here. I pay so little attention to the macros that I am unable to say if it is considered rare in the London suburbs, but I have not noticed one about here before.—A. THURNALL.

CALLOPHRYS AVIS AT CANNES.—Immediately I had read Dr. Chapman's note (p. 187) on this interesting butterfly, I wrote to Mr. Morris, who is collecting this year at Beauvezer, Basses-Alpes—a delightful spot at a comfortable altitude—for further information of his captures. This morning I have received the following account of his experiences with *C. avis*: "I took my *C. avis* at Cannes on an old terrace on the Pezou at *Calycotema*—there is no arbutus there;

* 'Trans. Entom. Soc.,' 1885, p. 173.

another I gave a friend, not then knowing it was *avis*, was taken at Mandelieu on hawthorn." Mandelieu is about seven kilometres from Cannes in the Auribeau direction.—H. ROWLAND-BROWN; Harrow Weald, July 29th, 1916.

AGRIADES CORYDON, VAR. SYNGRAPHA, AND MELANARGIA GALATEA IN THE BUCKS. CHILTERNs.—I have had only one day's collecting this year; and that so cool and overcast that hardly an insect was moving. This was July 23rd, and I was out on my favourite ground to look for *M. galatea*; of course, it was not visible. But I met an enthusiastic young entomologist who told me that he had taken it recently quite close to Prince's Risboro'; and also that he had captured the "all-blue" female of *corydon* on the same spot where I took the single specimen already recorded some years ago.—July 29th.

Since writing the above note I have had another day, August 20th, on the Chilterns, when I was more fortunate in point of weather. *A. corydon* was swarming—I have never known it here in such abundance—and I captured half a dozen exquisitely fresh var. *syngrapha* among them, my companion being equally successful. I took also one female, the hind wings streaked with blue much as in *semisyngrapha*, Tutt.—H. ROWLAND-BROWN; Harrow Weald, August 22nd, 1916.

FRENCH ENTOMOLOGISTS AT THE FRONT.—The Entomological Society of France publishes in its monthly Bulletins news of all members serving in the French Army and Navy. In this connection many friends of the family will read with interest and sympathy the roll of honour of the Oberthür family. All the sons and sons-in-law of M. Charles and M. René Oberthür respectively have seen service; and M. Henri Oberthür, a grandson of M. Charles, Aspirant Officier, 54me Regt., has just been wounded and taken prisoner before Fleury, near Verdun. He is reported wounded and in hospital at Munich; of his company on this occasion but a single wounded corporal survived. M. Charles Oberthür the younger, also at Verdun, has fought from the first days of the war, was present in all the actions where his battery was engaged in the retreat from Belgium, and in the turning victory of the Marne as captain of artillery. M. Louis Oberthür in April last was wounded, and sick in hospital, but has now recovered. Dr. Joseph Oberthür, a keen lepidopterist, is in command of a military hospital. Of M. René's four sons-in-law, the youngest, Capt. de Clerck, was left for dead on the field of Virton in August, 1914, but had a marvellous escape, and is well again; Lieut. Cartier-Bresson, 94me Regt. has just had his arm broken by a shell splinter at Verdun, and is in hospital at Orleans. M. Charles Oberthür the younger accompanied his father to the Oxford Congress of Entomology in 1912; Henri Oberthür's photograph was published with that of his famous grandfather in the 'Entomologist,' 1912. He was then a boy at school. Since then he has made several interesting entomological expeditions in the higher Pyrenees, and bids fair to carry on the family tradition. We wish him a speedy recovery and return to France.—H. R.-B.

A PLAGUE OF CATERPILLARS.—I was interested to see Mr. Adkin's reply—'Entomologist,' August, 1916, pp. 191-2—to a contribution which appeared in the 'Entomologist' (and elsewhere) for last July. I believe it is generally agreed upon by scientific economic entomologists that the right course to pursue in combating any insect pest is to parasitise it if possible, and that "spraying" and "washes" belong to the realm of departmental and popular entomology. Spraying in the case of a greenhouse, or a particular tree, or with respect to some kinds of moulds, if repeated may possibly be a palliative, but in how many cases where spraying is adopted is the slightest trouble taken to establish "controls," and thereby endeavour to ascertain whether relief from any particular pest is brought about *not* by reason of the spray or wash, but irrespective of it, by purely natural causes? It must be obvious to anyone that, in the case of a large forest tree—especially the larger-leaved kinds—however effective the spray atomiser may be, and however sovereign the liquid sprayed, there must be hundreds of leaves which receive no more than a microscopical droplet on one side of the leaf only, and hundreds of larvæ, which, owing to the fact that they rest unexposed during the daytime, cannot possibly be touched by the spray, and how many leaves and larvæ would escape untouched if, say, 10,000 acres of forest were tackled? It may be said that the spray, even if it does not actually come in contact with the larvæ, renders their food-plant poisonous or unpalatable, but my experience is that the larvæ—even on a small rose-bush that has been smothered with spray—can always find sufficient unsprayed food-plant, and, even supposing this not to be the case, what is to prevent the larva from dropping by a thread to seek fresh quarters, especially if polyphagous? Another point which appears to be lost sight of by the spray enthusiasts is that a spray does not discriminate betwixt friend and foe, and is quite as likely to affect beneficial as well as noxious insects, quite apart from probable destruction of bird life, the very thing one wishes to foster. As a general rule, Nature may be relied upon to suppress anything which is harmful, and those who put on the boxing-gloves with her generally ask for rough handling. In the case of the West Wickham Wood, cited by Mr. Adkin, and which I have myself visited regularly many times during the last fifteen years, I very much question whether the ravages of the larvæ which were so much in evidence this year, were not of indirect benefit to the wood, quite apart from the warblers, which were abundant there this year. Light and air were admitted to the undergrowth of plants and bushes, and possibly members of the insect life which parasitises the defoliating larvæ were increased thereby. At the present time the undergrowth looks in better condition than I have seen it for years, whilst fresh foliage has appeared on the infested trees. The predominant larvæ in this wood this year were those of *T. viridana*, but a large percentage of the pupæ disclosed parasitic flies.—G. BERTRAM KERSHAW M.Inst.C.E., F.E.S.; West Wickham, Kent.

AGRIADES CORYDON ATTACKED BY A BUG, ZICRONA CÆRULEA, L.—Whilst collecting *A. corydon* at Royston on August 9th, 10th, and 11th, with my friends, Messrs. F. Pennington, W. Brocklehurst, and

C. Down, several instances were observed of this butterfly being attacked and killed by a green bug. In some instances the butterfly was still alive, and in others just dead and in perfect condition. Four of the bugs were taken and sent by the Rev. G. Crawshay to Dr. C. J. Gahan at the Natural History Museum. Dr. Gahan identified the bug as *Zicrona cærulea*, L., and said there was no record of this species attacking living butterflies and inquired whether the butterflies were dead when attacked. I may say that each of us saw butterflies still alive with the bugs adherent to their thorax and abdomen. The bugs were only noticed on a small area of the Heath, which was a breeding-ground of *coridon*, where pairs of this insect were lying about on the ground or on grass stems. Both males and females were attacked. The weather at the time was very hot and sunny, and the ground very dry.—W. GIFFORD NASH; Bedford.

AGRIADES CORYDON IN SHROPSHIRE.—This afternoon I caught a perfectly fresh male of *A. corydon* at the foot of the Longmynd, and my friend, Mr. M. J. Harding, saw another. I have collected in this neighbourhood, on and off, for thirty years, and never came across this species before, there being no chalk or limestone in the vicinity, which is my reason for recording the capture. I can find no note of its prior occurrence in this county.—F. B. NEWNHAM, M.A.; Church Stretton, August 20th, 1916.

YPSOLOPHUS MARGINELLUS, F., IN ESSEX.—On the 5th inst. I was rather surprised at the sight of an old Surrey friend in the shape of a ♀ *marginellus* in the most perfect condition on a close fence at Leytonstone. This fence bounds one side of a garden which seems to be entirely used as a kitchen garden; I was unable to see any juniper therein, but it must grow very near the spot where I found the moth, as it was in the finest condition. Another old Surrey friend turned up on the following day in the shape of *Pyrausta aurata*, Sc. A common enough species, of course, in many places, but I had not seen it in this neighbourhood before. If I am not mistaken *Y. marginellus* is an addition to the Essex list of Micro-Lepidoptera.—A. THURNALL; Wanstead, Essex, August 9th, 1916.

ZYGAENA FILIPENDULÆ.—I collected nearly 3000 pupæ of this insect near Ventnor last month. Of those that emerged 2108 were more or less normal in colour and markings, 87 had the outer pair of spots, and 430 the middle pair of spots united. In 17 instances only were both middle and outer pairs united. Over 300 failed to emerge, mostly through being ichneumonated. The two best variations were one male and one female, in which the lower of the two basal spots was prolonged as a bar until it joined the centre pair of spots. In the case of the male the right wing was normal, but in the female the variation was the same on both wings. Probably they are progeny of the same parent. I paired them and have about 120 ova, and shall be interested to see to what extent the variation is transmitted. I may add the ground colour of quite 20 per cent. seemed more decidedly blue than green.—ERNEST CORNELL; Burmah, Newport Road, Ventnor, Isle of Wight.

SPHINX CONVOLVULI IN SUSSEX.—On August 17th (at 7.30 p.m.) I took a *Sphinx convolvuli* (recently emerged) at rest on a cement pavement at Preston Circus, Brighton.—F. G. S. BRAMWELL; 1, Dyke Road Drive, Brighton.

TABANIDÆ IN THE NEW FOREST.—I was interested to see the note in the August number, as a friend of mine, who is staying at Ringwood, in the New Forest, sent me last month two flies to name: one was *Chrysops cæcutiens* and the other *Atylotus fulvus*. I have never seen the latter insect alive, but certainly as a cabinet specimen it has a dusty faded appearance, and the eyes have none of the beauty that they have in life. My friend has lately sent me a few more flies from the same locality, among which are *Tabanus bovinus*, *T. maculicornis*, and *Hæmatopota pluvialis*.—HERBERT BURY; Lomber Hey, High Lane, Cheshire.

NOTES FROM EAST DORSET.—Although Tuesday, July 11th last, was bright, there was a keen edge to the wind, and consequently there were few insects on the wing. In the more sheltered spots *Cænonympha pamphilus* was disporting itself in fair numbers in company with *Lycæna ægon* and *L. icarus*, also in a warm corner where gorse, honeysuckle, and bracken intermingle, *Hemaris fuciformis* and *Argynnis selene* were joined in their frolics by *Epinephele ianira*, and a solitary specimen of *Zygæna filipendulæ* was clinging to a grass stem. Imagines of *Arctia villica* were few and for the most part undersized, and of course worn; *A. caia* were just emerging. In the marshes the pupæ of *Z. filipendulæ* were very plentiful, with a sprinkling of *O. potatoaria*. Some of the former have emerged, among them one closely approaching *ab. cytisi*; another is asymmetrical, the right side being typical, and on the left fore wing the spots and outer margin are white, and the hind wing is pinkish, graduating to red in the centre (this one was bred out by my wife at Bourne-mouth, the others emerged here), and a third is of the pink form. Larvæ of *H. fuciformis* were scarce, as was the Lasiocampid, *L. trifolii*. Of the Sphingidæ, *S. ligustri*, *A. populi*, and *S. ocellatus* could have been taken; *D. vinula* and *O. antiqua* were abundant. Imagines of *Adopæa actæon* and *Melanargia galatea* were to be seen in their favourite haunts.—LEONARD TATCHELL; 71, Clova Road, Forest Gate, E.

LEPIDOPTERA AT THE FRONT.—The following list of Lepidoptera captured at the front whilst on active service between January and July, 1916, may be of interest to some of your readers: *Papilio machaon*, not uncommon in marshy districts; *Pieris brassicæ*, *P. napi*, *P. rapæ*, all common; *Melanargia galatea*, on railway embankments; *Vanessa io*, *A. urticæ*, hibernated females common on fine days in spring, later larvæ: *I. lathonia*, not uncommon in rough places near the coast; *Pararge megæra*, *Epinephele ianira*, *Aphantopus hyperanthus*, very common on the dunes, where in July it is the commonest butterfly (surely a curious habitat for this shade-loving butterfly?); *Cænonympha pamphilus*, *Chrysophanus phlæas*, common; *Polyommatus icarus*, common, some fine blue varieties of

the female occur on the dunes: *P. astrarche*, rare; *Amorpha populi*, common; *Metopsilus porcellus*, common on bedstraw flowers on the dunes; *Dicranura vinula*, common where poplars abound; *Pygara anachoreta*, two broods, first in May, second in July, not uncommon; *Dasychira pudibunda*, common; *Euproctis chrysorrhœa*, very common on the dunes, where all the vegetation is eaten up by the larvæ (some fine forms of the male occur with two black spots at the inner angle and occasionally one at the apex of the fore wings); *Porthesia similis*, common; *Stilpnotia salicis*, perhaps the commonest moth in July; *Malacosoma neustria*, rare; *Lasiocampa quercus*, very common, and efforts at assembling males to a bred female were attended with great success; *L. trifolii*, fairly plentiful on the dunes; *Cosmotriche potatoria*, common; *L. quercifolia*, rare; *Spilosoma menthastri* and *S. lubricipeda*, tolerably abundant; *S. mendica*, rare; *Diacrisia sanio*, very common on the dunes in early July; *Arctia caia* and *A. villica*, very common in similar situations; *Hipocrita jacobææ*, common on the dunes. Of the Noctuæ: *Agrotis segetum*, *A. corticea*, *A. nigricans*, *A. exclamationis*, *Noctua xanthographa*, common; *Triphæna pronuba*, *T. orbona*, *T. ianthina*, fairly common; *Apamea secalis*, abundant; *Xylophasia monoglypha*, common; *Prothymnia viridaria*, rare; *Campptogramma bilineata*, common; *Eupithecia oblongata*, *E. assimilata*, *Cilix glaucata* (*spinula*), not uncommon; *Perizoma albulata*, rare; *Abraxas grossulariata*, very common; *Zygena filipendulæ* abounds in meadows; *Trochilium apiformis*, not uncommon where poplars are abundant. This brief list gives a general indication of the lepidopterous fauna of a district near the coast in the north of France. Had more time been at my disposal the list of species I think would have increased accordingly.—JAMES W. BROWN; H. Q. Friends' Ambulance Unit, B.E.F.

LYCENIDS IN NORTHERN FRANCE.—May I trespass on your courtesy by asking for information about two insects I have taken this evening on a bit of rough, sandy ground in the Pas de Calais? They closely resemble *Polyommatus icarus* ♀, but differ as follows: Both have blacker ground colour with fringes very slightly lighter than ground colour, though in one the apex of fore wing on both costa and outer margin is white. This specimen has no blue on upper side fore wing; the orange spots are well marked, that nearest the apex being almost white, however. No discoidal spot fore wing. The other specimen has no orange spots, but has a sharply defined purple or violet basal blotch—it is about normal in size for *icarus*, the other being smaller. The under sides of both resemble *icarus*, with well-marked orange spots, fringes paler than above and two basal spots fore wing, but all markings on under side are rather more definite than usual. This is my first season with the continental butterflies, and the only book I have is Kane, which is rather out of date and certainly does not mention *icarus* with dark brown fringes. I am rather disappointed to find the insects here so British in character, the only non-British species as yet being, I think, *Glaucopsyche cyllarus* ♂. However, I have taken *Nola centonalis* and *Parascotia fuliginaria*, also *Melitæa athalia*, Rott., and some decent

forms of *P. napi*. I gather from the 'Entomologist' that the European butterflies have got considerably beyond Kane's book, but it is a useful size when one's kit is limited to 35 lb.—H. DOUGLAS SMART, Capt., R.A.M.C., B.E.F.; August 8th, 1916.

In connection with Mr. J. W. Brown's and Captain Douglas Smart's interesting letters, it is noteworthy that all our British Lycænids, except *Lycæna arion*, have been reported from the Pas de Calais or the Nord, though it is long since the former Department was systematically worked and catalogued; and I should not be surprised if *arion* turned up in the trenches or anywhere else there where the environment is suitable. *Nomiades semiargus* is reported by Paux common on the dunes of Malo-les-Bains; *N. cyllarus*, very rare in Nord, and is hitherto unrecorded from Pas de Calais. *A. corydon*, rare in Nord; I observed it near Azincourt in August, 1902; *A. bellargus* reported in a single locality in the Forest of Mormal, "but not elsewhere," by Le Roi. The part of the Pas de Calais worked by my friend and correspondent M. Postel of Foncquillers just behind the Allied lines—I trust he is well, and I am sure he is undismayed by his warlike surroundings—is otherwise singularly poor in butterfly life, though *Papilio machaon* abounds. I suspect, therefore, that the dark Lycænid females are forms of the protean *icarus*: perhaps some reader of the 'Entomologist' can identify with more particularity.—H. R.-B.

APATURA IRIS AT BOURNEMOUTH.—It may be of interest to record that a male specimen of *A. iris* was taken at rest on one of the piles on Bournemouth Pier the last week in July. Except for a slight chip in right hind wing it is perfect. Can any readers inform me if this species has been taken in Bournemouth before?—SOPHY TATCHELL; Karenza, Heathwood Road, Bournemouth, August 19th, 1916.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—June 22nd.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Dr. Robertson, a larva of *Cleora jubata (glabraria)* from the New Forest, which was wholly suffused with black coloration.—Mr. Priske, a series of the very local beetle, *Copris lunaris*, and pointed out the sexual dimorphism in the development of the frontal horn.—Dr. Chapman, the larva of the sawfly, *Cimbex sylvarum*, a large species on birch, and stated that the ova laid by a virgin female would produce all males.—Mr. Carr, a spider from the Wye Valley, and reported on the species of Lepidoptera he had recently met with there, including *Leptosia sinapis*, *Asthena blomeri*, *Brenthis seiene*, *B. euphrosyne*, *Abraaxas sylvata*, *Perinephele lancealis*, *Cymatophora*

fluctuosa, etc.—Mr. Sich, specimens of *Argyresthia brocheella* with the aberration *aurivittella* and an intermediate form, and also a cocoon of *Tortrix viridana* spun on a blade of grass, and thus of a long narrow shape.—Mr. Hy. J. Turner, a number of species of *Pyraustinae* taken by Mr. Bacot in Sierra Leone. They were all species of very extensive distribution and included, *Entephria cribrata*, *Zinckenia fascialis*, *Marasmia venialis*, *Syngamia floralis*, *S. abruptalis*, *Bocchoris inspersalis*, *Nacoleia indicata*, *Sylepta balteata*, *S. derogata*, *Glyphodes indica*, *G. sinuata*, *Sameodes cancellalis*, *Maruca testulalis*, and *Pachyzancla phæopteralis*.—Mr. R. Adkin, xanthic forms of *Aglais urticae*.—HY. J. TURNER.

July 13th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. H. Leeds exhibited a large number of aberrations of *Polyommatus icarus* taken in May and June, including obsolete, asymmetrical, gynandromorphous, abnormally spotted, light, dark, and suffused specimens.—Mr. H. Main, Pupa of *Geotrupes spiniger*, living examples of *Copris lunaris*, larva of *Panorpa germanica* (scorpion-fly), an ichneumon of the alder sawfly *Phyllotoma vagans*, and the larva of the sawfly of the Solomon's seal *Phymatocera aterrima*.—The Rev. F. D. Morice, a British specimen of *Polistes gallica*, a common Continental wasp. It was taken in Durham.—Dr. Chapman, a larva of *Tricopteryx viretata* on the flowers of *Cornus sanguinea* from Reigate.—Mr. Hy. J. Turner, cocoons of *Bucculatrix aurimaculella*, leaves of birch mined by the Coleopteron *Orchestes rusci*, the beautiful open net-work cocoon of the anomalous Lepidopteron *Chrysocoris festaliella*, and some tubular larval cases of a Tineid formed on dog's excrement at Aden.—Mr. Bunnett, imagines and larval cases of the hawthorn Cleophorid *Coleophora nigricella*.—Mr. F. B. Carr, a pupa of *Gonepteryx rhamni*.—Messrs. R. Adkin and F. M. B. Carr communicated notes on the Lepidoptera of the present season, and interesting remarks were made on the same subject by Messrs. Curwen, Hare, Newman, Rev. F. D. Morice, and others.—HY. J. TURNER.

OBITUARY.

FREDERICK ENOCK, whose death we briefly referred to in our last number (*antea*, p. 192), was perhaps best known to the present generation as a popular lecturer on entomological subjects, and in this connection did much to instil into the minds of his hearers a desire to study the economy of some of the more obscure species. He was at his best when lecturing to the members of some of the numerous Natural History or more definitely Entomological Societies, where the knowledge that he was addressing sympathetic audiences relieved the tension of the set lecture-room and allowed full play to his natural witty method of bringing home to his hearers the more important points of the subject under review. Many of those who were privileged to hear him under such conditions, often the occasion being practically a "trial run" before any set lecture

was put together, will look back to those evenings as among the most instructive and pleasant in their memories.

But to regard Enock simply as a popular lecturer would be to do him an injustice. It may be that his early training in the engineering profession instilled into his mind the necessity of exactitude of detail, but whether that be so or not, accuracy was the keynote of all his work. No pains were too great for him in unravelling the details of any work that he had undertaken, and it is to be feared that not infrequently his health was made to suffer rather than he should miss some point in the development of the subject that he was studying. His view of entomology was largely although by no means confined to the economic side, and he did good work in working out to the minutest detail the habits of pests that from time to time threatened our crops, such as the Hessian Fly (*Cecidomyia destructor*), the Mustard Beetle (*Phædon cochleariæ (betulæ)*), and other obnoxious species. He was also an expert microscopist and a good photographer, and was particularly happy in his methods of preparing and mounting minute insects as microscopic slides. These accomplishments were of great assistance to him in the chief work of his later years, the study of the Mymaridæ. It was his intention, we believe, to publish a monograph of these delicate little "fairy flies," and during his lifetime he had already published the descriptions of several new species of the group, while of many others he had the descriptions in manuscript; indeed, there is reason for believing that the material for his proposed monograph was in an advanced state at the time of his death, and it is much to be hoped that the work on which he had spent so much labour may yet be available for publication. Fortunately we have in this country a society whose special work it is to produce such publications, and it is not impossible that if they could be approached, with the manuscript in suitable form, a means might thus be found for saving this valuable portion of his work for posterity.

For many years and until the time of his death he was a Fellow of the Linnean, Entomological, Royal Microscopical, and Royal Horticultural Societies, and a member of the Birmingham Natural History and the South London Entomological and Natural History Societies. He was of a sociable disposition and appeared to enjoy to the full the intercourse of the many friends with whom he came into contact at their meetings, and by whom especially he will be greatly missed.

During the greater part of his life he resided in or near London, and it was less than two years ago that he was induced to remove to Hastings in the hope that his failing health might thereby be benefited; this, however, was not to be, and he passed away on May 26th last, having exceeded man's allotted span of three score years and ten by little more than a year.—R. A.

ERRATUM.—Page 187, line 5 from bottom, for "H. Chapman" read "T. A. Chapman."

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[No. 641

ON THE NORFOLK *HESPERIA ALVEUS* (*recte H. ARMORICANUS*, OBTHR.), WITH SOME COLLATERAL MATTER.

BY JAMES EDWARDS, F.E.S.

ACTING upon the suggestion of Mr. Rowland-Brown (*antea*, p. 88), I propose to add somewhat to the history of the butterfly found in Norfolk by the late Rev. T. H. Marsh and recorded under the name of *Hesperia alveus*, Hubn. In order to do this usefully some reference to the male genitalia will be necessary; but I propose to deal with that subject simply as it affects practical taxonomies. So far as one can judge from the recent literature, it seems to be generally assumed by Lepidopterists that, in order to enjoy the advantages arising from the use of differential characters drawn from the male genitalia, one must necessarily have recourse to a compound microscope and microscopic preparations; in practice one finds that this is by no means the case. This statement will doubtless be regarded by the "worker with the microscope" as rank heresy, but my present purpose is strictly practical; I simply desire to point out to the average student that he may have all that is worth having in this particular branch of investigation without making any very severe demands upon his time and eyesight. The useful differential characters are found in the last body-ring and its appendages, and therefore all that is needful is to cut off so much of the tip of the abdomen as will include the last complete ring, submit this to the action of damp air until the parts are thoroughly relaxed, clear off the scales and superfluous matter, and cut off the two ventro-lateral pieces at their junction with the ring. This gives us three portions, which may be gummed on a small piece of card and pinned in the cabinet by the side of the specimen; of course, with some distinctive mark to indicate with certainty the insect to which it belongs. Consecutive numbers answer this purpose very well; I have used them up to four figures with a satisfactory result. The last body-ring should be fixed on the card by its cephalad surface, and one clasp (ventro-lateral piece) should show the

inner and the other the outer surface. From this simple preparation one can see all that is necessary, for the useful differential characters reside in the chitinous and not in the membranous parts; and the structures thus mounted present a certain amount of what may be called "character," arising no doubt from the retention of much of the natural orientation of the parts, which is entirely lost when they are treated with chemicals and embedded in a transparent medium. The cleansing and dissection can easily be accomplished with the aid of a hand-lens, magnifying ten diameters or less, mounted on a home-made stand of some sort, and if a greater magnification is desired for subsequent examination, hand-lenses $\times 20$ are common nowadays; but none of these equal in definition a good $\frac{1}{2}$ in. microscope objective used as a hand-lens. If there are any distinctive characters in the male genitalia of a lepidopteron, a dry-mounted preparation will show them to an extent quite impossible in a slide; and the minutiae for the examination of which a slide-preparation is really necessary are not of the first importance from a taxonomic point of view. The great defect of slide-preparations, which anyone except a microscope man can see, is that we are limited to one aspect of the object only, that at right angles to the plane in which the slide lies. If it were necessary to demonstrate the utter futility in certain cases of slide-preparations as a means of illustrating the form and arrangement of the parts, *H. melotis* might well be quoted as a case in point. In this species the aedeagus-guides in the lateral aspect form two long branches from a wide base, the upper bisinuate and gradually pointed, the lower nearly straight for two-thirds of its length, the pointed apical third being suddenly bent back on the upper side of the remainder; this recurved portion is, in fact, one end of a trisinuate chitinous bar which reaches from side to side and is fused with the end of the lower branch. This bar is best seen in the ventrocephalad aspect, when it presents a remarkable resemblance to a well-developed pair of oxen horns. In Prof. Reverdin's figure ('Bull. Soc. Lep. de Genève,' ii, t. 13, fig. 3), which is as good a reproduction of an excellent slide-preparation as I ever expect to see, the ends of the bar appear as half-crescent-shaped bodies with their concavity behind, and the real nature of the bar is not indicated.

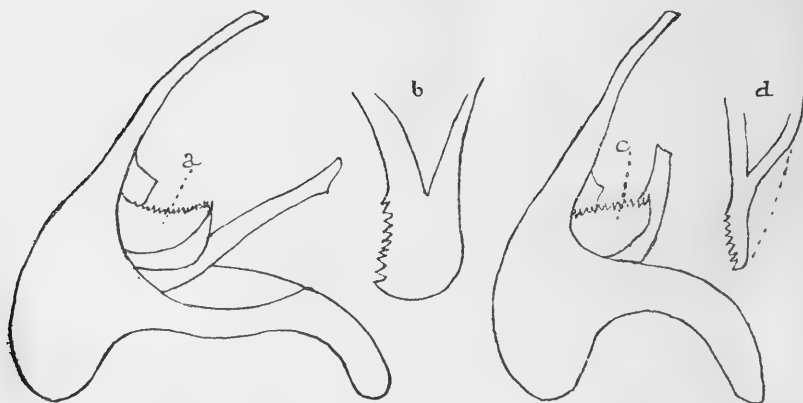
There has lately been a good deal of discussion as to the best means of rendering intelligible to others the results of one's examination of genitalia; the reproduction of photographs is advocated by some, and of diagrams by others, in both cases from slide-preparations. It is claimed that the photographs must, in the nature of things, be accurate; but the advocates of this method seem to forget that accurate photographic representation of a slide-preparation is at any one time limited to one plane of

very exiguous depth, and that the lens must reproduce both the accurate and the distorted aspects of the subject. On the other hand, it is claimed by the advocates of drawings from slides that their method gets rid of the distortion difficulty and reveals what the 'master's eye' can see; but the matter under consideration seems to be one in which the assistance of the organ in question may very well be dispensed with; for it is certainly doubtful whether features which require the 'master's eye' for their appreciation have any practical taxonomic value. One sometimes meets with such a phrase as "apprenticeship in the study of genitalia," which would seem to imply that the composition of the posterior end of the lepidopterous body is something not to be comprehended by the average intellect; as a matter of fact the organs which furnish useful differential characters are so few in number, and the plan on which they are arranged is so simple, that all the preliminary knowledge necessary for their successful investigation may be obtained in an hour or so. Genitalic characters are of such evident utility that it would be a great pity if any should be dissuaded from the study of their real nature and taxonomic function as the result of the squabbles between the Big-enders and Little-enders as to whether the parts are to be examined in the lateral or in the ventro-cephalad aspect.

No one familiar with the blackish-grey white-spotted upper-side of *Hesperia malva* would mistake it for *H. alveus*, with its nut-brown yellow-spotted upper surface, and it was precisely because the late Rev. T. H. Marsh did not know the former (a rare species in Norfolk), that he placed his Norfolk specimens of a *Hesperia*, which he captured whilst working the flowers of *Pedicularis sylvatica* for *Macroglossa bombylifformis*, in his collection under the name of *alveolus*. Here they remained until they came under the notice of Barrett, who saw that they were not *malva*, and at length identified them as *H. alveus*. The latter belongs to a group of species which are most certainly determinable by reference to the male genitalia. The clasp in the lateral aspect is about twice as long as wide, with the apex broadly rounded, almost in a semi-circle. At first it seemed reasonable to refer all specimens having a clasp-form falling within this definition to the same species; but M. Charles Oberthür, in the course of his studies, found himself able to separate the *alveus* of the mountains from the *alveus* of the plains, to which latter he gave the name *armoricanus*. The characters relied upon by M. Oberthür are found by Prof. Reverdin, as the result of most ample investigation, to be correlated with certain differences of degree in the male genitalia; differences which—as he puts it—are more or less marked, but constant. So little marked are these differences that they did not in the first instance appear to me to be greater than what one might reasonably expect to find amongst members of the same species; and it remained for Prof.

Reverdin, with his greater command of material, to demonstrate their constancy. The genitalia of the Norfolk *alveus* present exactly the same differences from those of the mountain *alveus* that one finds in *armoricanus*, and it should therefore be known by the latter name.

The most reliable distinction between *alveus* and *armoricanus* lies in the form of the ædeagus-guides. These are paired organs, apparently hung from the roof of the tegumen, but really proceeding from the diaphragm which closes the end of the body, one on each side a little above the ædeagus. In the lateral aspect they appear as irregularly oblong lobes with small crowded irregular teeth on their upper edge. They proceed from a wide base which on the inner side is in contact with its fellow, and, with the exception of a space on the basal half of the upper side,



J. E. del.

are highly chitinised. In *alveus* the guides are twisted so that the lower edge, instead of lying directly beneath the upper edge, lies considerably to the outside of it, and is distinctly reflexed, so that the surface appears to be broadly concave. In *armoricanus* the guides are approximately flat, their upper and lower edges lying in practically the same plane. These conditions may be observed either in the cephalo-vertical or the lateral aspect; but they are not to be seen in any photographs of slide-preparations that I have seen. The use of the term ædeagus-guides for the parts in question was suggested by their appearance when *in situ*; they are the "*apophyses laterales de l'uncus*" of Prof. Reverdin, and have also been referred to as the *scaphium*; though why the latter term should be applied to paired organs is not clear.

I have to thank Mr. Rowland-Brown for placing at my disposal authentic examples of *H. armoricanus*.

EXPLANATION OF DIAGRAMS.

- a.* Left ædeagus-guide of *H. alveus* in the lateral aspect.
b. Right ædeagus-guide of *H. alveus* in the cephalo-vertical aspect.
c. Left ædeagus-guide of *H. armoricanus* in the lateral aspect.
d. Right ædeagus-guide of *H. armoricanus* in the cephalo-vertical aspect.
 Figures *c* and *d* from an original Norfolk example.

Colesborne, Cheltenham,
 September 13th, 1916.

BIOLOGICAL AND SYSTEMATIC NOTES ON BRITISH THYSANOPTERA.

By C. B. WILLIAMS, M.A., F.E.S.

(The John Innes Horticultural Institution, Merton, Surrey, England.)

THE notes below include the descriptions of four British species of Thysanoptera hitherto undescribed, records of three new to the British Fauna and notes on the life histories of several species, some of which are of economic importance. The biologic notes are for the most part incomplete, but they are published now as circumstances make it unlikely that I shall continue work on the group during the next few years.

Sub-Order TEREBRANTIA.

Family Æolothripidæ.

Rhipidothrips, Uzel.

Since describing *R. brunneus* ('Journ. Econ. Biol.,' viii, 1913, p. 216) I have had the opportunity of examining a specimen of *R. niveipennis*, Reut., from the collection of Reuter. I find that it differs in several respects from the published description, which necessitates alterations in the key to the genus which I gave on p. 218, *l. c.*

The species can be best separated as follows :

(*a*) Cheeks slightly arched, with three or four short, stout, forwardly directed spines on the lateral margin of the head behind the eyes. Tibiæ slightly paler near the tip, tarsi pale brown. *brunneus*, Williams.

(*b*) Cheeks parallel, with no stout spines on lateral margin. Tibiæ suddenly much lighter near tip (near middle in anterior pair). Tarsi pale yellowish. *niveipennis*, Reuter.

The figure of the antenna of *R. niveipennis* given by Reuter is quite useless. The following are measurements of a specimen from his collection kindly lent to me for comparison by Mr. J. D. Hood :

| | | | | | | | | | | |
|------------------|---|----|----|----|----|----|----|----|----|---|
| Segment | . | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Length (μ) | . | 32 | 46 | 75 | 66 | 55 | 40 | 36 | 16 | 8 |
| Width (μ) | . | 40 | 31 | 21 | 22 | 21 | 23 | 21 | 12 | 6 |

The species also possesses a single long spine at the hind angle of the prothorax, which must have been overlooked or accidentally removed in the specimens described by Reuter. Reuter's descriptions were apparently all made from specimens mounted dry on cards—a method which leads to endless mistakes and cannot be too strongly condemned.

Family Thripidæ.

Genus *Sericothrips*, Haliday.

Up to the present all the European specimens of the genus have passed under the name of *S. staphylinus*, Haliday—a species originally described, quite insufficiently, in 1836 as frequenting flowers of *Ulex* in England. Uzel, in 1895, redescribed what he called *S. staphylinus*, Hal., from Bohemian specimens found among grass, etc. In 1910 Karny described *Rhytidothrips bicornis*, which he later stated to belong to the genus *Sericothrips* and to be identical with *S. staphylinus* (as described by Uzel). I have specimens of the species described by Karny from his collection and also specimens from the collection of Dr. Uzel. I have also been able to obtain some numbers of the British species from flowers of *Ulex*, which is without any doubt that described by Haliday. An examination of these shows that the species called by Uzel *staphylinus* and that described by Karny as *bicornis* are the same, but are not the British *S. staphylinus* of Haliday. A second British species is described below, so that there are now three European members of this genus known.

Sericothrips gracilicornis, sp. nov.

1913. *Sericothrips staphylinus*. Williams, Journ. Econ. Biol.,
viii, p. 219 (in part).
1913. „ „ Bagnall, Journ. Econ. Biol.,
viii, p. 232 (in part).

Female (macropterous).—*Measurements*.—Total length about 1.1 mm., head length 0.116 mm., width 0.188 mm.; prothorax length 0.144 mm., width 0.224 mm.; pterothorax length (dorsally) 0.210 mm., width 0.260 mm.; abdomen width about 0.320 mm.; wing length 0.78 mm.; width (about half way along) 0.040 mm.

| | | | | | | | | | |
|------------------|---|----|----|----|----|----|----|----|----|
| Antennæ: Segment | . | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Length (μ) | . | 26 | 40 | 74 | 60 | 49 | 58 | 12 | 14 |
| Width (μ) | . | 32 | 29 | 21 | 20 | 19 | 17 | 7 | 5 |

Total length of antennæ 0.330 mm.

Colour.—Body dark brown. Femora as dark as the body except

the tip of the fore femora, which are a little lighter. Fore tibiæ light brown, mid and hind tibiæ a little darker, except near the tip, which is similar in colour. All tarsi pale brown. Wings dark brown at the extreme base, then a colourless area for about one-sixth of the wing length, and from the end of this to the apex pale brown. Antennæ brown, except for the first two segments, which are very pale, and the third, which is paler at the base, becoming darker to the apex.

Surface figuring of chitin.—Transverse striations on the frons, round the ocelli and on the back of the head. A thick, heavily chitinised band from near the posterior lateral margin of the head coming forward on the dorsal surface to the level of the hind margin of the eyes; this thickening is on the internal surface of the chitin. The chitinised surface of the head behind it is thinner and more transparent. The prothorax is covered with a number of transverse dark striations; a mid-dorsal longitudinal line would cut approximately 36–41 of these striae. There are six smaller and two larger irregular depressed areas more free from striations. Meso- and meta-notum striated. On the abdominal tergites 1–8, and on the legs all the striations are lined with minute setæ, which give the characteristic silky gloss to the species of this genus during life. The mid-dorsal posterior part of the abdominal tergites are free from striations and setæ, particularly on segments 1–4. This may possibly be correlated with the presence of wings. On the third abdominal tergite there are about 16–17 lines of striation. Each abdominal tergite has a stout transverse internal thickening near the anterior margin, which probably serves for the attachment of muscles.

Head one and a half times as broad as long, broadest across the eyes. Frons depressed in front of the anterior ocellus. *Eyes* large, projecting slightly on the front margin; distance between the eyes one and a half times the width of the eyes, distance from the eye to the back of the head only a little more than half the length of the eye. *Ocelli* small, the anterior one directed forward; the two posterior distant from the margin of the eye; no noticeable coloration beneath. Two stout spines on each side of the frons in front of the ocelli, one near the mid line, the other near the margin of the eye; a stout spine just on each side of the anterior ocellus; one long and two short spines near the posterior dorsal angle of the eye and three forwardly directed spines on the cheeks. *Mouth-cone* reaching about three-quarters across the prosternum. *Maxillary palps* three-segmented, relative length of segments 7:5:6. *Antennæ* (Fig. 1a) almost three times as long as the head, relatively longer and more slender than the other European species of the genus. The first segment short and barrel-shaped; the second longer but not so broad, tapering at each end but more so at the base; the third long and slender, three and two-third times as long as broad with a short pedicel at the base, widest at the apical third then abruptly narrowed to an apical neck; the fourth shorter than the third, three times as long as broad, and with an apical neck as on the third; the fifth two and a half times as long as broad, widest in the middle; the sixth about as long as the fourth: the eighth a little longer than the seventh. Forked trichomes dorsally on the third and ventrally on the

fourth segments, and much shorter simple ones near the apex of the fifth and sixth segments externally. For coloration see above.

Prothorax about one-fifth longer and wider than the head. One long stout inwardly curved spine on the hind margin near the lateral end; a pair of slightly shorter spines between these; a short stout

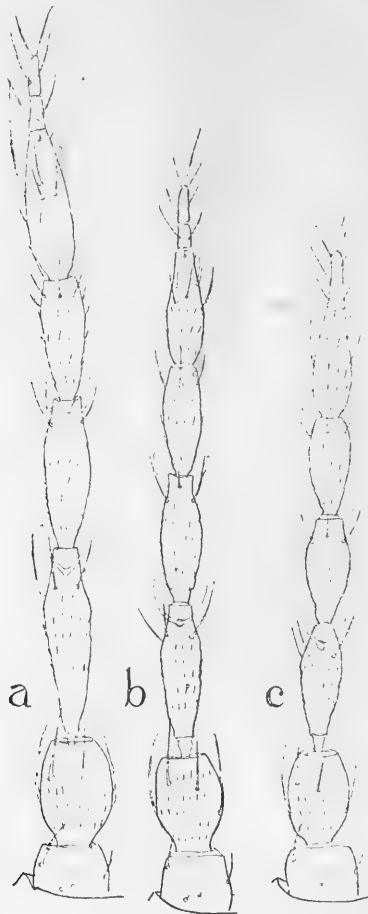


FIG. 1.—Antenna of (a) *Sericothrips gracilicornis*; (b) *S. bicornis*; and (c) *S. Staphylinus*.

forwardly directed inwardly bent spine at each front angle, four fairly long spines in a row just behind the front margin; six or eight of similar length in a slightly irregular row across the middle of the pronotum and one other on each side between this row and the long posterior marginal spines. *Pterothorax* normal. *Legs* fairly long and slender, used for jumping. *Wings* fully developed (in the two female specimens known), broad at the base, then narrowing by the

bending in of the front margin. On the fore wings there is no trace of a hind vein; the fore vein is represented by a row of short spines, 3 at the base, then a short space on the clear part of the wing, then 16-20 with a short space just before the last spine. At this level there is one spine nearer the hind margin of the wing which may represent the last of the row of spines usually present on the hind vein; 22-25 spines on the costa. The costal fringe begins about one-quarter the wing length from the base. Colour pale brown with a narrow colourless band just before the base. Hind wings pale brown with a darker central vein distinct almost to the tip of the wing.

Abdomen normal. On the hind margin of tergites two to eight there is a fairly stout spine inset near each lateral end. Along the whole of the hind margin of these tergites there is a fine comb. The hind margin of sternites 2-6 is ornamented with alternate lengths of fine comb and long slender inset spines; there are six of these spines on each sternite.

Male (macropterous) about one-sixth smaller than the female. *Antennae* similar in colour to those of the female. Wings fully developed, 15-17 spines on the outer half of the fore vein; 20-23 on the costa. On the abdominal sternites 3-7 there is a comparatively large round clear area surrounded by a dark margin; the diameter of this area is about one-third the length of the sternite. This area is little if any paler than the surrounding sternite and has a granular appearance.

Type in the author's collection.

Described from one female swept from mixed herbage on a railway bank at Yarnton, near Oxford, England, by C. B. Williams, on July 13th, 1913, and one female and one male taken in the same locality by Mr. R. S. Bagnall (date unknown) on Bedstraw (*Galium*).

Sericothrips staphylinus, Haliday (*nec* Uzel).

1836. *Sericothrips staphylinus* Haliday, Ent. Mag., iii, p. 444.
 1852. " " Haliday, in Walker Homopt. Ins. Brit. Mus., p. 1103.
 1913. " " Williams, Journ. Econ. Biol., viii, p. 219 (in part).
 1913. " " Bagnall, Journ. Econ. Biol., viii, p. 232 (in part).

Female (brachypterous).—*Measurements*.—Total length about 0.9 mm. Head length about 0.85 mm.; width 0.172 mm.; prothorax length 0.132 mm.; width 0.212 mm.; pterothorax length (dorsally) 0.120 mm.; width 0.220 mm.; abdomen width about 0.300 mm.

| | | | | | | | | |
|------------------|----|----|----|----|----|----|---|----|
| Antennæ: Segment | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Length (μ) | 19 | 41 | 52 | 42 | 42 | 48 | 8 | 12 |
| Width (μ) | 31 | 29 | 21 | 23 | 21 | 18 | 6 | 5 |

Total length of antennæ 0.288 mm.

This species differs from *S. gracilicornis* chiefly in the rela-

tively much shorter and stouter antennæ (Fig. 1c). The third antennal segment is only about two and a half times as long as broad. The first segment is dark except near the tip, the second pale yellow, the third also pale except near the tip, the fourth to eighth are very dark brown. There are 33-36 transverse striations crossing the mid line of the prothorax and 10-12 on the third abdominal tergite. There are no areas free of minute spines on the basal abdominal tergites as described for *S. gracilicornis*, but this is probably only a character of brachypterous forms, as *S. bicornis* agrees with *S. staphylinus* in this respect.

Male.—The circular areas on the abdominal sternites 3-7 are transverse oval in shape and gradually increase in size from in front, that on the third sternite being much smaller than in *S. gracilicornis*, and that in the seventh about the same size, but differing in shape.

At present only brachypterous males and females of this species have been found on flowers of *Ulex nanus* and *Ulex europæus*.

Localities.—New Forest, Hampshire; Bidston, Cheshire; Ilfracombe, Devonshire; there is yet no certain evidence of this species outside England.

Sericothrips bicornis (Karny).

1895. *Sericothrips staphylinus*, Uzel, Monog. Thysanopt. p. 91.
 1910. *Rhytidothrips bicornis*, Karny, Mitt. Nat. Univ. Wein. vol. viii, p. 50.
 1913. *Sericothrips staphylinus*, Karny, Zool. Anz. xliii, p. 134.

Measurements of Female.—Head length 0.112 mm., width 0.176 mm.; prothorax length 0.136 mm., width 0.232 mm.; pterothorax length dorsally 0.104 mm., width 0.240 mm.; abdomen width about 0.36 mm.

| | | | | | | | | |
|------------------|----|----|----|----|----|----|----|----|
| Antennæ: Segment | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Length (μ) | 28 | 42 | 62 | 53 | 44 | 54 | 10 | 14 |
| Width (μ) | 29 | 28 | 20 | 20 | 19 | 18 | 8 | 6 |

Total body length about 0.95 mm.; antennæ 0.29 mm.

Female (only brachypterous specimens seen).—Differs from *S. gracilicornis* in the shorter and stouter antennæ (Fig. 1b), which are, however, not so short as in *S. staphylinus*. Also differs from both *staphylinus* and *gracilicornis* in the much more close nature of the spinose striation of the chitin. A mid-dorsal line on the prothorax in this species cuts about 48-50 transverse striations, and a similar count on the third abdominal tergite gives 20-21 transverse striations. As mentioned under *S. staphylinus*, the whole of the median portion of the tergites of the species (brachypterous) is covered with minute setæ.

Male.—The areas on the abdominal sternites 3-7 resemble those of *S. staphylinus* more than *S. gracilicornis*; the anterior one is small, but the three posterior are more nearly equal in size than

those of *S. staphylinus*. In shape they are slightly transversely oval, as in *S. staphylinus*.

Distribution.—Bohemia, Bosnia. [Sweden, Croatia, Sardinia, Tyrol, *teste* Karny, specimens not seen by the author.]

This species has not at present been found in England, but is introduced here in connection with the British species of the genus.

(To be continued.)

PALÆONYSSIA: A NEW BISTONINE GENUS.

BY J. W. H. HARRISON, M.Sc.

IN carrying out some researches into the geographical distribution of the Bistoninæ it has become necessary to use the above generic name, which up to the present has been a "convenience" name in my notes.

Palæonyssia, gen. nov.

Male.—Insect stout and robust; head, thorax, and breast with furry covering like *Lycia*, *Pæcilopsis*, and *Nyssia*. Abdomen *very feebly covered with weak scales* like *Megabiston*. Antennæ *very stout and long*, armed with powerful pectinations of *very even* lengths; pectinations *very strongly ciliated*. Hind tibiæ armed with terminal spurs only. Male genitalia: *Æodeagus* small, covered with minute spiculations. Furca *stout, long, and finger-like* of a primitive Amphidasyd, rather than *Nyssia* type.

Female.—Apterous.

Type of genus: *Palæonyssia trisecta*, Warren.

Habitat: Natal, parts of Cape Colony and the Transvaal. 312

This species was originally placed by Warren in the genus *Haggardia*, but removed thence to *Apocheima*, very probably on the discovery of its apterous female. This is an impossible reference, as *Apocheima* (type, *hispidaria*) has male genitalia with excised valves furnished with a strong armature of spines, the whole being of a very different type from what is seen in the present insect. In addition the furca in *hispidaria* is obscure and fused.

AN AFRICAN ICHNEUMON IN LONDON.

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

My friend Mr. Bruce F. Cummings, of the Natural History Museum, South Kensington, was good enough to write in the middle of last August: "The enclosed two insects were found flying in a room here, in which some packages of skins, skulls, etc., from the Belgian Congo had been opened. This was on Monday [14th]; one is still lively now. Are they of any

interest to you? We have the species, I believe, but I would like to have your *ipse dixit* on the point." As a matter of fact, they were of so great interest that I think a note upon their occurrence here worthy of publication.

The insects are two females of *Oneilella formosa*, Brullé, one of the most striking and beautiful of African Ichneumonidæ; and this, their first capture in Britain, is a noteworthy importation. The species, which is figured by both its author ('Hist. Nat. Ins. Hym.,' iv, 1846, pl. xli, fig. 3) and Desmarest (in Chenu's 'Encycl. Hist. Nat. Annales,' 1860, fig. 142), was originally recorded from the Cape. Smith exhibited to the Entomological Society specimens from Mount Cameroons, West Africa, taken at 5000 feet above sea level ('Proc. Ent. Soc.,' 1878, p. xlii). Tosquinet first described the male, which was captured at Usambara in February, 1880 ('Ann. Soc. Ent. Belg.,' v, 1896, p. 150); and the only subsequent mention of the species is by Cameron, who, when erecting a new genus, *Oneilella*, for its reception, records it from Grahams Town ('Zeits. Hym.-Dip.,' iv, 1904, p. 190), and from Durban in Natal ('Ann. S. Afr. Mus.,' v, 1906, p. 142). The British Museum possesses a long series from South and Tropical Africa, where its range is at present but partially known and where it has occurred upon Fennel flowers.

Probably some cocoons of Bombycid moths had become introduced into the above packages of skins and skulls, for the only intimation yet published respecting the host of *O. formosa* is Smith's assertion (*loc. cit.*) that the species had been reared from *Anaphe panda*, Boisid., and *A. reticulata*, Walk., in West Africa.

Monks Soham House, Suffolk,
September 1st, 1916.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

(Continued from p. 208.)

SECTION 1.

Glomeratus, L.*

Undoubtedly the best known species in the genus, being a very common garden insect. It attacks larvæ of the species of

* Linneus, F. S., 410.

Pieris, particularly those of *P. brassicæ*, and by so doing helps to keep a serious pest in check. Unfortunately for the gardener, the larvæ of *P. brassicæ* do not, as a rule, succumb to the attacks of the parasite until they are fully grown, by which time they have consumed a large amount of cabbage.

In the autumn of 1914, throughout the New Forest district, plants of the cabbage family suffered greatly from the caterpillar, cauliflower plants in particular, so much so that in many gardens nothing was left but the dwarfed cauliflower surrounded by a *chevaux de frise* composed of midribs of the leaves. Some 50 per cent. of the caterpillars fell victims to the *Apanteles*, and the yellow cocoons of the parasites could be found in numbers affixed to garden walls, on fences, under copings, and many even in houses. On more than one occasion I noticed birds—sparrows, robins, and tomtits—apparently tearing the cocoons from the walls and devouring them. By Christmas practically the whole of those constructed in exposed positions had disappeared. Occasionally the cocoons of the parasite may be found attached to the food plant.

Both the summer and autumn broods of *P. brassicæ* are attacked, the parasites from the autumn brood passing the winter within their cocoons and emerging during the following May.

Marshall, in his description,* gives the coxæ as black; but in most cases I have found the four anterior to be rufo-testaceous, and even the hind pair light beneath. Marshall also remarks that the cocoons are “irregularly piled together without a common covering.” This is sometimes so, though I have known a case in which the cocoons were constructed under a fairly stout web.

Both Bignell † and Morley ‡ record the breeding of this species from *Abraxas grossulariata*, which cannot, I think, be a common occurrence. Fitch § that Bignell also bred it from a larva of *Phigalia pedaria*, though, according to Marshall, || this is an error.

In June, 1908, some larvæ of *P. brassicæ* were sent to me from Yeovil, and on July 1st large numbers of the larvæ of the *Apanteles* emerged from some of them. Whilst watching this process I chanced to notice a small hymenopteron paying particular attention to an apparently healthy Pierid larva and seemingly ovipositing therein. I isolated the larva and its tormentor and found that the oviposition still continued. Two days later the usual batch of *Apanteles* larvæ left the caterpillar

* ‘Trans. Entom. Soc.,’ 1885, p. 176.

† ‘Trans. Dev. Ass.,’ xxxiii, p. 657.

‡ ‘Entom.,’ xxxix, p. 100.

§ ‘Entom.,’ xvii, p. 68.

|| ‘Trans. Entom. Soc.,’ 1885, p. 176.

and spun their cocoons. On July 13th several imagines emerged from these cocoons, about half producing the parasite. On July 29th the expected hyperparasites emerged from the remaining cocoons, more than one from each cocoon. Probably this hyperparasite is the Chalcid described by Bouché as *Diplolepis microgastri*.*

Stellatarum, Bouché.†

In his description of this, as of other species, Bouché mentions that there are three elevated lines on the first abdominal segment. At first this seems misleading, but no doubt he refers to the lateral margins of the shield of the segment, which are raised, and to a very slightly indicated obtuse medial carina. Under a low-power magnification these "raised lines" are quite visible, though when a higher power is applied they cease to be noticeable. The species does not seem to have been recognised, since Bouché described it from a specimen reared from the larva of *Macroglossa stellatarum*.

The following is Nees' translation of the original description: †

"*M. ater*. palpis albidis, pedibus rufo-testaceis, unguibus ovinum, posticorum femoribus tibiis tarsisque apice late nigricantibus, primo abdominis segmento lineis tribus elevatis, nervis alarum fuscis, stigmatate nigro. *Microgasteri glomerato* similis."

I give also a description taken from a male and female in my own collection:

Black; palpi pale, basal joints darker; belly at the base usually piceous; fore femora, tibiæ and tarsi testaceous; middle femora testaceous with a fuscous stripe, middle tibiæ and tarsi testaceous, the latter darker at apices; hind femora fuscous above and at apices, hind tibiæ testaceous with the apices dark, hind tarsi fuscous; hind coxæ above shining, almost smooth.

Wings hyaline, stigma and nervures fuscous. Mesothorax finely punctulate, scutellum smooth; metathorax rugulose with a medial carina. First segment of the abdomen, truncate, punctulate, shining, rather longer than broad and slightly narrowed towards base, apical angles rounded; second segment shorter than third, subrugulose at sides and impressed with two oblique curved lines which end in irregular fovæ before reaching the base of the segment and enclose a semicircular subrugulose space. Terebra very short; valvula ventralis not surpassing the anus. Spurs of the hind tibiæ stout, about as long as half the metatarsus.

Very close to *glomeratus*, but is a larger and more robust insect; the first segment of the abdomen is broader, and the

* 'Naturg.', 168, n. 61.

† 'Naturg.', 1834, p. 157.

‡ 'Mon. Aff.', ii, 402.

spurs of the hind tibiæ are longer and stouter; from *immunis* and *jugosus* it is easily separated by its rugulose metathorax.

The cocoon is smooth and of a pale lemon colour. This species passes eleven months within its cocoon, the larva leaving its host in June and not producing an imago until the following May.

A solitary parasite which I have several times bred from small larvæ of *Hemaris fuciformis*.

Care must be taken not to confuse this species with *rubecula*, which is also bred as a solitary parasite from small larvæ of *H. fuciformis*, and makes very similar cocoons. *A. rubecula* has dusky wings and wants the impressed lines on the second abdominal segment.

Spurius, Wesm.*

A species with slender legs, by which it may be distinguished from *zygænarum*, *caicæ*, *difficilis*, etc.

The cocoons, which are thin, papyraceous, and arranged in a cake with great regularity, are enveloped in a fluffy ball very similar to that made by the larvæ of *congestus*, but firmer and lighter in colour (fig. 5). The insect differs from *congestus* in that the hind coxæ and first and second abdominal segments are much smoother, also the terebra is subexserted and the first abdominal segment narrower.

On May 27th, 1911, I obtained a brood of 38 (5 males and 33 females) from a larva of *Leucania littoralis*, taken at Sandbanks, Poole, and Mr. F. M. Mitchell Hedges has sent me several other broods all from the same host, taken on the Dorset coast. I have seen specimens taken by Cameron in Scotland, and now in Harwood's collection.

Zygænarum, Marsh.†

Nearly related to *insidens* and *difficilis*, but differing from the former in that the wings are somewhat paler, and from the latter in that the first two segments of the abdomen are not so shining, and from both in having the metathorax carinated. Marshall says that all the tarsi are rufo-testaceous, but in many cases I have found the tarsi to be distinctly fuscous. Cocoons sulphur-yellow, generally attached to a grass stem in an irregular cluster some inches above the ground (fig. 3). The larvæ of the parasite emerge from their host when the latter is nearly full fed. I have two broods given me by Colthrup, who obtained them from larvæ of *Zygæna filipendulæ* taken at Shoreham, and have myself bred numbers in mid-July from the same host taken at Beer, Devon, and also on the railway embankment near Holmsley Station, New Forest, where, until recently, there was

* 'Nouv. Mem. Ac. Brux.,' 1837, p. 49.

† 'Trans. Entom. Soc.,' 1885, p. 181.

a large colony of the burnet. At this locality the cocoons of the parasites could be found on the grass stems almost as commonly as the cocoons of the host. I have also specimens from Redhill, bred from *Z. trifolii* June 24th, 1911, and have seen a specimen in Harwood's collection said to have been bred from a larva of *Z. lonicerae* taken near Newbury.

The broods I have consist of from seven to twenty individuals, and I believe they are sometimes even larger. In each brood the sexes are about equally divided. I have often bred *Mesochorus pectoralis*, Ratz., from the cocoons of this species, and have known instances where the whole brood has succumbed to the attack of this hyperparasite. *Hemiteles submarginatus*, Bridg., is another hyperparasite which I have frequently obtained.

(To be continued.)

NOTES AND OBSERVATIONS.

HESPERIIDÆ AND BIRD-DROPPINGS.—In the article entitled "Curious Habits of *Eudamus retracta*" (*antea*, p. 38), mention is made of a Hesperid butterfly moistening bird-dropping and sucking same. I have noticed the same thing here on several occasions, and have always been astounded at the volume of liquid the insects would eject from their bodies. I have bred several species of Hesperiidæ (unhappily I have no means of classifying them yet). Their food-plant is nearly always moist and sappy—leaves of bananas, cannas, etc. Some live on sugar-canes and some also on the dry rattans. The bare-skinned larvæ fold over the edge of the leaves, and fix them so that there remains a protecting tunnel, in which neither rain nor sun disturb them. I have also never found one of them parasitised, which is astonishing in this land where it is always parasite on parasite. Should the white powder with which the caterpillar is covered—a soft powder, feeling like talc—act as a repulsive agent?—M. E. WALSH; Soekaboemi, Java, Dutch East Indies.

ATTACUS ATLAS IN THE HIMALAYAS; A LARGE SPECIMEN.—While travelling down from the Himalayas last week I came to a comfortable little half-way house at a place called Bhowali, some ten miles from Naini Tal, the popular hill resort of the Kumaon district. After some twenty-seven miles of road journey through typical monsoon rain, this haven of rest appeared more than usually attractive that night, and after satisfying the inner man, my mind was free to wander in a higher plane. I soon noticed a fine female specimen of *Attacus atlas*, set out on a piece of cardboard on a table close beside me. Its size at once attracted attention, and I asked the good lady of the house what it measured. She produced a tape measure, and we found that it just touched 11 inches when measured straight across the wings from tip to tip. The wings had slightly sprung, so that it would have measured well over the 11 inches if it had been set out quite flat. The largest specimen in the Indian Museum,

Calcutta, appears to be a very little over 10 inches. In the 'Fauna of British India,' Sir George Hampson gives 250 mm. as the expanse of wings for a female of this species. It would be interesting to know what size these handsome moths can attain. Will anyone in touch with a big European collection let us know if this 11-inch specimen of the Himalayas can be surpassed? I was informed that it was taken quite recently by the roadside near Bhowali, at an altitude of 4000-5000 ft. above the sea-level.—J. C. MOULTON; 4th Wiltshire Regt., Calcutta, July 26th, 1916.

A LEPIDOPTERIST'S INCIDENTAL COLEOPTERA.—Each year since 1913 I have spent the greater part of the month of June at Brockenhurst in Hampshire. Although Lepidoptera were the chief quarry, any other insects that presented themselves during the daily ramble were noted or, when unrecognised, boxed or bottled for subsequent identification. The following list of Coleoptera may therefore be of interest as indicating some of the more or less noteworthy species that fall, among a host of commoner things, into a "Bignel tray" when hawthorn blossom and the boughs of oak, birch, fir, etc., are worked for lepidopterous larvæ in the New Forest. For the determination of some of the more closely allied species I am greatly indebted to Mr. G. C. Champion. The fall of a number of species belonging to other families, chiefly Curculionidæ, also resulted from beating operations; identification of these is still incomplete.

CERAMBYCIDÆ: *Clytus mysticus*, L., one specimen in 1915 and four in 1916; beaten from hawthorn bloom. *Rhagium bifasciatum*, F., several specimens from hawthorn blossom and one from buckthorn flowers; the latter has the fasciæ unusually broad. *Toxotus meridianus*, L., one ♂ beaten from buckthorn blossom, others from hawthorn. *Anoplodera sexguttata*, F., one in 1915 and one in 1916; the latter from a pine-tree. *Grammoptera tabaciolor*, De G., three specimens in 1915, only one secured in 1916; hawthorn. *Grammoptera analis*, Pz., a single specimen in 1916 from buckthorn flowers. *Grammoptera præusta*, F., one in 1915 and two in 1916, from hawthorn. *Grammoptera ruficornis*, F., very common in 1916 at hawthorn blossom, only a few noticed in 1915.

LAMIDÆ: *Tetrops præusta*, L., one specimen in 1915. *Leiopus nebulosus*, L., several specimens, but most frequently observed in 1916.

ELATERIDÆ: *Elater sanguinolentus*, Schr., very local, but not scarce in one small area, from the flowers of gorse, especially in 1915; a few specimens were also beaten from pine-trees. Varied considerably in the amount of black on elytra; in a few examples the black was entirely absent; one or two specimens of the orange form were also obtained. *Elater elongatulus*, L., six specimens were beaten out in 1916, but only one in 1915. *Melanotus rufipes*, Hbst., three were secured in 1915, one only in 1916. *Athous villatus*, F., one in 1915, several in 1916. *Athous hirtus*, one in 1915, at gorse bloom. *Corymbites tessellatus*, F., one in 1915, three in 1916; at gorse and pine. *Corymbites quercus*, Gyll., possibly I failed to detect this species among the many "Elaters" that fell into the beating tray; anyway,

I have only one for 1915 and another for 1916. *Sericosomus brunneus*, L., of this species I met with but one specimen in each year. *Agriotes lineatus*, L., one specimen beaten from pine, 1916. *Campylus linearis*, L., one male example secured in 1915 and two females in 1916.

TELEPHORIDÆ: *Podabrus alpinus*, Pk., not uncommon, each year.

CLERIDÆ: *Tillus elongatus*, L., a male specimen in 1915 and another in 1916.

ÆDEMERIDÆ: *Nacerdes melanura*, L., one specimen in 1915. *Ischnomera cærulea*, L., one in 1914. *Ischnomera sanguinicollis*, F., one in 1916. *Edemera lurida*, Marsh, a specimen from hawthorn blossom in 1915.—RICHARD SOUTH; 4, Mapesbury Court, N.W.

LARVÆ OF CEROSTOMA IN THE NEW FOREST, June, 1916.—Most of the hawthorns, especially at Rhinefields, yielded larvæ of *C. scabrella*. A few larvæ of *C. horridella* were also beaten from the Rhinefields hawthorns, more fell from sloe, but not one could be obtained from crab-apple (*Pyrus malus*). Larvæ of *C. costella* and *C. radiatella* were common on oak, but those of *C. alpella* and *C. lucella* were not noted. Some larvæ beaten from willow, thought to be *C. sequella*, did not mature. Honeysuckle here and there produced a few *C. xylostella*, but not a larva of *C. nemorella* was seen.—RICHARD SOUTH.

RETARDED EMERGENCE OF YPONOMEUTA COGNATELLUS.—Wherever *Euonymus europæus* flourished in the New Forest last June there also would be seen the larval web or webs of *Y. cognatellus*. A good supply of full-grown larvæ were taken from one of these colonies on June 14th. These pupated in due course, and, as I thought, all the moths emerged during the first half of July. On looking at the box again on September 3rd I was surprised to see three living and very fresh imagines therein. They certainly were not there on August 23rd, as I had occasion to examine the box on that date.—RICHARD SOUTH.

ASTHENA BLOMERI IN BUCKINGHAMSHIRE.—On July 18th last I went to Chalfont Road to visit a wood in the neighbourhood, where on August 8th, 1891, I obtained my first specimens of *A. blomeri* ('Entom.,' xxiv, p. 217). Soon after leaving the station I was pleased to meet two wielders of the net who were just returning from the identical wood to which I was going. Naturally we chatted upon matters entomological, and touching *A. blomeri* I gathered that the "bag" of each comprised a goodly number of this species. This was interesting as proof that *blomeri* still stands where it did. However, I went on to the old spot and found the moth there right enough, but I only saw a very few specimens. Lacking the information I had received, I might have concluded that this pretty little species was becoming scarce or that my visit was not well timed. Either deduction would have been wrong.—RICHARD SOUTH.

AGRIADES CORYDON ATTACKED BY ZICRONA CÆRULEA.—I am very much interested in Dr. Gifford Nash's observations on the bug *Zicrona cærulea* (*antea*, p. 210), which prove that the living butter-

flies were attacked. Professor Poulton exhibited before the Entomological Society last year a pair of the same species of bug, which I found feeding on a male *Agriades corydon* at Royston. It was then suggested that a spider had killed the butterfly before the bugs discovered it ('Proc. Ent. Soc.,' 1915, p. cxix).—E. A. COCKAYNE; 16, Cambridge Square, W.

[When sending Mr. Crawshay the name of the Pentatomid bug, I had forgotten the particulars of Professor Poulton's exhibition, but very soon after recalled it; and on the following day sent a complete extract from the Proc. Ent. Soc. to Mr. Crawshay. This unfortunately does not seem to have reached Dr. Nash in time to be incorporated with his note.—C. J. G.]

DICRANURA VINULA TWO YEARS IN PUPAL STAGE.—In August, 1914, I cut from the bark of a poplar tree in Ayrshire a cocoon of *Dicranura vinula*. At the same time I was feeding up a number of *vinula* larvæ which I got from London. I mention this to indicate that the cocoon was in existence at the same time as half-grown larvæ (all of which died before feeding up). I have the cocoon now and the pupa is still living inside. That means two years at least in that state, however long it was thus when I got it. I have had it in artificial heat nearly the whole of the time, and last year brought out in the same temperature three *vinula* obtained from London in the pupal state as an experiment. I have now removed the cocoon to an ordinary temperature, at which I purpose keeping it till it either emerges or dies. There is a slight opening at the bottom of the cocoon, caused by the shrinkage of the bark, and the pupa can be distinctly seen to move when touched.—WM. A. R. JEX LONG.

LATE APPEARANCE OF DRYAS PAPHIA.—On September 9th I saw a number of *D. paphia*, probably ten or twelve, in an open space in one of our woods. They were feeding on the blossoms of devil's-bit scabious (*Scabiosa succisa*) in company with a number of *Pyrameis atalanta*, *Vanessa io*, *A. urticae*, *Polyommatus icarus*, *Chrysophanus phlæas*, a couple of *Gonepteryx rhamni*, also numerous *Plusia gamma*, and the usual assortment of insects that collect in such places when it happens to be a sun-trap on the rare occasions when the sun shines in this gloomy September. Surely this is an unusually late date? I rarely see one here after the middle of August. These butterflies did not look very weather-worn; indeed, only one female looked quite worn out. I noticed they only visited the scabious blooms, neglecting betony, bramble, and heather.—E. G. B. MEADE-WALDO; Hever Warren, Kent.

CHRYSOPHANUS PHLÆAS, AB. ALBA, IN CORNWALL.—On August 22nd last I had the good fortune to net a specimen of the form of *C. phlæas* known as ab. *schmidtii*. It was settled on a stone at the side of a rough combe at Pentire, near Padstow, in Cornwall. The ground colour was silvery white and very conspicuous. Unfortunately it was not in very good condition, the hind wings being a little torn and frayed.—GEOFFREY HARPER; Byflete, Battledown Approach, Cheltenham. [As the specimen of *C. phlæas* recorded

above is silvery white, it will be *alba*, Tutt, which is a modification of *ab. schmidtii*, Gerh.—ED.]

REARING LARVÆ OF *CUCULLIA UMBRATICA*.—Can anyone help me with the treatment of *C. umbratica* larvæ? For three years I have reared a good number from ova and they have fed up very successfully and quickly on sow-thistle varied by dandelion. But with very few exceptions they always die off when full-fed and never make any attempt to burrow in the earth. Perhaps others who have reared the species can tell me the cause of my failure, and the remedy.—J. S. CARTER; Suffield Park School, Cromer.

THE BUTTERFLIES OF THE SOUTH SALISBURY DOWNS.—The following thirty-nine butterflies were all taken within five miles of the village of Damerham on the chalk downs to the south of Salisbury: *Pieris brassicae*, *P. rapæ*, *P. napi*, *Euchloë cardamines*, *Colias edusa* (very plentiful in 1912 and single specimens since), *Gonepteryx rhamni*, *Argynnis selene*, *A. euphrosyne*, *A. aglaia*, *A. adippe*, *D. paphia* (Woodgreen), *Vanessa polychloros*, *V. urticae*, *V. io*, *Pyrameis atalanta*, *P. cardui*, *Limenitis sibylla* (Woodgreen), *Pararge egeria*, *P. megæra*, *Satyrus semele*, *Epinephle ianira*, *E. tithonus*, *A. hyperanthus*, *Canonympha pamphilus*, *Thecla quercus*, *Callophrys rubi*, *Chrysophanus phlæas*, *Plebeius ægon*, *P. astrarche*, *P. icarus*, *A. bellargus*, *A. corydon*, *Cyaniris argiolus*, *Zizera minima*, *Hesperia (Syrichtus) malvæ*, *Thanaos (Nisoniades) tages*, *Adopæa (Hesperia) thaumas*, *A. (H.) sylvanus*, *Argiades (H.) comma* (confined almost entirely to the downs south of Martin). There is a record of *Papilio machaon* having been taken at Cranbourne in Morris's 'British Butterflies.' I may add that all the species enumerated above were taken by Lieut. G. F. Challis (who has been recently killed in action) and myself.—A. S. CORBET; 32, Hamilton Road, Reading.

ENTOMOLOGICAL JOTTINGS FROM THE FRONT.—Enclosed with a letter written on July 30th, Lieut. Norman Riley, who is on service in France, kindly sent me a fine specimen of *Araschnia levana* that had been taken two days earlier. In the letter he writes: "*Melanargia galatea* is the most interesting of the butterflies around the camp, as it is absolutely swarming, but there are crowds of the usual common species about, and at night the tent is alive with moths, chiefly small things. Occasionally a *Leucania* from the marshy ground by the river finds its way in, and a few water-beetles."—RICHARD SOUTH.

THE TRIMEN COLLECTION OF SOUTH AFRICAN BUTTERFLIES.—We understand that this historic collection, which formed the basis of the late Roland Trimen's classical monograph on the South African Butterflies, has recently been acquired by Mr. J. J. Joicey. It is representative of the whole of the *Rhopalocera* of extra-tropical South Africa and contains most of the types of the species described by Trimen. Lepidopterists who are desirous of seeing types or other specimens contained in the collection may have access to it upon application to the Curator, the Hill Museum, Witley, Surrey.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 27th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. S. Edwards exhibited the fungus *Polyporus sulphureus* found at Box Hill during the Field Meeting on July 22nd.—Mr. Frohawk, a figure of the unique, absolutely white form of *Melanargia galatea* taken near Walmer in 1843; also a specimen of *Euchloë cardamines*, in which there was no trace of black scales on either side, and a *Colias hyale*, in which the black markings were represented by a faint dusky shade.—Mr. Turner, a series of *Parnassius apollo* var. *valaisiaca* from Macugnaga, and contrasted its size and brilliancy with the smaller var. *montana* from St. Moritz, Engadine. Mr. Turner also showed cases of the following species of the genus *Coleophora* (micro-lepidoptera), supposed to have been in the late H. T. Stainton's collection, and referred to by him in his 'Tineina of Southern Europe,' 1869: *C. calycotomella* on *Calycotema spinosa*, *C. chamædryella* on *Teucrium chamædryis*, *C. giraudi*, *C. musculella* on *Dianthus superbus*, *C. cornuta*, *C. polonicella* on *Astragalus arenarius*, and *C. otitæ* on *Silene otites*.—Mr. Bowman, a specimen of *Lytta (Cantharis) vesicatoria*, a rare British beetle from the Isle of Wight.—Mr. B. L. Williams, several species of *Eupithecia*, including melanic *E. lariciata* from Leith Hill, a melanic *E. castigata* from Finchley, and a series bred from larvæ taken at Oxshott last autumn.—Mr. Sperring, dwarf examples of *Polyommatus icarus*, ♂ 22 mm., ♂ 24 mm., and ♀ 22 mm. respectively, with very light ♂s and very blue ♀s from Portsmouth; a barred aberration of *Eupithecia oblongata (centaureata)*; seven examples of *Epinephele tithonus* with extra eye-spots, from Sidmouth; and a yellow *Pieris napi* spring brood.—Attention was called to the destruction caused by the larvæ of *Lucanus cervus* in fencing around London.

August 10th.—Mr. Hy. J. Turner, F.E.S., President, in the chair. Mr. H. M. Stewart, M.A., M.D., of Dulwich, was elected a member.—Mr. Leeds exhibited a series of *Hibernia leucophaëaria* from Herts, with aberrations, including ab. *marmorinaria* and ab. *merularia*, together with a female *Polyommatus icarus* with paler to whitish areas.—Dr. Chapman, a series of *Vespa norvegica*, which has this year occurred in some numbers near Reigate; and also bred living specimens of *Selenia bilunaria*, showing both spring and summer forms in the same brood.—Mr. Main, the pupa of the tiger-beetle, *Cicindela campestris*, produced in one of his small observation cages.—Mr. Turner, the life-history of *Coleophora nigricella* on hawthorn; the larval "winter cots" of a species of *Limenitis* from N. America; cocoons of *Nepticula euphorbiella* from mined leaves of *Euphorbia dendroides*; leaves of the cork-tree, *Quercus suber*, with mines of the larva of *Nepticula suberis*; cocoons of *Nepticula catharticella* from mined leaves of *Rhamnus alaternus*; leaves of *Quercus suber*, with mines and cocoons of *Nepticula suberivora*; and cocoons and webs of the larvæ of *Zelleria phillyrella* among twigs of *Phillyrea angustifoliella*. These micro-lepidoptera are some of the actual specimens

referred to and described in Stainton's 'Tineina of Southern Europe,' pp. 224-229.

August 24th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. Main (1) Larva, pupa, and imago of the water-beetle *Pelobius tardus*; (2) the curious result of an attack of fungus on a Syrphid fly; (3) the ova of the Neuropteran *Hemerobius concinnus*.—Mr. Curwen, a bred series of *Cleora lichenaria* and *Cleora jubata* (*glaberraria*) from the New Forest. The larvæ of the latter species fed on a lichen, *Cladonia*. He also showed an example of *Xanthorhœ fluctuata*, asymmetrical in both shape and markings.—Mr. Turner, details of the life-histories of some micro-lepidoptera: (1) Mines of *Lithocolletis lantanella* in Lauristinus; (2) pyramidal cones in oak leaves of larvæ of *Gracilaria alchimiella* (*swederella*); (3) galleries of larvæ of *Gelechia pinguinella* (*turpella*) on poplar leaves; (4) mines of *Lithocolletis leucographella* in leaves of *Cratægus pyracantha*; (5) the beautiful network cocoons of *Epiblemia strictellus*; and (6) larval cases of a Coleophorid, said to be *Coleophora salinella*, from the seeds of *Chenopodium maritimum*. He also exhibited coloured figures of a dozen striking aberrations of *Dryas paphia*.—Mr. H. Moore, *Agriades coridon*, ab. *semisyngrapha*, and ab. *roystonensis*, with an asymmetrical male, from Royston.—Mr. Frohawk, a unique form of *Arctia caja*, with the fore wings uniformly chocolate and hind wings almost wholly black, with several others less striking, bred from larvæ taken in the Scilly Isles.—Mr. Wolley Dod, a *Saturnia pavonia* female, in which the antennæ were considerably pectinated.—Mr. Bunnett, a glow-worm, *Lampyris noctiluca*, with the tibia of the hind leg on the right side bifurcate.—Mr. Carr, a living *Platyptilia gonodactyla* taken in the City.—Several specimens of *Amorpha populi* had been taken by members, and it was suggested that they belonged to a second brood.—HY. J. TURNER.

RECENT LITERATURE.

In the Hands of the Senoussi. C. Arthur Pearson, Ltd., London. 1916.

AMONG the many thrilling books of the war there is no more human document than the little volume compiled by his wife from the diary of Captain Gwatkin-Williams, R.N. It is the story of nineteen weeks spent as a prisoner in the Lybian desert, and records with convincing simplicity the terrible experiences of the naval officer in command of H.M.S. "Tara," formerly the S.S. "Hibernia," plying between Dublin and Holyhead. This is no place to review at length a book which gives a faithful picture of the miseries suffered by the gallant officers and crew of the "Tara" among the hostile Arabs, finally ended with the spirited rescue of the survivors by Major the Duke of Westminster and his flotilla of motor cars. But it is pleasant to note that Captain Gwatkin-Williams found not a little comfort in observing the butterflies of this parched and treeless land, though he endured hideous discomfort from insect vermin. On the 9th and 10th

February, 1916, we have this entry: "The spring butterflies now much in evidence whenever there is a northerly wind, which blows them from the district in that quarter, where there is much more vegetation than in this stony wilderness." And again, after the unsuccessful attempt to escape to the seacoast, March 1st-6th: "The weather is commencing to warm up now. Peculiar-looking bees are common, as also *Papilio machaon* (the yellow swallow-tail butterfly, common in the English fen counties), and a very pretty 'copper' butterfly, with bright-green underside" (probably *Thestor ballus*). "There is also a small kind of cockchafer, and the almost fully-grown, but not as yet winged locust." Captain Gwatkin-Williams has been interested for many years in British Lepidoptera, and has, I believe, paid special attention to those of the South of Ireland, including *Canonympha tiphon*. We entomologists in particular offer him our heartiest sympathy, and congratulations on his escape, trusting that the ordeal through which he has passed will not deprive his Country of his services in the future, and himself of many days with the lepidoptera of more kindly lands.

H. R.-B.

A List of the Butterflies of Egypt, with some Notes on those of the Sinai. By CAPTAIN PHILIP GRAVES, F.E.S. 'Bulletin Soc. Entomologique d'Egypte,' 1915, pp. 135-157.

CAPTAIN GRAVES is another of our soldier entomologists who continues his studies war notwithstanding. His "List of the Butterflies of Egypt, and Notes on those of the Sinai," makes special appeal at the moment, and incidentally confirms my identification of *Thestor ballus* as the Copper with the bright-green underside, noted above by Capt. Gwatkin-Williams in the western Mairut Steppe, its only Egyptian locality. British collectors, perhaps, will be surprised to hear that up to the present Egypt can boast but 31 species of butterflies, two of which—Hesperiids—if not more, owe their discovery to Capt. Graves and the late lamented Col. Neville Manders. This lean record is attributed by the author chiefly to failure of all but a few to establish themselves on desert flora, the irrigation of the fertile parts of the Delta, and the enormous preponderance of cultivated plants there; though the steppe region from Alexandria to Sollum will probably yield additions when peace returns and the borders of the Senoussi are reopened to the naturalist. For instance, in the light of Capt. Gwatkin-Williams' remarks, it would seem that *P. machaon* should be eliminated from the list of "unexpected absentees," as it appears to extend eastwards from the Senoussi land into Egypt proper. The author also draws interesting comparisons between the richness of the South Palestine and Sudan fauna, whose frontiers march with those of Egypt, supporting the view that the palæartic butterflies of Algeria, or at any rate a part of them, common to the northern parts of Asia Minor, spread there from north of the Mediterranean and thence across the long submerged Sicilian "bridge," rather than westward *via* the littoral of Egypt and North East Africa.

H. R.-B.

OBITUARY.

ROLAND TRIMEN, F.R.S., F.E.S.

Born 1840. Died 1916.

AMONG the older school of entomologists none has left a more enduring fame in the sphere of his own particular operations than Roland Trimen. Leaving King's College School, he entered the Cape Civil Service as long ago as 1860, at a time when Cape Colony and Natal were the lonely British "white" provinces of South Africa under the Union Jack; and as little was known of the fauna and flora beyond the Orange River and the Limpopo as of the native tribes. The period of his activities in the world of Nature coincides with the development of the British Empire, politically speaking, from the Cape to the Zambesi, and he retired from his service on the eve of the events which led up to the great war and final consolidation of South Africa as we know it to-day. If Moore was the father of Indian lepidopterology, Trimen will be remembered as the father of South African lepidopterology. His published works on the subject began within two years of his arrival with "*Rhopalocera Africæ Australis*; a Catalogue of South African Butterflies," published in London 1862-1866, followed twenty years later by the splendid and comprehensive "*South African Butterflies*; a Monograph of the Extra-tropical Species," 1887-1889. During the interval he also contributed numerous papers of special value on the same and kindred subjects to the 'Transactions' of the Entomological, Linnean, and Zoological Societies. To employ a well-known phrase, he may indeed be said to have taught British entomologists to think in continents, and upon the foundations well and truly laid by his industry has been erected the structure of scientific knowledge, advanced to later perfection by the able naturalists whose African explorations have revealed the entomological mysteries and beauties of the once "Dark Continent." In 1881 he represented Great Britain as sole Commissioner to the Bordeaux Phylloxera Congress. As Curator of the South African Museum, Cape Town, from 1873 to 1895, he was also exceptionally well placed to pursue his favourite lines of research in insect mimicry, and in 1883 he was elected a Fellow of the Royal Society; while he had returned but two years to London when the Entomological Society elected him their President (1897-98); his term of office being crowned the year following by Oxford conferring upon him the "naturalists'" degree of M.A., *honoris causa*. In 1910 he received the Darwin medal, in recognition of his merit as associate and fellow-worker of Darwin himself. Nor was it until the Congress of Entomology at Oxford in 1912 that we heard for the first time that his strength was failing. From that time onward his public appearances became fewer and fewer, to the deep regret of friends entomological and otherwise, but he retained a lively interest in his own particular subject to the last. Besides being a man of strikingly handsome appearance—he might have sat for the bust of the Olympian Zeus without the severity—he ever maintained a grand simplicity and gentleness of nature, combined with a charm of manner which all those of us who were privileged to know him shall not soon forget. To his widow we offer our sincerest sympathy in her bereavement.

H. R.-B.

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A NEW SOUTH AMERICAN PAPILIO.

By PERCY I. LATHY.

Papilio horracki, sp. nov.

♂. *Upper side*.—Fore-wing black, with strong bluish-black reflection except on apical area, which is sparsely scaled and slightly transparent; a discal grey-green band from lower discoidal to near inner margin, where it is produced towards base; fringes slightly spotted with crimson between nervules. Hind-wing black, with strong bluish-black reflection, a series of five carmine patches beyond cell, the lower four extending from cell to near outer margin, where they are slightly paler; the upper much shorter and near outer margin. These patches bordered inwardly with grey-green scaling; a little greyish-green scaling within cell towards end; fringes carmine between nervules.

Under side.—Fore-wing paler than above, bluish-black reflections not so pronounced, discal band dirty white, darker towards inner margin, and not so produced towards base. Hind-wing without bluish-black reflections excepting on inner margin; carmine patches as above, but more dull in colour and slightly suffused with black scaling; two additional patches on outer margin below lower median nervule, the upper being the larger; outer two-thirds of cell and inner edge of carmine patches, particularly the two upper, suffused with buffish scaling.

Hab.—French Guiana; St. Jean de Maroni.

This most remarkable species is best placed between *P. panthonus*, Cram., and *P. lysander*, Cram., and is, I think, more nearly related to the former. The large extension of red patches of hind-wing at once serves to distinguish it from either of these species; also the greenish-grey band of fore-wing is a character wanting in *P. panthonus*, while the band of *P. lysander* is exceedingly narrow above and does not touch cell, and in the new species the band is wider above than on inner margin and touches cell; also in *P. horracki* the outer margin of hind-wing is not so produced as second median nervule.

This new species must be remarkably rare, as the Maroni district has been collected in for many years. Only one example was captured, fortunately in perfect condition, and it is now in the fine collection of Mlle. de Horrack of Paris. This remark-

able species will rank with the two other great South American rarities of this family, *P. hahneli*, Stgr., and *P. hedæ*, Foetterle, both of which, I believe, have only been captured but once, and remain unique.

CONCERNING CERTAIN CYNIPID GALLS IN DURHAM, NORTHUMBERLAND, AND NORTH YORKSHIRE.

BY J. W. H. HARRISON, M.Sc.

DURING the last few years, in collaboration with Mr. R. S. Bagnall, I have been working at the more obscure orders in our counties, and lately our energies have been directed more particularly toward gall-making insects. Our results in Cecidomyid and Eriophyid galls have been phenomenal, over a hundred species of the Dipterous group and about thirty of the gallmites having been added to the British list. In the present class, our list of novelties is limited, but it does include one or two. Excluding the Oak Cynipids, which are reserved for special treatment, my list is appended:

Rhodites rosæ, L.—Everywhere, seems to prefer roses of the Eucanine group; in West Durham, where the Villosæ are more or less dominant, on them also.

Rhodites mayri, Schl.—This gall is new to Britain, and I have only taken it once, on *Rosa mollissima* m. *cuspidatoides*, Crep., by the road-side between Lanchester and Sätley, in Durham. It is somewhat like the preceding, which everyone knows as the "bedeguar," but is softer and lacks the clothing of reddish filaments; their place is taken by feeble, ill-developed spines.

Rhodites eglanteriæ, Hartig.—Common, but varies greatly in abundance. Prefers the Villosæ, but I have seen it on *Rosa glauca* and *Rosa canina* m. *lutetiana*, Lem., in the Eucanines, and on *Rosa spinosissima* m. *pimpinellifolia* of the Pimpinellifoliæ.

Rhodites rosarum, Giraud.—Rare, prefers the Villosæ; S. Durham, Team Valley, Nunthorpe, Yorkshire.

Rhodites spinosissimæ, Gir.—In Durham on *Rosa pimpinellifolia*. Gall somewhat like the preceding, but embedded as it were in the leaf. Occurs chiefly on the coast, but inland at West Cornforth.

Diastrophus rubi, Hartig.—Team Valley, Durham, Nunthorpe, Yorkshire. Elongated, slightly irregular swellings on *Rubus fruticosus*. Not common.

Xestophanes potentillæ, Retz.—Irregular fused masses on the runners and on the roots of *Potentilla reptans*. Occurs everywhere with the plant where it grows in light soil.

Xestophanes brevitarsis, Thomson.—Previously not on record for the North of England, found on *Tormentilla erecta* on Birtley Fell in Durham. Gall like the preceding, but not fused.

Aulax glechomæ, L.—Very rare. Horden, Durham. Fleshy reddish swellings on *Glechoma hederacea*.

Aulax hypochæridis, Kieff.—Somewhat irregular swellings on *Hypochæris radicata*. Very rare, on plants growing on an old slag heap, Birtley.

Aulacidea pilosellæ, Kieffer.—On midrib of leaf of *Hieracium pilosella*. Sparingly throughout North Durham. New to Britain. Taken by both Mr. Bagnall and myself.

Aulacidea hieracii, Bouche.—Spherical or top-shaped swellings on *Hieracium boreale*, an enormously abundant plant in North Durham and South Northumberland—and the gall is just as plentiful.

BIOLOGICAL AND SYSTEMATIC NOTES ON BRITISH THYSANOPTERA.

BY C. B. WILLIAMS, M.A., F.E.S.

(The John Innes Horticultural Institution, Merton, Surrey, England.)

(Continued from page 227.)

Sericothrips, spp.?

1836. *Sericothrips staphylinus*, Burmeister, Handb. d. Entomologie, ii, p. 413.
 1843. " " Amyot et Serville, Ins. Hémiptères, p. 641.
 1878-9. " " Reuter, Diag. ofv. nya Thysanopt. f. Finland, p. 11.
 1899. " " Reuter, Acta Soc. p. Fauna Fennica, xvii, p. 40.

In the above references there is nothing to show which species of this genus was found. They should, therefore, be kept apart until specimens can be obtained from the countries in question. No useful purpose is served by confusing the problems of distribution by inaccurate identification of old descriptions and records.

Heliothrips errans, sp. nov.

Female (macropterous).—*Measurements*.—Total length about 1.4 mm., head length 0.140 mm., width 0.220 mm.; prothorax length 0.144 mm., width 0.260 mm.; pterothorax greatest length 0.350 mm., width 0.370 mm.; abdomen length about 0.95 mm., width 0.37 mm.; wing length 0.95 mm., width 0.060 mm.

| | | | | | | | | |
|------------------|---|----|----|----|----|----|---|----|
| Antennæ: Segment | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Length (μ) | ? | ? | 74 | 64 | 53 | 35 | 9 | 44 |
| Width (μ) | ? | 37 | 25 | 24 | 22 | 22 | 9 | 45 |

Total length of antennæ 0.32 mm.

Colour.—Dark brown. Head and thorax a little clearer than the abdomen; antennæ with segments 1, 2, 6, 7, and 8 dark, the rest clear yellow; fore femora pale yellowish-brown, tinged with darker at the base and externally; fore tibiæ pale yellowish-brown, except for a faint darker tint in the middle; mid and hind femora brown, pale at the ends; mid and hind tibiæ paler at base and in outer half; all tarsi pale, with a dark brown spot at tips. Fore wing dark at the extreme base, then a narrow pale band, then dark again just before the origin of the hind vein, gradually getting paler to almost clear just before the tip of the wing, the extreme tip again becoming darker.

Reticulation.—Distinct and hexagonal on the head in front of a strongly chitinised ridge about half-way between the hind margin of the eye and the posterior margin of the head; cells smallest between the ocelli, larger round the eyes, particularly on the cheeks. Behind the ridge the reticulation is fainter, larger, and more irregular. Within these reticulations, particularly near the hind margin, are a number of minute dark spots. On the prothorax—the anterior half more or less regular hexagonal; behind this the cells are slightly transverse, becoming hexagonal again further back towards the posterior margin; on each side on the posterior half are two slight depressions in which the reticulations are larger and more irregular. On the mesonotum—hexagonal in front, elongate behind, radiating from the middle and the sides of the posterior margin. Metascutum with a triangle of heavy reticulation with its base on the anterior margin and its apex on the hind margin; outside this the reticulations are larger and fainter. Scutellum as in the outer portion of the metascutum, with a heavy curved line on each side near the lateral margin. All femora and tibiæ reticulated. The first two abdominal tergites reticulated right across, the median portion forming an indistinct inverted triangle, the third, fourth, fifth, sixth, seventh, and eighth reticulated at the sides and also a small patch mid-dorsally, leaving an unreticulated patch on each side in the position along which the wings will lie. The ninth tergite more faintly reticulated right across, the tenth segment with very faint larger reticulations. Near the anterior margin of tergites 1-8 is an irregularly curved, symmetrical, heavy chitinised line, which limits the reticulation anteriorly in that tergite. All the sternites with longitudinally elongated faint reticulations and with a straight thickened fore margin.

Head one and half times as broad as long. *Eyes* large and protruding, produced backwards on the upper surface; distance between the eyes one and two-thirds the width of the eye, distance from the eye to the back of the head four-fifths the greatest length of the eye; the frons depressed on each side and raised to a ridge mid-dorsally and anteriorly. *Ocelli* fairly large, close together on a small raised prominence; the anterior ocellus directed straight forward. Two minute ocellar spines on the sides of the triangle and one between each of these and the margin of the eye; about six minute spines arranged along the transverse ridge across the hind part of the head. The *mouth-cone* over-reaching the prosternum, stout and rather blunt. *Maxillary palps* two-segmented, the segments about

equally long, the basal much stouter than the apical, and narrowing a little towards the base; labial palps with one distinct slender segment and probably a very short basal one. *Antennæ* eight-segmented; the first segment short, the second broader and longer, barrel-shaped, narrower at the base; the third with a short pedicel, narrow cylindrical in the basal third, then expanding irregularly, widest at the apical third, then again rapidly constricted to a short apical neck; the fourth shorter than the third, gradually widening from the base to the apical third and constricted as in the third but with a shorter neck; the fifth shorter and narrower than the fourth, and irregularly widening to just before the apex, then slightly constricted; the sixth with the sides rounded, as wide as the fifth but much shorter, with an irregular dark transverse line just in front of the middle; the seventh very short; the eighth very long and slender, with a longer slender hair at the extreme tip. Forked trichomes on the third and fourth segments very long and slender, those on the fourth segment reaching beyond the apex of the fifth. Colour as described above.

Prothorax slightly longer than the head and about half again as wide as long, only quite short spines at its angles and about fourteen minute ones scattered more or less symmetrically over the pronotum. *Pterothorax* stout, rounded. *Legs* normal, fore femora somewhat short. *Wings* fully developed, setæ covering the membrane of the fore wing rather long. On the costa 24–27 spines. On the fore vein six at the base and two near the apex. On the hind vein 7–9. The fringe of the costa starts just external to the white band near the base of the wing. The vein on the hind wing distinct almost to the tip of the wing.

Abdomen normal. Spines on the ninth segment short, reaching to just beyond the tip of the tenth segment. Spines on the tenth segment a little shorter. Tenth segment split mid-dorsally throughout the entire length.

Described from three females found on orchids (*Lalia anceps*) in a greenhouse at Surbiton, near London—one in August, 1913, and two in May, 1914—by Mr. W. J. Kaye.

Type in the author's collection.

This species may be recognised by the form of the banding of the wings, which recalls *H. aulmanni*, Karny, and also by the transverse ridge across the hind part of the head, which is found also in *H. brunneipennis*, Bagnall, to which it is most closely related. It is distinguished, however, from this by the colour of the wings, which, in *H. brunneipennis*, are uniformly dark brown with a small white spot near the base. It is impossible to suggest the original home of *H. errans*, the genus *Heliothrips* being widely distributed throughout tropical and sub-tropical countries. The greater number of orchids in the greenhouse in which they were found came from Central America (chiefly Venezuela), but *H. brunneipennis*, to which it is most closely allied structurally, is only known from Ceylon.

(To be continued.)

GARDEN NOTES.

BY CLAUDE MORLEY, F.Z.S.

(Continued from 'Entom.' xlix, p. 34.)

16. *Dipteron in Burdock*.—On June 15th, 1915, my attention was called to the leaves of this large plant by their peculiarly blotched appearance; this rapidly spread till, on July 3rd, the inside of one leaf, between its upper and lower surfaces, was so nearly consumed that little food remained for the maggots which I discovered subsisting upon it. The leaf was then brought indoors. By the 31st, fifteen Dipterous puparia had emerged and two larvæ were lying upon the bottom of their box; the latter would doubtless have "gone to earth" if left in the garden. On August 6th there were twenty-one of these puparia, and others were concealed in the curled leaf on November 10th. A small Alysiiid *Braconidæ*, doubtless parasitic upon one of these larvæ, emerged on July 31st, 1915; but no flies came out till May 4th, 1916, when two emerged. On the 12th four more were out, and the last was already dead on the 20th. Mr. Collin names a pair *Pegomyia gemipunctata*, Stein, one of the Anthomyidæ. This is the same as *P. conformis*, Mde. (*nec* Fall.); and the latter tells us ('E. M. M.' xx, p. 10) that a single pair was reared during May, 1882, by Peter Inchtald "from the leaves of *Arctium lappa*, upon which the larvæ had fed," pretty certainly in Yorkshire. The statement is repeated in Meade's Descriptive List of British Anthomyidæ, 1897, p. 54, though his earlier record of two females from Windermere in 1874 is omitted. The species is, if not rare, much overlooked; it is not included in my list of 1623 species of Suffolk Diptera, published by the Norfolk Nat. Soc. last year.

17. *Dragon-fly Food*.—It is well known that dragon-flies prey entirely upon living animals; yet observations of this kind seem so infrequent that one is led to the belief that the species of insects captured by them is very rarely ascertained. It is, then, of interest to note that the common *Pyrhosoma nymphula*, which annually appears in the garden towards the end of April, was holding a *Nemoura variegata* between its front legs and in the act of devouring it early last May. On being frightened it flew off, without relinquishing (as would an Empid) its prey.

18. *Parasites of Hypera runicis*.—W. B. Davis, Esq., has recently sent me a collection of *Hypera runicis* and its parasites, all bred from the cocoons of the former at Stroud in Gloucestershire, which should not go unrecorded, because so very few parasites have been bred from this genus of weevils (*cf.* 'Tr. Ent. Soc.' 1907, p. 44, et 1911, p. 478). The specimen of the host sent me emerged from its own "cocoon on *Eupatorium*"; and two similar cocoons yielded distinct species of Ichneumonidæ. The one was apterous, a female *Pezomachus kiesewetteri*, which

appeared on May 29th, since which date, Mr. Davis tells me, another has emerged. The other was winged, and proves to be an Ophionid, *Canidiella subcincta*, Grav., which I have rather doubted being a beetle parasite in my British Ichneumons; such is thus proved to be the case. The later emerged on May 30th. *Pezomachus* is well known to (at least, sometimes) be hyper-parasitic through another parasite, and it may here have been so also, though there is at present nothing to confirm such a circumstance.

19. *A Disappointed Bug*.—Aphidides have been no more than normally numerous this year, though they are always all too common on rambler roses. On one of these was a nymph of *Anthocoris sylvestris* on July 18th, and an examination showed him to be tickling a female of *Siphonophora rosæ* with his rostrum. But the Aphis was already dead and its skin indurated by the enclosed *Aphidius* larva, who had so thoroughly done its work that the bug poked in vain with its rostrum to find a weak spot. First it tried point blank upon the dorsum; next the sides were tackled; and finally the rostrum was pushed as far as it would go beneath the Aphis, while *Anthocoris* practically stood upon his head in his zeal. All was vain; and with a drooping anus the bug sought pastures new. His persistency seemed, however, to suggest that times were when he had had good meals from similar objects, and I accordingly accounted him a friend to be fed on unparasitised Aphids.

20. *The Oviposition of Fœnus jaculator*, L.—Very little of the habits of this genus of Hymenoptera, usually placed in the Evaniidæ, is known; nor have I seen the present species here before in the course of a dozen years' residency. In the sixth of these notes ('Entom.,' 1914, p. 217) is the account of a dead willow; and at this trunk on July 25th last I detected *Lissonota femorata*, *Perithous mediator*, and *Nematopodius formosus*, all ichneumons bent on laying eggs in Fossors' nests. With them was a single *Fœnus*, whose apically white-banded terebra was as long as the whole body. It was minutely investigating all the Fossors' holes in the trunk by flying slowly and steadily up and down, obliquely and across, holding its body and terebra horizontally the while, and its anterior legs tucked close to the thorax and the hind ones depending nearly vertically. The antennæ were thrust straight forward from the slightly upturned head, and it was perfectly evident that a touch from them upon the entrance to the burrows was sufficient to ascertain whether they were or were not suitable for its purpose. Two or three times the insect settled, detached its spicula from the terebra, and thrust the former its full length into a boring, while the valvulæ remained at right angles to the trunk. Once an already sealed boring was discovered, and this had to be pierced, a process accomplished after some hard pushing, without any of the

“bradawl” action recorded in Pimplinæ. In all the insect spent fifteen minutes flying (from 3 to 7 feet) about this trunk, keeping to the very hot, sunny side only, and taking no notice whatever of such bees, fossors and Diptera—*Sarcophaga carnaria*, etc., basking on the wood—as came in its way. Giraud claims ('Ann. Soc. Ent. France,' 1877, p. 417) to have bred *F. jaculator* from *Osmia tridentata*. I have little doubt that *O. Leiana* was the host in the present instance.

(To be continued.)

Monks' Soham, Suffolk.

NEUROPTERA AND ODONATA FROM SALONICA.

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

ON June 10th, 1916, I received through Mr. A. E. Gibbs fourteen insects belonging to eleven different species, taken by Mr. P. J. Barraud near Salonica. The insects in themselves were very interesting, and coming from such a locality at such a time a still greater interest attached to them. As so many species were represented amongst fourteen insects, it would appear that Mr. Barraud had carefully selected the specimens he took. They are as follows:—

NEUROPTERA.

**Nemoptera sinuata*, Oliv., one distinctly marked specimen of this singular insect with long tail-like hind wings, taken near Lembet Camp on May 26th.

**Ascalaphus macaronius*, Scop., var. *kolyvanensis*, Laxm., one male of this very beautiful variety captured near Lembet Camp on May 23rd. *Kolyvanensis* is brilliant yellow and black in colour, except for part of the fore wings, which is hyaline (fig. 1).

ODONATA.

Libellula fulva, Müll., one female, taken on April 29th near Lembet Camp. The wings possess the small dark spot at the tip.

**Orthetrum brunneum*, Fonsc., one male, that had not attained its blue coloration, taken on April 30th near Lembet Camp.

**Gomphus schneiderii*, Selys (see 'Revue des Odonates,' p. 292), in rather teneral condition, captured near Lembet Camp on May 1st. This insect resembles a small *Gomphus vulgatissimus*, Linn., with yellowish colour on the under side of the thorax. It may be only a form of that insect, rather than a distinct species.

**Anax parthenope*, Selys, one female, taken April 30th near Lembet Camp. The brilliant colour had gone, but, although a female, the white accessory membrane and faint frontal triangle attest the species.

* These species do not belong to the British fauna.

Æschna isosceles, Müll., two with yellowish wings, taken near Lembet Camp—a female on April 30th and a male, at an altitude of 400 ft., on May 1st.

**Epallage fatime*, Charp., one teneral male, taken on May 6th near Lembet Camp. The hint of dark colouring at the tip of the wings is very slight indeed.

Calopteryx splendens, Harris, a teneral male taken on May 12th and a full-coloured male on May 21st near Langaza Lake. They are large specimens, with somewhat broad wings and the blue band reaching nearly to the tip.



Fig. 1.—*Ascalaphus macaronius*, Scop., var. *kolyvanensis*, Laxm.

Platycnemis pennipes, Pallas, a male and a female of the var. *lactea* taken on June 6th near Lembet Camp.

Agrion pulchellum, Lind., a male taken on April 30th near Lembet Camp.

Kingston-on-Thames, October 10th, 1916.

A NEW GENUS OF OMPHALINE EULOPHIDÆ FROM NORTH AMERICA (HYMENOPTERA).

By A. A. GIRAULT.

THE following remarkable genus has the habitus of *Perilampus*, and could easily be mistaken for a member of that genus.

Miromphalomyia, n. gen.

Female.—Form short, stout. Head thin, the occipital margin of the vertex sharp, the ocelli in a curved line, the scrobes distinct, short, forming a short triangle, from the apex of which runs a long narrow median sulcus to the cephalic ocellus, the head wider than

* These species do not belong to the British fauna.

the thorax, sublenticular, the antennæ inserted a little ventrad of the ventral ends of the eyes, 12-jointed with two ring-joints, the club 4-jointed, its terminal joint cylindrico-conical (like a long nipple), itself terminating in a long, colourless spine, the rest of the club ovate and as long as the proximal three funicle joints combined; scape long and slender, much longer than the club; pedicel over twice longer than wide, longer than funicle 1. Second ring-joint large. Genal suture absent. Pronotum barely visible from above, the parapsidal furrows incomplete, distinct, straight, along caudal half or thereabouts. Scutellum from laterad with its apex projecting over the propodeum, the latter with a median carina and no others but the latero-caudal margins carinated (forming a long, curved, "lateral" carina ending just laterad of the spiracle and which branches over the caudal coxa). Scutellum beehive-shaped. Axillæ advanced, widely separated. Caudal tibial spur single, short and stout. Marginal vein about a third shorter than the submarginal, the latter broken only in regularity and not very distinctly then (about as in *Secodella*, with which the genus is allied). Post-marginal vein distinct, a mere spur, the stigmal of moderate length, with a distinct neck and knob, four times the length of the post-marginal. Discal cilia of the fore wing of moderate density, normal, short, the marginal cilia short but not extremely so (as to be indistinct). Tarsi 4-jointed. Abdomen cordate, smaller than the thorax, glabrous, segment 2 occupying about a third of the surface, its caudal margin straight, the other segments much shorter but the last (6) longest of these and with a slight scaly sculpture; abdomen widest at apex of segment 2, sessile.

Miropophalomyia perilampoides, n. sp. Genotype.

Female.—Length, 1.50 mm. Black, submetallic, the head dark æneous, the wings hyaline, the venation brown; tarsi and base and apex of tibiæ yellowish, scape and pedicel and ring-joints reddish-brown. Funicle 1 longer than wide, 2 subquadrate, 3 and 4 subequal, a half wider than long; clubs 1 and 2 subequal to funicle 4, 3 conical with a wide base, 4 linear (thrice longer than wide and with little width). A line of 3 to 4 setæ on disc of the fore wing under the marginal vein and not especially near it. Thorax coarsely punctate, the head, postscutellum and propodeum with smaller (but as dense) scaly punctures. Tarsal joints not elongate. Median carina of propodeum dividing at apex and running along the caudal margin to join the latero-caudal carinated margins. A round fovea on propodeum at cephalic margin, more than half way to the spiracle from the meson. Lateral ocellus distant from the eyes.

Described from one female from the Chiric Mountains, Arizona (H. G. Hubbard), and labelled "*Hubbardiella arizonensis*, Ashmead. Catalogue No. 12733, U.S.N.M. ♀ type.

Type.—As above, the female on a tag, a caudal leg, the antennæ and a pair of wings on a slide.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

(Continued from p. 232.)

Caia, Bouché.*

To all lepidopterists who have collected larvæ of *Arctia caia* and *A. villica* with the idea of breeding varieties, this species is only too well known. It may be distinguished from its near relatives by the large ventral valve and subexserted terebra of the female, and also by the belly being testaceous at the base.

Cocoons dirty white, with a very faint pinkish tint, not attached to the host as in *insidens*, but usually scattered owing to the host moving about during the time the parasite larvæ are emerging. Colthrop has given me several broods obtained from larvæ of *A. caia* taken in Surrey, Sussex, and Kent, and I have also broods from Cheshire. In June, 1908, I bred large numbers from the same host taken at Canford Cliffs, Bournemouth. The insects usually emerge from their cocoons from the middle to the end of June. On account of the cocoons being scattered it is somewhat difficult to estimate the usual number of insects in a brood, but I believe it to be very considerable; indeed, Bignell records as many as 180.†

Gracilis, Curtis.‡

Among the insects obtained by Harwood from the Fitch collection are two females without data, but labelled "gracilis." They agree with Haliday's description excepting that the trochanters are not dark but testaceous. The terebra slightly surpasses the apex of the abdomen.

Nothus, Reinh.§

On June 26th, 1911, I bred, from a small larva of *Phigalia pedaria* three insects, two male and one female, which I must refer to this species, as the wings are somewhat dusky and the second segment of the abdomen is shorter than the third. The second abdominal segment is impressed with converging curved lines as in *difficilis*, and the terebra slightly surpasses the apex of the abdomen.¶ My insects agree with Marshall's description excepting that the trochanters are not entirely dark but partly testaceous. Cocoons pure white.

The species is very close to *gracilis* and may very possibly be the same.

* 'Naturg.', 1834, p. 403.

† 'Trans. Dev. Ass.', xxxiii, p. 657.

‡ B. E., 321.

§ M. S., see Marshall, 'Trans. Entom. Soc.', 1885, p. 187.

Insidens, Ratz.*

Ratzburg's description of this species and its habits is quite unmistakable. Unfortunately Reinhard ('Berl. ent. Zeit.,' 1881, p. 35) confused it with *difficilis*, Nees, *juniperatae*, Bouché, and other species, his synonymy being accepted by Marshall. After studying a very large amount of material I am convinced that the species is quite distinct. I give below a description taken from forty-four specimens in my collection :

Black ; palpi pale ; belly at the base fusco-testaceous ; legs rufotestaceous ; fore and middle femora black except at apex, hind femora entirely black ; hind tibiae fuscous at apex, middle tibiae also sometimes fuscous at apex. Wings rather dusky, stigma fuscous. Mesothorax punctulate, shining ; scutellum smoother, also shining ; mesopleurae smooth and shining ; metathorax rugulose. Abdominal segments 1 and 2 rugulose, sometimes narrowly edged at the sides with testaceous, 1 longer than wide with subparallel sides, 2 almost as long as 3, subcarinated and with two subobsolete converging lines ; other segments smooth and shining. (In this, as in other species, the second segment is longer in the male than in the female.) Hind coxæ above punctulate, shining. Spurs of hind tibiae stout, longer than half the metatarsus. Terebra very short. Length $2\frac{1}{2}$ - $3\frac{1}{4}$ mm., expands 6-7 mm.

The cocoons are yellowish buff, but soon turn almost white when exposed to light, and are attached to the host as described by Ratzburg (fig. 1). When the host is a practically hairless caterpillar, the cocoons usually fall off, but with other hosts, such as *Pacilocampa populi*, they remain attached until the imagines have escaped. I have on more than one occasion taken a living but unhealthy larva of *P. populi* carrying on its back fifteen or sixteen empty cocoons of this parasite; and a larva of *Asteroscopus sphinx*, which was confined in a pill-box, was so lively at the time that its parasites emerged from their cocoons that when they settled on its body it showed every sign of expecting to be again "stung," throwing its head round and "jumping" in the usual way. I did not, however, see any of the parasites attempt to oviposit. A curious thing occurred with regard to this particular larva of *A. sphinx*, for although the parasite larvæ evacuated the host on May 30th and 31st and the imagines emerged from their cocoons on June 8th and 9th, yet on June 10th I was surprised to notice a single parasite larva (I believe of an *Apanteles*) emerging from the unfortunate caterpillar. This single parasite was evidently unhealthy, as it failed in its attempt to spin up, and both it and the host died on or about June 14th. I have obtained broods of this very common species from the following hosts: *Phigalia pendaria*, June 15th, 1908, June 26th, 1910, and other dates; *Amphidasys strataria*, July 6th and 22nd, 1911, and many other times; *Himera*

* 'Ich. d. Forst.,' i, p. 72.

pennaria, July 10th, 1910; *Gonodontis bidentata*, October 19th, 1913; *Metrocampa margaritaria*, March 31st, 1915 (in this case the parasite larvæ left their host on October 14th, 1914, so that it would seem that the winter is passed in the larval state within the cocoon, although I have also bred the insect in November from larvæ of *M. margaritaria*); commonly from larvæ of *Pœcilocampa populi* in early June (quite 50 per cent. of the full-grown larvæ of *P. populi* obtained by beating in the New Forest usually produce this parasite); very commonly from full-fed larvæ of *Diloba cæruleocephala*; *Miselia oxyacanthæ*, June 5th, 1911; *Asteroscopus sphinx*, June 8th, 1911; and *Catocala promissa*. May 25th, 1912.

The broods usually consist of from eleven to sixteen individuals, though I have obtained as few as three from *M. margaritaria*.

Difficilis, Nees.*

Nees von Essenbeck himself considered his *difficilis* to be a synonym of *caia*, Bouché,† and it is difficult to understand why Reinhard should have disagreed with this. At any rate, the insect with which we are now dealing, *i. e.* that redescribed by Reinhard ‡ as *difficilis*, Nees, is certainly very distinct from *caia*.

Differs from *insidens* in having hyaline wings and a much shorter second abdominal segment.

This is the parasite of *Bombyx rubi*, many of the half-grown larvæ of the host falling victims in August, while often two-thirds of the full-grown caterpillars succumb in October. The parasites of the later generation pass the winter as larvæ within their cocoons, the imagines emerging in April. That there is at least one generation in the year which cannot prey on *B. rubi* is certain, and I would suggest *B. quercus* or *B. trifolii* as likely hosts.

The cocoons are flesh-coloured and not attached to the host as in *insidens*, though they may occasionally be seen entangled among the long hairs of the caterpillar. Marshall gives a very long list of other hosts for this species, partly copied from continental authors and partly recorded from Bignell's collection, and tells us that the cocoons are often buff-coloured or yellow. Although I have obtained such cocoons from some of the hosts mentioned by Marshall, I cannot think that the makers belong to this species. If not an undescribed species, which I think probable, they are, I believe, more likely to be pale examples of *insidens*. Probably a study of the male genitalia would settle this point. Bignell, writing after Marshall had published the lists of hosts in 'Trans. Entom. Soc.,' gives only *B. rubi* as the host.§

* 'Mon.,' i, 182.

† 'Mon.,' ii, 402.

‡ 'Berl. ent. Zeit.,' 1881, p. 35.

§ 'Trans. Dev. Ass.,' xxxiii, p. 657.

Picipes, Bouché.*

Black; base of belly testaceous; palpi pale, excepting first joint, legs rufo-testaceous; coxæ black; fore femora except at apex, middle femora except at extreme apex and hind femora entirely black (occasionally the hind femora are very narrowly testaceous at apex) middle and hind tibiæ dark at apex; hind tarsi somewhat infusate. Wings hyaline, stigma and attached nervure dark fuscous, other nervures much lighter, beyond the second cubital cell they are decolorous. Body somewhat shining; metathorax finely punctate; scutellum smooth; metathorax rugulose. First segment of the abdomen almost smooth with scattered punctures, lateral margins piceous, truncate, about twice as long as its greatest width; second segment shorter than third, with two converging irregular impressed lines enclosing a subtriangular, shining, subrugulose space; the rest smooth and shining. Terebra very short, not surpassing the apex of the abdomen. Hind coxæ smooth. Spurs of hind tibiæ slightly shorter than half the metatarsus. Length $2\frac{1}{2}$ -3 mm., expands $5\frac{1}{2}$ -6 mm.

I am aware that Bouché gives the impressed lines as being on the *first* segment of the abdomen, which must surely be an error, unless he refers to the sides of the "shield." In spite of this I think that I have correctly identified my specimens, particularly as Bouché bred the type from *Pionea forficalis*.

The species is very similar to *abjectus*, but may be easily distinguished therefrom by the much longer first abdominal segment; from *octonarius* it differs in the color of the legs and in other particulars.

Appears to be a not uncommon parasite of the larva of *Pionea forficalis*, from which I have bred it in May and July; the parasites coming from the autumn brood of the host pass the winter within their cocoons and emerge the following May. I have obtained broods of from three to thirteen individuals. The cocoons are constructed within the earthen cocoon made by the host beneath the surface of the ground, and are pure white. The larvæ of *P. forficalis* are only too well known as garden pests, and, no doubt, their numbers are greatly reduced by this useful parasite.

(To be continued).

NOTES AND OBSERVATIONS.

EFFICIENCY OF SPRAYING.—The discussion in the September issue of the 'Entomologist' (p. 210) on the efficiency of spraying, under the title "A Plague of Caterpillars," is interesting to the American economic entomologist familiar with conditions in the North-eastern United States, where extended areas have been ravaged and many thousands of trees killed or threatened with destruction by such well-known pests as the Gipsy Moth, *Porthetria dispar*, Linn., the Brown-tail Moth, *Euproctis chrysorrhæa*, Linn., and the Elm-leaf Beetle, *Galerucella luteola*, Mull., to mention only three important tree pests. The first two thrive on a variety of native trees, and are

* 'Naturg.', 1834, 158.

serious menaces to forest lands, while the last is mostly a pest of shade and street trees. The application of an arsenical poison, usually arsenate of lead, has been in vogue for over a decade, and the results, wherever the infestation was sufficiently serious to warrant treatment, have been more than satisfactory in all cases where the application was thorough. There has been no lack of "controls," since unsprayed trees, groups of trees, or areas, in some instances hundreds of acres in extent, have stood adjacent, and in almost every case there was not the slightest difficulty in distinguishing between the sprayed trees, with an abundance of foliage frequently almost uninjured, and the unsprayed trees, with badly mutilated leaves and in not a few cases almost entire destruction of the foliage. Sharp demarcation between well-sprayed and poorly treated foliage has been evident in many instances on individual trees. Much of this has been possible only by the development of sufficiently powerful apparatus so that there would be a quick and uniform distribution of the poison. The high-powered outfits now used for much forest and shade tree work in the North-eastern United States permit the thorough spraying from the ground of even the largest maple or elm within two or three minutes. The work is so thorough that it is very difficult to find leaves which have not been fairly well covered with the poison, while those entirely untouched are almost non-existent. The progress made along these lines is remarkable, and can be explained only by the fact that insect ravages were so serious as to necessitate drastic action of some kind. There are some observations in the above-mentioned article upon the probability of destroying birds by spraying. There is no section of the world where the application of poison has been more general and extensive during the past decade than in Eastern Massachusetts, a locality where tons of arsenates have been applied to orchard, shade, and forest trees annually. In spite of this work there has been no undoubted evidence adduced of the destruction by poison sprays of any number of birds in this area. There is no question but that plagues of caterpillars disappear automatically owing to natural causes of one kind or another, and, in certain cases, spraying of more or less thoroughness may wrongly be considered the decisive factor. This is especially likely to occur in the case of outbreaks by native insects. This, however, is very different from the serious annual devastations mentioned above which have occurred in so many New York and New England localities, and here at least there can be no question as to the marked benefits accruing from the judicious use of insecticides.—E. P. FELT, State Entomologist; Albany, N.Y., September 29th, 1916.

THE OVIPOSITION OF CALLOPHRYS (THECLA) RUBI.—On May 20th last a female of the above species was observed on the open North Downs, some distance from its usual bushy haunts, at about 11 a.m. She was seen to be egg-laying, the plant chosen in this case being *Lotus corniculatus*. The amount of leisured, fastidious, and painstaking choice shown by the butterfly thus engaged, surrounded as she was by acres of the *Lotus*, was very striking. The plant was in various stages of growth, from that of full flower to short undeveloped heads containing minute and scarcely perceptible flower-buds sunk below

the surrounding leaflets, and it was in the centre of these heads, and as far down in them as she could reach, that the butterfly in each case deposited her egg. This would appear to ensure a provision of the developed flower-buds for the subsequent larva, as I have found that in captivity it is the flower only (when this species is provided) that is consumed by the caterpillar. The act of deposition was preceded and accompanied by the peculiar rotating motion of the hind wings so often noticed in resting Lycænids, reminding one of two juxtaposed "eccentrics" on a piece of machinery, and it was not until a very thorough and searching probing, with the tip of the abdomen, over and into the entire surface of the flower-head had been undertaken that the egg was finally laid. In some cases, after careful exploration, the insect would apparently think better of it, and leave the selected head of *Lotus* with her egg unladen, and seek a fresh one, and that without being disturbed in any way in her duties. There was no attempt on the butterfly's part to alternate these activities with any attention to honeyed flowers during the twenty minutes or so that she was under observation; in no case was more than one egg laid upon a selected flower-head. Years ago I have reared *Thecla rubi* from the egg upon *Lotus* flowers, but until now had only found the eggs in Nature laid upon *Rhamnus catharticus* (leaves and base of flower-umbels) and in the axils of the young shoots of gorse.—R. M. PRIDEAUX; Brasted Chart, Kent.

PAPILIO MACHAON AB. FLAMMATA, BLACHIER.—In the 'Bulletin de la Soc. lépidopt. de Genève' (vol. iii, fasc. 1, August, 1914), the late M. Blachier described under the name of ab. *flammata* (pl. ii, fig. 7), a form of *P. machaon* in which the intraneural spaces 3 and 4 are adorned on the hind wings with flame-like splashes of orange-red within the black ante-marginal band corresponding with the similarly placed normal rufous markings on the underside. I have an example of this pretty form in my collection taken by Miss Margaret Fontaine, or one of her sisters, near Bastia in Corsica, May, 1894. In Switzerland it appears to be rare. M. Blachier mentions one example from Tougues near Geneva, and the excellent figure is of a specimen in the Museum captured at Crassier, Vaud, by the late M. Loriol. I have never come across it in my many years collecting on the Continent. In all these three recorded cases the *machaon* are of comparatively small size. I may add that from a series bred this year from Mr. Flöersheim's Wicken Fen stock, of fourteen superb examples only two are without the red spots well developed on the costal lunule of the hind wings (cp. J. Jenner Weir, 'Entomologist,' vol. xxiv, p. 105, and W. Farren, 'Entomologist's Record,' vol. iv, pp. 100-108). It would be interesting to hear whether ab. *flammata* has occurred in Britain.—H. ROWLAND-BROWN; October 8th, 1916.

SOME RHOPALOCERA OF WEST JAVA.—No wind, and a bright sun, the morning shall be fine for butterfly-hunting; this afternoon it shall rain, as every afternoon. Around the "Duar" trees in the garden *Delias belisama* is already to be seen in dozens, easy to be caught, flying slowly and often resting. Along the hedges of the roads *Terias hecabe* and several Lycanidæ do not even attract our attention, they are so numerous! But we arrive at the "sawahs,"

rice-fields, and we immediately meet the cosmopolitan *Pyrameis cardui*, then *Junonia asterie*; of these we catch all the specimens we can to examine them, and to-day to release them all, for the aberration with the spots under reduced to a very small size are here, in West Java, very rare. I have had hundreds of *asterie* in hand, and but two or three of the aberration. *Junonia atlites* and *Neptis matuta* are here also plentiful. Bees and wasps are busy on every side, and a blood-red libellule settles itself on my bamboo stick and remains immovable. We leave the rice-fields and enter under-wood. The path is in deep shadow, and *Lethe godana* makes its appearance; it is not a shy species, and can sometimes be caught by the hand. Our path follows a ravine, and where the trees make place for shrub we can see, too low to be attained, three green *Papilios* flying. Are they *batycles*, *doson*, or *evemon*? Only when in the net can this be ascertained. These *Papilios* are our despair; their flight is so rapid and so erratic, and they choose such precipitous abodes that to catch one ourselves is nearly a wonder. My native collectors, however, seem to have more luck; it is true that they can climb anywhere. I am just bagging a *Euploea leucostictus* and my friend an *E. basilissa*, when a furious bark from our fox-terrier makes us haste forward. A long thin green snake, with a red blotch under the throat, lies on the road, and we must use the wrong end of our stick to catch that prey. It is a lovely reptile, but we kill it without remorse; it is one of the most dangerous. Continuing our walk, we arrive at the bottom of the ravine, and to cross the stream is not easy; the water is pretty high; but on a sandy patch on the other side are a dozen or so of *Cyrestis lutea*, so off shoes and stockings and we wade; but the net is no sooner moving in the direction of the yellow *Cyrestis* than the whole troop takes flight to alight on another sand patch—on the other side of the water!! After playing us so two or three times they are left in peace. I see better game, and after five minutes of careful watching I catch a *Libythea myrrha*, the second specimen in five years. The first specimen was caught in East Java, where they were equally rare and equally difficult to reach. An admiring exclamation makes me look down: following the water up-stream, but too high above it to be caught, comes in leisurely, majestic flight *Ornithoptera amphrysus* ♂. We follow it with longing eyes as far as possible, and notice at the same time that heavy clouds are rolling down the mountain side. Better go back! We look neither right nor left, for storms come fast, and yet, we cannot resist that temptation—from right under our feet flies a jewel of blue, to alight a few yards further and tempt us again. A try—missed; a flight of another ten yards, another try—caught this time. *Amnosia decora* ♂ in all its beauty. No insect life more to be seen; the thunder rolls menacingly and the sky is black. But yes, on our doorstep, on a palm, two *Elymnias* resting, out this morning evidently, their empty chrysalides hang still near them.—M. E. WALSH; Soekaboemi, Java, June 24th, 1916.

ARGYNNIS PAPHIA IN SEPTEMBER.—In South Devon this butterfly is, I think, not infrequently met with in September, especially in

cold summers, when its emergence may, presumably, be delayed. On September 22nd, 1888, I record two specimens from near Ashburton; and this year, whilst spending a fortnight on the moor, in late August and early September, a few miles south of Chagford, *A. paphia* was of frequent occurrence and in very fair condition in this district, being a lane and roadside species, and not confined to woodland. The weather at that time was very unfavourable for butterfly activities, or more would doubtless have been seen. Amongst other kinds, by far the most abundant was *Pararge megera*, a refreshing sight for anyone coming from this part of Kent, where it is rarely or never observable. *P. egeria* was unusually scarce—probably it was between the broods; *Vanessa io* quite common; *Pyrameis atalanta* scarce; and I have no record of *P. cardui* for the entire season.—R. M. PRIDEAUX; Brasted Chart, Kent.

AMORPHA (SMERINTHUS) POPULI: SECOND BROOD.—On May 23rd a friend brought me a pair of *Smerinthus populi*, the female depositing a large number of ova. These eventually hatched, and the larvæ I gave away, with the exception of about twenty. These were sleeved on growing poplar, and were full fed by mid-June, the last pupating on July 3rd. The pupæ were kept in the garden in a box covered with gauze, but otherwise quite open to the air and weather. I did not expect any imagines to emerge until next year, and I was therefore surprised to note a fine male in the box on August 12th, and during the fortnight following nineteen others put in an appearance. The insects were all perfect, but were slightly undersized, the sexes being about equal. The most curious thing in connection with the matter was that the original pair were of a light brown colour with a pinkish tinge, while their progeny were of a slaty grey. I have bred *S. populi* a number of years, but this is the first time that a second brood has occurred with me.—J. H. GRANT; Ward End, Birmingham.

PLUSIA MONETA IN BIRMINGHAM DISTRICT.—I am pleased to be able to record that this beautiful *Plusia* appears to be becoming increasingly common around East Birmingham. I noted the first this year on June 21st hovering over the *Delphinium* border in my garden, and four days later I counted over a dozen at the same flowers. I netted two or three which were in fine condition. For about a fortnight *P. moneta* was the commonest insect at dusk, and occasionally two or three would be hovering or resting on the same flower spike.—J. H. GRANT; Ward End, Birmingham.

EREBIA BLANDINA AND LARENTIA FLAVICINCTATA AT GRASSINGTON.—On August 5th last I had an opportunity of running over to Grassington, and, as the day proved an almost ideal one for butterflies, I had my first chance of seeing *Erebia blandina* fully out and in abundance in its old haunts in the grassy glades of the High Wood. It was in almost perfect condition, and I was enabled to get a nice range in both males and females. Not many moths were about, but I kicked up one, *Stilbia anomala*, from a heap of stones, and also found *Larentia flavicinctata* in its usual places among

the rocks, well up on the hills, all of the light Yorkshire form.—W. G. CLUTTEN; Burnley.

NOTE ON *DIANTHÆCIA CARPOPHAGA*.—On the East Coast between Harwich and Aldeburgh I found ova of *Dianthæcia carpophaga* on *Silene maritima* during June, 1915. They duly turned to pupæ, and I thought they intended to lie over as they did not show any signs of emergence until July-August this year. The last moth appeared on August 29th. The imagines are all of the light-coloured form similar to the Sussex and Kent coast races, except one which approaches the inland form. They passed most of their existence in an old tin. They were the only insects I had time to observe. I should be interested to know if this form has previously been recorded from Suffolk.—H. M. EDELSTEN; C.P.O., R.N.A.A.S.

NOTES ON THE LIFE-HISTORY AND VARIATION OF *EUCHLOË CARDAMINES*.—Under this title an elaborate paper by Harold B. Williams, LL.D., appears in the recently published 'Transactions of the London Natural History Society for 1915.' One is apt to regard *E. cardamines* as a species little prone to aberration, so that it may occasion some surprise to learn that, apart from geographical races, there are about two dozen named forms. Ten of these refer to the male sex only, four to the female sex, whilst in the remaining ten the phase of variation is common to both sexes. Several of these forms are found in our islands. Of the eleven local races two are credited to the British Isles; these are *hibernica*, Williams, and *britannica*, Verity. Some twenty-five instances of gynandromorphism are mentioned with details, and reference to record cited. Altogether the paper is a valuable contribution to the literature of a fascinating subject.—R. S.

"COLEOPTERA ILLUSTRATA."—We have received the first number of vol. i of a work published under the above title by Mr. Howard Notman. Fifty species of Carabidæ are here represented, each figure on a separate plate, and all figures uniform in size. The name of the species represented appears on the plate, also sex, size, and distribution are mentioned. There is an index to genera and subgenera, and one to species and subspecies, but there is no preface, introduction, or indeed anything in the way of letterpress other than that adverted to. The numbers are published at one dollar each, and may be had from the Author, 136, Joralemon Street, Brooklyn, N.Y.—R. S.

GALL MIDGES OF STATE OF NEW YORK.—A third part of "A Study of Gall Midges" is published as an Appendix to the 30th Report of the State Entomologist on Injurious and other Insects of the State of New York ('Museum Bulletin' 180, January, 1916). This instalment, which deals with the Tribes Itonididæ and Oligotrophiariæ comprises 162 pages of letterpress with figures in the text, and 18 plates.—R. S.

DAPHNIS (*CHÆROCAMPA*) *NERII* AT FOLKESTONE.—I took a specimen of *C. nerii* on the Leas undercliff at Folkestone on August 30th. It was resting on the trunk of a small poplar. With the exception of a small amount of fringe missing the insect is in very fine condition.—G. B. OLIVER; Tettenhall, Wolverhampton.

WICKEN FEN.—The Council of the National Trust appeal to naturalists interested in the preservation and upkeep of Wicken Fen to assist to defray the expenses of the Watcher who guards the property against abuse, and performs the duties of Forester generally. As entomologists, we are, perhaps, more concerned for the integrity of the fenland than any other workers in the field of Science. I am asked, therefore, to invite subscriptions and donations for the purpose indicated. The amount required is not large, and I shall be happy to receive contributions, however small. Cheques and postal orders should be crossed "London and South Western Bank, Bloomsbury Branch, Wicken Fund," and made payable to me.—H. ROWLAND-BROWN; Hon. Treasurer for Wicken Fund, Oxhey Grove, Harrow Weald.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, June 7th, 1916.*—The Hon. N. C. Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.—Miss Alice Balfour, of Whittinghame, Prestonkirk, Scotland, and 4, Carlton Gardens, S.W., was elected a Fellow of the Society.—The death of Mr. F. Enock was announced.—The President read a letter from Mr. H. Rowland-Brown, inviting a continuance of subscriptions to the upkeep of Wicken Fen.—Dr. F. A. Dixey exhibited specimens of insects collected by him during the visit of the British Association to Australia in 1914.—Mr. G. Talbot exhibited a bred family of *Papilio dardanus*, Brown, and some rare South American butterflies.—Prof. Poulton read a letter written by the late Colonel N. Manders on the discussion following his paper on March 3rd, 1915, written just before he started for the Dardanelles, where he gave his life for his country.—The Rev. F. D. Morice exhibited a worker of the social wasp *Polistes gallicus*, L., taken by Mr. J. W. H. Harrison on the day after August Bank Holiday, 1915, at Wolsingham, in the hilly west of Co. Durham, at about 1200 ft.—Dr. Chapman showed some dried leaves of birch and hawthorn, with the egg-pockets of *Cimbex sylvarum* and *Trichiosoma tibiale* respectively, from which the larvæ had hatched.—Mr. Donisthorpe announced that on some of our battleships the men were much interested in observation nests of ants; and it was found that the ants were entirely unaffected by the firing of the great guns.—The following papers were read: "On new and little-known *Lagriida* and *Pedilida*," by G. C. Champion, F.Z.S.; "On certain forms of the genus *Acræa*: a reply to M. Ch. Oberthür," by H. Eltringham, D.Sc., M.A., F.Z.S.

Wednesday, October 4th, 1916.—Commander J. J. Walker, M.A., R.N., F.L.S., Vice-President, in the chair.—Mr. Howard M. Peebles, 13, Chesham Street, S.W., was elected a Fellow of the Society.—A vote of condolence with Mrs. Trimen, on the death of her husband, a former President of the Society, was passed unanimously.—Mr. P. A. Buxton called the attention of the Society to some remarkable work published in the Ann. Inst. Pasteur (Paris) for July and August, 1916. A plague of the locust (*Schistocerca peregriana*) has

been successfully stayed in Morocco by infecting a few thousands with the cocco-bacillus of a fatal enteritis.—Mr. Donisthorpe exhibited ♂ ♂, ♀ ♀ and ♀ ♀ of *Myrmica schencki*, Emery, discovered at Sully, Glamorganshire, by Mr. Hallett last year, and identified and introduced as British by himself.—Mr. L. W. Newman exhibited two leaden-coloured ♂ ♂ of *Agriades thetis* and a curious ♂ having part of the wings leaden colour and part normal blue; all taken on the wing in September, 1916, in East Kent.—Mr. O. E. Janson exhibited a male specimen of *Carabus catenulatus* showing arrested development in the left posterior leg; an example of *Tetropium gabrieli* in which the right antenna consisted of only eight joints and bore a basal branch of three joints; a specimen of *Dorcadion egregium* from Mongolia, exhibiting a very rare instance of an almost symmetrical duplication of a limb, both of the antennæ bearing a short three-jointed branch arising from the large basal joint, the antennæ themselves being otherwise normal.—Also, on behalf of Mr. F. W. Frohawk, two remarkable varieties of *Arctia caja* reared this season from larvæ from the Scilly Islands.—The following papers were read: "Gynandromorphous Lepidoptera," by E. A. Cockayne, M.A., M.D., F.E.S.; "The Rein-sheath in Plebeiid Blues: a correction of and addition to Paper vi," by T. A. Chapman, M.D., F.Z.S.; "Resting Attitudes in Lepidoptera: an example of Recapitulation in Habit," by the same; "The Evolution of the Habits of the Larva of *Lycæna arion*," by the same; "*Micropteryx* entitled to Ordinal Rank: Order Zeugloptera," by the same.—GEORGE WHEELER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*September 14th.*—Mr. Hy. J. Turner, F.E.S., President, in the chair. The meeting was spent in a consideration of *Pararge ægeria*. The President introduced the subject with a series of notes on the following points: I. Original description. II. Enlarged and modified subsequent descriptions. III. History of the nomenclature. IV. Times of appearance. V. Evidences of growing scarcity in this country. VI. Experiments in breeding. VII. Variation. (1) General characteristics. (2) Lines of variation. (3) Sexual Variation. (4) List of aberrations (striking aberrations are very rare). (5) Geographical races. VIII. Suggested questions for further investigation.—Mr. Gibbs discussed some of the same points, especially referring to his own observations of the growing scarcity of the species.—Mr. Platt-Barrett gave his experiences of the species for the past fifty years.—Dr. Chapman, Messrs. Gibbs, Curwen, Platt-Barrett, Leeds, and Turner exhibited the various forms from the British Isles and many parts of the Continent.—A number of members took part in the discussion.

September 28th.—Mr. Hy. J. Turner, F.E.S., President, in the chair.—Mr. T. W. Hall exhibited a larva of *Cossus ligniperda*, and called attention to the habit, when annoyed, of ejecting an evil-smelling liquid.—Mr. Newman, a dark leaden aberration of *Agriades thetis*, one of several taken recently in Kent.—Dr. Chapman, considerable series of the grasshoppers *Stenobothrus lineatus*, *Gomphocerus*

rufus, *Chortippus parallellus*, *Stauroderus bicolor*, and *G. maculatus* from the North Downs escarpment, and gave notes on their habits and habitats.—HY. J. TURNER.

LONDON NATURAL HISTORY SOCIETY.—October 3rd.—Mr. L. W. Newman, F.E.S., exhibited slate-grey males of *Agriades thetis* (*adonis*), and one showing a curious mixture of the two colours slate-grey and brilliant blue. The grey form has occurred before, but the mixed specimen is unique; all were found at one spot. The structure of these grey insects is extremely delicate, and to secure perfect specimens they must be taken drying their wings; otherwise they are invariably badly damaged. Mr. Newman also exhibited *Agriades coridon*, vars. *roystonensis*, *inaequalis*, and *impar*, five having left-side small wings and seven right-side small wings, several females with blue streaks, and also two with tawny streaks on the usual ground colour.—J. ROSS, *Hon. Sec.*

RECENT LITERATURE.

Études de Lépidoptéologie comparée, fasc. xi bis. *Contributions à l'Étude des Grands Lépidoptères d'Australie. Genres Coscinocera et Xyleutes.* Par CHARLES OBERTHÜR, CONSTANT HOULBERT, et F. P. DODD. Rennes. Septembre, 1916.

M. OBERTHÜR continues his contributions to our world knowledge of the Lepidoptera with a magnificent quarto fascicule devoted entirely to the mammoth moths of the Australian continent. The form of the previous volumes of the 'Études' being inadequate to meet the abnormal requirements of the illustrations of this series, the several papers included are presented in large readable type, and the figures photographed direct from the model, are in all instances of life size. The result is altogether satisfactory; and it is no exaggeration to say that the figures are worthy of the accompanying letterpress. The collaboration of a British-born entomologist with the two distinguished French authors whose names appear on the cover is also gratifying testimony to the perfect *entente* existing with our neighbours alike in the world of science and in the world of politics. Mr. Dodd's biological notes on *Coscinocera hercules*, Misk., as well as those on the vast Australian *Cossidæ*, will be of exceptional use to the student of ancestral forms, and M. Oberthür's "Notes critiques et descriptions de trois Espèces nouvelles" (part v), indicate a new and hitherto little explored field for research—this paper being illustrated by photographs of the *Xyleutes* in his collection; while M. Houlbert traces their distribution from Australia across the "lost continents," through South and Equatorial Africa to South and Central America, the eastern coast of Australia being apparently the richest in actual species of the genus. We offer our sincerest congratulations to M. Oberthür in that, amid the stress and turmoil of a war in which he is deeply concerned, he is still issuing from the Rennes Imprimerie the magnificent works so long maintained at the same high level of scientific value, and appropriate illustration. Looking through the eleven fascicules of the 'Études' already published we readily understand how it is that M. Oberthür holds so closely to

the formula enuntiated four years ago at Oxford when he put forward his scheme for a final system of nomenclature—"Pas de bonne figure à l'appui d'une description, pas de nom valable."—H. R.-B.

Bulletin de la Société lépidoptérologique de Genève, vol. iii, fasc. 3. Genève. Mai, 1916.

THE Bulletins of this Society are issued at irregular intervals, but even during the war one fascicule at least has made its appearance each year, embellished with beautifully coloured plates designed by M. Culot, the well-known entomological artist, and President of the Society in 1915. The several papers recently published should be read by all British naturalists, dealing as they do with species of common occurrence in this country, yet making numerous additions to our bionomical knowledge. M. Rehfsou (this year's President), contributes an interesting note upon the oviposition of *Epinephele jurtina*, proving that the butterfly does not invariably affix the ova, but not seldom distributes them broadcast after the fashion, *e. g.*, of *Melanargia galatea*. M. J. Mongenet's "Note sur les Phytometrinæ du Bassin genevois" appeals to those who make a special study of the Plusias; while M. A. Pictet has much that is new to communicate in his "Observations biologiques, et recherches experimentales sur l'hibernation d'*Abraaxas grossulariata*." Of extra-Britannic species Dr. Reverdin continues his amazingly successful search for new species among the Hesperids, and gives us (with a figure) *Adopea nova* from Amasia, Asia Minor, differentiated both superficially and by the male appendages from our familiar *A. thaumas*, and *A. acteon*. I have still unnamed what I believe to be an example of this new butterfly sent me in 1913 or 1914 by Captain P. P. Graves from Syria; but the "brown" Skippers received on this occasion travelled badly, and further deteriorated (being in papers) when submitted to the ordeal of the relaxing tin. At some later date and when things postal are less unsettled on the Continent I hope to get my suspicions confirmed by Dr. Reverdin himself. I may add that to the *Hesperia* group he has added and figured (vol. iii, fasc. 1, 1914), *H. amenophis*, from Heliopolis, Egypt, and *H. pontica* also from Amasia; and to *Carcharodus* (*Erynnis*), *C. ramses* from the Mairiut Steppe, Egypt. *C. tauricus*, and *H. schansiensis*, both new species, are also described and figured (vol. iii, fasc. 2, 1915). The Geneva Lepidopterological Society, like those of the Allies, has carried on manfully for the past two years, despite the fact that half its members have been mobilised to guard the frontiers of what was once the playground and is now the military sanatorium of Europe. Floreat!—H. R.-B.

Proceedings of the South London Entomological and Natural History Society for 1915-16. Pp. i-xv, 1-156. Twelve plates. The Society's Rooms, Hibernia Chambers, London Bridge, S.E. 1916.

ALTHOUGH there are many other matters of considerable interest in this excellent publication, we would note the following papers as being of special importance to the entomological student: "Seasonal Dimorphism," by Dr. F. A. Dixey, M.A., F.R.S. (pp. 1-14); "Life Cycle of *Tortrix viridana*, L.," by Alfred Sich, F.E.S. (pp. 15-20);

"The Maple Aphis and its Dimorphic Larva," by E. J. Bunnett, M.A. (pp. 21-24 and plate iv); "On the Metamorphosis of *Geotrupes stercorarius*, L.," by Constant Sano (pp. 25-28 and plate v); "British Cockroaches," by W. J. Lucas, B.A., F.E.S. (pp. 29-40 and plate iii); "British Crickets," by W. J. Lucas, B.A. (pp. 50-54 and plate vi); "The European Species of the genus *Melanargia*," by J. Platt Barrett, F.E.S. (pp. 55-61 and plate xii); "The Autumn Butterflies at Eastbourne and some other Notes," by Robert Adkin, F.E.S. (pp. 62-67).

The figures on plate iv are from drawings by the author of the paper which they illustrate. Those on plate v are from photographs by Mr. H. Main. Mr. Lucas photographed nearly all the insects discussed in his papers, and these camera pictures and some drawings are reproduced on plates iii and vi. The species of *Melanargia* shown on plate xii were photographed by Mr. G. T. Turner.

Four other plates (viii-xi) reproduce photographs by Mr. F. N. Clark, illustrating Dr. Chapman's remarks on *Everes argiades*, printed on pp. 75-77 of the 'Abstract of Proceedings.'

In addition to the wealth of illustration just referred to, there are two beautiful plates in colour, on one of which (ii) are five figures of the larva of *Everes argiades*, and on the other (i) six figures representing aberrations of European butterflies.

A comprehensive Index, extending to 12 pages, facilitates reference to the contents generally, or to any particular subject or special object in which one may be interested.

R. S.

The Invertebrate Fauna of Nottinghamshire. By J. W. CARR, M.A.
Pp. i-viii, 1-618. Nottingham: J. & H. Bell, Ltd. 1916.

The number of animals listed in this volume reaches 5330, a very respectable total. The majority belong to the Hexapoda, close upon 4800 species being mentioned in this class, which is divided into three sub-classes as under:—

APTERYGOTA.—Thysanura (4 species); Collembola (29 species).

EXOPTYERYGOTA.—Dermaptera (2 species); Orthoptera (20 species); Plecoptera (13 species); Psocoptera (18 species); Ephemeroptera (11 species); Odonata (14 species); Thysanoptera (2 species); Hemiptera (410 species).

ENDOPTERYGOTA.—Neuroptera (32 species); Mecaptera (3 species); Trichoptera (65 species); Lepidoptera (933 species); Coleoptera (1409 species); Diptera (921 species); Siphonaptera (17 species); Hymenoptera (892 species).

Notes on locality and dates accompany each entry, and there is an Index of Genera.

We can heartily congratulate Professor Carr on the successful completion of a very laborious task. Possibly there are still many species of the Insecta still awaiting detection in the county, and these will no doubt be brought to light in due course.

It is exceedingly convenient to have the whole of the insect fauna of a county presented for study and reference as in the volume under notice. Perhaps we may hope that in the not remote future more fauna lists of the same comprehensive character may be produced.

R. S.

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[No. 643.

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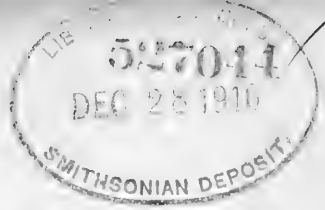
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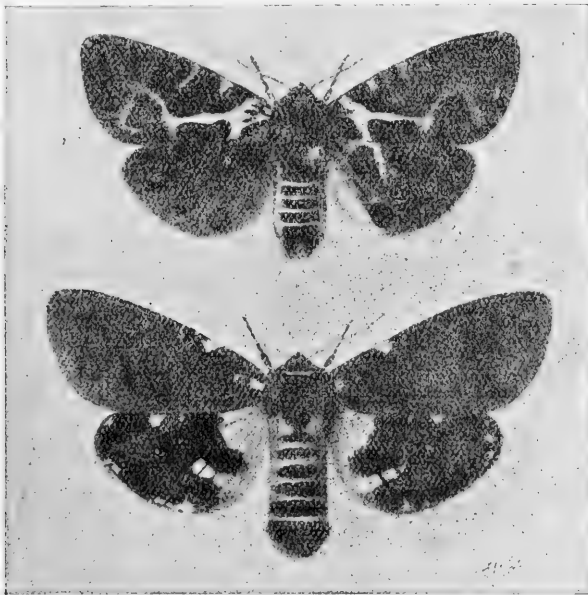
DECEMBER, 1916.

[No. 643

VARIETIES OF *ARCTIA CAIA*.

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

THE figures below represent two remarkable female varieties of *Arctia caia*, which I reared from larvæ collected on the Scilly Islands last May. As will be seen by the upper figure (emerged July 21st), the specimen is asymmetrical in pattern. The



Varieties of *Arctia caia*.

normal white markings on the fore-wings are greatly reduced and gradually become suffused with brown, which finally almost obliterates them over the apical portion, producing a peculiar clouded appearance; the chocolate-brown markings are outlined with very dark brown. The ground colour of the hind

wings is a smoky olive-brown, excepting the light basal markings of the right wing, which are yellow; the normal metallic blue-black spots add richness to the general colouring. On the right side of the thorax is an orange blotch; the sides of the abdomen are orange-red. In the colouring of the hind wings it closely resembles the specimen I figured in colour in the *Entomologist*, April, 1900, Pl. iii, fig. 9.

The lower figure (emerged July 26th) is an extremely handsome insect and almost symmetrical in pattern. Excepting the small basal white spots, the fore-wings are entirely of a light chocolate-brown with a mere trace of markings indicated here and there by darker brown. The hind wings are remarkably rich in colouring. The light markings are deep apricot-orange except the small marginal spots, which are yellow, the remaining portion being deep velvety black, relieved with metallic blue-black blotches, the abdomen is apricot-orange banded with purplish-black and with the extremity brown.

The specimens were exhibited at the meeting of the Entomological Society of London, October 4th last, and are now added to the fine series of this species in the Tring Museum.

November, 1916.

NEW SPECIES OF LEPIDOPTERA FROM FORMOSA.

BY A. E. WILEMAN AND RICHARD SOUTH.

(Continued from p. 203.)

Pseudogyrtana ochreopuncta, sp. n.

♀. Head and collar dark brown, the latter edged with paler brown; thorax pale brown mixed with darker; abdomen dark brown, segmental divisions pale. Forewings pale brown, freckled with darker; basal line black, short; antemedial line black, excurved, interrupted at the nervures; postmedial line black, sharply elbowed below costa, thence double and inwardly oblique to middle of dorsum; a black-edged pale ochreous spot in the cell, below this a blackish shade runs to dorsum; subterminal line pale ochreous, wavy, deeply bordered with black on its inner edge from costa to vein 3; terminal dots black, preceded by pale ochreous dots. Hind wings pale fuscous powdered with darker especially towards termen. Under side paler brown; forewings suffused with dark fuscous, postmedial line blackish followed by ochreous dots on costa, subterminal line ochreous only distinct towards costa; hind wings have a blackish discoidal dot, wavy postmedial and indistinct subterminal lines.

Expanse, 26 millim.

Collection number, 394A.

A female specimen from Kanshirei (1000 feet), March 2nd, 1908.

Bomolocha parva, sp. n.

♂. Antennæ ciliated. Fore wings pale brown powdered with darker, densely on basal two-thirds and on termen; a black dot in the cell; antemedial line indicated by blackish angular marks above dorsum; postmedial line blackish brown, sinuous, outwardly white edged; subterminal line whitish, wavy, indistinct; terminal line blackish, interrupted, inwardly edged by whitish marks. Hind wings fuscous brown. Under side whitish suffused with fuscous on fore wings and powdered with fuscous on hind wings; three pale brown dots on costa towards apex of fore wings, black discoidal dot and traces of line beyond on hind wings.

♀. Similar to the male in colour and marking, but rather larger. Expanse, 17-19 millim. ♂. 21 millim. ♀.

Collection number, 249.

Two males and a female from Tainan (plains), a pair of which were taken in June, 1906, the other male in July, 1904; a female from Takow (plains), August, 1904.

Near *B. sylpha*, Butl.

Anoratha sinuosa, sp. n.

♂. Fore wings ochreous brown, suffused with fuliginous; antemedial line blackish, curved, diffuse; postmedial line dark brown, sinuous, followed by two clear patches of the ground colour; a blackish transverse cloud enclosing a bent ochreous line at end of cell; subterminal line represented by a sinuous series of more or less connected blackish spots. Hind wings dark greyish suffused with fuliginous, especially towards termen. Fringes black dotted with ochreous at ends of the veins. Under side fuliginous grey, rather silky; all wings have a darker discoidal mark; an elbowed blackish line beyond the discoidal on hind wings; fringes as above.

♀. Fore wings dark brown, somewhat suffused with blackish; a whitish streak on costal area merging into brown on the costa; postmedial line white, sinuous. Hind wings as in the male.

Expanse, 42-46 millim. ♂. 44-46 millim. ♀.

Collection numbers, 930 and 931.

Two specimens of each sex from Arizan (7300 ft.), July and September, 1908; September, 1916.

Hypena kanshireiensis, sp. n.

♂. Fore wings pale ochreous brown heavily powdered with darker brown and freckled with black; a clear streak of the ground colour from base extending under cell to just beyond the middle of vein 2; postmedial line black, outwardly angled above middle, dentate above dorsum, not well defined towards costa; a white streak from apex, oblique to vein 6, thence turned in towards postmedial line; terminal line white, crenulate; fringes grey, ochreous at base, paler at tips. Hind wings fuscous, terminal line black; fringes dark grey, inclining to ochreous at the base. Under side greyish, fore wings

and costal area of hind wings suffused with fuscous; two white spots below apex of fore wings and two ochreous dots on costa before apex. Expanse, 23 millim.

Collection number, 251A.

A male specimen from Kanshirei, August 15th, 1905.

Stenhypena costalis, sp. n.

♀. Head grey-brown, palpi darker brown, third joint tipped with pale brown; thorax dark brown, flecked with grey in front; abdomen pale brown, flecked with darker brown. Fore wings dark brown, costa pale brown, medial area below cell pale brown dusted with darker; two black dots at outer extremity of cell; subterminal line represented by white dots between the veins; terminal line black, interrupted; fringes dark brown, marked with paler between the veins. Hind wings pale fuscous, interrupted terminal line black. Under side pale brown dusted with darker; all wings have a black discoidal dot and a diffuse dusky subterminal line.

Expanse, 38-42 millim.

Collection number, 1109.

Two female specimens from Kanshirei, one obtained in March, 1908, the other in April of the same year.

A male specimen and three females from Kanshirei (Wileman) are in the British Museum. Antennæ of the ♂ with paired bristles.

Near *S. adustalis*, Hampson, but larger, and without dark transverse lines.

Rivula arizanensis, nom. nov.

Sir George Hampson having kindly pointed out that "*Hydrelia*" *pallida*, Moore, is a synonym of *Rivula bioculalis*, Moore, the above new name is proposed for the species described as *Rivula pallida*, 'Entom.,' vol. xlvii, p. 266 (1914).

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ.

No. 3.—MICROGASTERIDÆ.

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

(Continued from p. 254.)

Abjectus, Marsh.*

Another smooth and shining species, somewhat similar in appearance to *difficilis*.

Mr. B. S. Harwood now possesses five specimens taken by Norgate in the New Forest, which were originally in Bridgeman's collection. These specimens were mentioned by Marshall

* 'Trans. Entom. Soc.,' 1885, p. 211.

('Trans. Entom. Soc.,' 1885, p. 211), and probably he partly described the species from them.

In the British Museum is a single specimen labelled "type." Marshall describes the metathorax as smooth, but under a magnification of six diameters it appears distinctly subrugulose. He also gives the colour of the cocoons as "brownish white"; possibly this is only another way of saying they are pale buff-coloured. The broods usually consist of from twelve to fifteen individuals.

In September, 1911, the larvæ of *Notodonta ziczac* were very plentiful in the New Forest, and many of them, generally when full fed, produced this parasite. The parasite larvæ remained within their cocoons until the following spring, when they pupated, and the imagines duly emerged. In one case, from a brood of twelve which left the host on September 9th, a single imago appeared on the 18th of the same month, the remainder not emerging until the following April. Harwood has sent me this species from Colchester, where he obtained it as a parasite of *N. dromedarius*, and it has also been bred from *N. dictæoides*. It is particularly liable to the attacks of hyperparasites. I have bred the following, most of them in some numbers: *Panargyrops æreus*, Grav.; *Hemiteles fulvipes*, Grav.; *H. crassicornis*, Grav.; *H. areator*, Panz.; *Pezomachus instabilis*, Forst.; and *Mesochorus brevipetiolatus*, Ratz.

Complanatus, sp. nov.

Black; palpi pale; legs testaceous; the fore and middle coxæ brown, hind coxæ black; hind femora fuscous at apex and hind tarsi dusky; belly at base testaceous; first and second abdominal segments laterally, narrowly testaceous. Wings hyaline, stigma fuscous. Mesothorax thickly punctulate; scutellum smoother; metathorax rather finely rugulose. First segment of the abdomen subquadrate, truncate, shining, almost smooth with scattered punctures; second considerably shorter than third, shining, almost smooth, punctulate at extreme apex, with two subobsolete punctulate converging lines wide apart; other segments smooth and shining. Spurs of the hind tibiæ as long as half the metatarsus. Terebra short, not surpassing the apex of the abdomen.

Length, 3 mm., expands, 6½-7 mm.

Described from twenty-two females bred from a larva *Drymonia chaonia* on July 6th, 1911. The cocoons are pure white, spun on a leaf in two flocky heaps, one on either side of the host, which was still alive and apparently brooding over the cocoons when the imagines emerged.

During the past twelve years I have reared a considerable number of the larvæ of *D. chaonia*, but on no other occasion have I obtained Braconid parasites. Care must be taken not to confuse this species with *octonarius*, which is smaller and more

slender, and has the first segment of the abdomen longer and narrower, etc.

Octonarius, Ratz.*

Also a shining species, having the first abdominal segment almost smooth with only a few scattered punctures, and half as long again as its apical width; the second segment has two impressed lines enclosing a subtriangular, subcarinated space, which is also almost smooth.

I have seen a specimen from Bridgeman's collection named by Marshall (see 'Trans. Entom. Soc.,' 1885, p. 210), and have also examined a brood in Marshall's collection in the British Museum. On July 11th, 1911, I obtained fifteen (eleven males and four females) from a larva of *Notodonta ziczac*.

Cocoons white with a very faint lemon-coloured tinge, constructed in an irregular cluster.

Jugosus, sp. nov.

Black; palpi pale; belly at base fusco-testaceous; coxæ black or blackish; fore femora testaceous with the base dark, middle dark with the apex testaceous, hind entirely dark, or dark above and below with a medial testaceous stripe at sides, or occasionally almost entirely testaceous; fore tibiæ testaceous, middle and hind tibiæ testaceous with the apex dark; fore and middle tarsi testaceous, hind tarsi fuscous. Wings hyaline, stigma fuscous. Antennæ of female as long as the body, of male rather longer. Mesothorax finely punctulate; scutellum and metathorax almost smooth, the latter with a medial longitudinal depression. First segment of the abdomen punctulate, truncate, twice as long as medial breadth, with subparallel sides (rather broader in the female than in the male), second as long as third, with two converging impressed lines ending midway in irregular fovæ; other segments smooth and shining. Hind coxæ smooth and shining; spurs of hind tibiæ rather shorter than half the metatarsus. Terebra very slightly exerted.

Length $2\frac{1}{2}$ –3 mm., expands 7 mm.

Occasionally the first two abdominal segments are margined at the sides with testaceous, and the belly at the base is also of that colour.

Described from seven males and two females. Somewhat close to *glomeratus*, though the smooth metathorax easily distinguishes it from that species. From *immunis* it differs, among other things, in having the first segment of the abdomen much longer in comparison to its breadth.

The cocoon is very pale lemon colour, but soon fades; for this reason it is often quite white in cabinet specimens, also in cases where it has been exposed to damp through the winter it becomes almost brownish. Round the capital extremity of the cocoon is a raised ridge which appears to guide the insect when

* 'Ich. d. Forst.,' iii, p. 52.

gnawing through in order to emerge, so that in an empty cocoon the ridge is not noticeable. A solitary parasite, it is on the wing from April to October; of the last generation in the year some emerge in October, but the majority pass the winter within their cocoons.

I have obtained it very frequently from both the summer and autumn broods of the larvæ of *Cabera pusaria*, and have also bred it from *Cidaria corylata*, February 2nd, 1912, and March 1st, 1912 (forced), *Semiothisa liturata*, June 10th, 1913, *Hybernia marginaria*, June 11th, 1911; *Oporabia dilutata*, May 30th, 1911, etc., and *Metrocampa margaritaria*, October 10th, 1911.

Immunis, Hal.*

This species seems to have been somewhat confused with others. Haliday's description of the female, given below, is, however, very clear:

"Thorace lævi: femoribus tibiisque flavo-testaceis; posterioribus illorum utrinque, harum apice, fuscis; alis hyalinis; aculeo brevissimo.

M. glomerato equalis; antennæ longiores; palpi fusci, apice pallide; pedes flavo-testacei, coxis et trochanterum basi nigris; femora antica summa basi, intermedia lineolâ superâ et aliâ inferâ fuscis; postica fusca plaga longitudinali testaceâ; tibiæ posticæ et tarsi posteriores apice fusciscentia; alæ hyalinæ stigmatè costaque piceis; thorax lævis nitidus; segmentum 1^{um} quam *M. glomerato* brevius scuto lateribus subrotundato medio latiore, subtiliùs aciculato; 2^{um} arcuato-impressum medio subtilissimè aciculatum; aculeus subxertus."

The species is variable in colour, sometimes not only the sides of the first and second abdominal segments being testaceous but also the greater part of the third and fourth also. The metathorax is almost smooth and the terebra slightly surpasses the extremity of the abdomen.

A solitary parasite; cocoon pale lemon colour. Bred from *Hybernia marginaria*, June 21st, 1911, and June 26th, 1915; *H. defoliaria*, June 21st, 1915, and *Thecla quercus*, June 23rd, 1908.

Cabera, Marsh.†

As Marshall remarks, this is very near *immunis*, and I rather doubt if it is really distinct. The only difference brought forward seems to be in the enclosed space on the second segment of the abdomen, which in *cabera* is smooth, in *immunis* is aciculate. Marshall describes the cocoon as "brownish-white"; this is correct with cocoons which have been kept on damp sand, etc., through the winter, but when newly-made they are pale lemon colour, similar to those of *immunis*. In Marshall's collection in

* 'Ent. Mag.', ii, 250.

† 'Trans. Entom. Soc.', 1885, p. 213.

the British Museum is a specimen labelled "Type," the cocoon accompanying it being pale lemon colour. I possess a single specimen, bred from a small larva of *Hylophila bicolorana* in late April, 1911; the larva of the parasite emerged from its host the previous September.

Popularis, Hal.*

Distinguished from its near relatives by having limpid hyaline wings. A common gregarious parasite of the larvæ of *Hipocrita jacobææ*, it is, however, much more plentiful in some seasons than in others. Of a large number of the larvæ of the host collected in 1911, quite 60 per cent. produced the parasite; yet in 1910, some 200 larvæ from precisely the same localities failed to yield me a single specimen. I have never obtained it from any other host.

A single-brooded species, some eleven months being passed within the cocoon, pupation only taking place shortly before the appearance of the imago. The cocoons are pure white and rather woolly. I have never found them in a natural state, but when the host is kept in confinement they are constructed on the surface of the ground or under dead leaves, etc., in irregular bunches, and are connected one with the other by a few threads. On several occasions I have bred the hyperparasite, *Mesochorus fascialis*, Bridg., from the cocoons of this species.

Gonopterygis, Marsh.†

In the New Forest this is a common solitary parasite of the larva of *Gonepteryx rhamni*, the parasite larva emerging from its host when the latter is half grown or so. When a larva of *G. rhamni* is about to evacuate its parasite it will be noticed to have assumed a lighter colour, and remains extended on a twig of the food plant without attempting to take food. This position will be maintained for two or three days before the emergence of the parasite. Before commencing to spin its cocoon the larva of the *Apanteles* loosely attaches the caterpillar from which it is emerging to the twig, and then constructs the cocoon beneath; the host eventually falls to the ground, but leaves the strands of silk by which it was attached standing out from the cocoon in the form of a tuft, giving it a very curious appearance (fig. 2). The cocoon is very firmly attached, and is a bright orange in colour.

* 'Ent. Mag.,' ii, p. 250.

† 'Spec. des Brac. d'Europe,' iii, p. 181.

(To be continued.)

NOTES ON THE DIPTERA OF DERBYSHIRE.

BY ERIC DRABBLE, D.Sc., F.L.S., AND HILDA DRABBLE.

The SYRPHIDÆ of North-East Derbyshire.

VERY little attention seems to have been given to the *Syrphidæ* in Derbyshire. In the 'Victoria County History' (vol. i, 1905) a list of species recorded up to that date is given, but the localities are almost entirely confined to South Derbyshire, the only places mentioned being Burton, Little Eaton, Clifton, Derby, Willington, Dove Dale, and Chesterfield (with one record). There is thus only one species recorded in the list from the north-east of the county, namely, *Chrysochlamys cuprea*.

A search through the literature has yielded but little of interest subsequent to the date of the 'County History.'

The following notes are the result of work in North-East Derbyshire during April, July, August, and part of September, 1916. The localities mentioned lie within a radius of about ten miles from Chesterfield. The district is very varied floristically and geologically, lying on Millstone Grit, Middle and Lower Coal Measures, and Permian Limestone. Insufficient attention has been given to the moorlands. We hope to work the moors more fully next season.

On September 5th a great swarm of Syrphids occurred at Spital. The flowers chiefly visited by the insects were *Hieracium boreale*, *Leontodon autumnale*, Dandelion, and *Convolvulus arvensis*. Composing the swarm were *Platycheirus manicatus*, *P. albi-manus*, *P. scutatus*, *Catabomba pyrastri*, *Syrphus luniger*, *S. corollæ*, *S. lunulatus*, *S. vitripennis*, *Eristalis tenax*, *E. pertinax*, and *E. arbustorum*.

SYRPHINÆ.

- Pipizella flavitarsis*, Meigen. Spital.
Liogaster metallina, Fabr. Holymoorside.
Chrysogaster hirtella, Loew. Holymoorside.
 †*Ch. macquarti*, Loew. Holymoorside.
 †*Chilosia sparsa*, Loew. Wingerworth, April 25th, thus antedating Verrall's earliest record.
Ch. pulchripes, Loew. Spital, Barlow.
Ch. variabilis, Panzer. Linacre, Moorhall.
 †*Ch. barbata*, Loew. Brimington, Spital, Loads.
 †*Ch. intonsa*, Loew. Brimington.
 †*Ch. impressa*, Loew. Unthank.
Ch. albitarsis, Meigen. Linacre.
 †*Ch. cynocephala*, Loew. Brimington, Spital, Barlow.
Platycheirus manicatus, Meigen. Common everywhere.
 †*P. peltatus*, Meigen. Spital, Holymoorside, Wingerworth, Upper Langworth, up to September 10th, thus extending the period given by Verrail.

- P. scutatus*, Meigen. Spital, Holymoorside, Barlow, Handley.
 †*P. albimanus*, Fabr. Common everywhere.
 †*P. scambus*, Staeger. Ramsley Moor, August 26th, thus extending the period given by Verrall.
P. clypeatus, Meigen. Brimington, Barlow, Ley's Fen, Freebirech, Walton, Stainsby, Glapwell.
 †*P. angustatus*, Zetterstedt. Spital.
Melanostoma mellinum, L. Common everywhere.
M. scalare, Fabr. Common, but less abundant than *mellinum*; observed up to September 3rd, thus extending the period given by Verrall.
Leucozonia leucorum, L. Linacre, Cordwell Valley; up to August 23rd, thus extending the period given by Verrall.
Ischrosyrphus glaucius, L. Common up to September 9th; Moorhall, Freebirech, Unthank, Cowley, Hundall, Tupton, omersall.
Isch. laternarius, Müller. Barlow, Brierley Wood, Holymoorside, Stainsby; up to August 22nd, thus extending the period given by Verrall.
 †*Catabomba pyrastris*, L. Spital, Barlow, Stubbin.
Syrphus albostrigatus, Fallén. Spital, Holymoorside, Linacre.
 †*S. tricinctus*, Fallén. Unthank, Freebirech, Walton; up to September 7th, thus extending the period given by Verrall.
 †*S. lunulatus*, Meigen. Holymoorside, Spital.
 †*S. lineola*, Zett. Cathole.
 †*S. vittiger*, Zett. Ley's Fen, Freebirech.
 †*S. grossulariæ*, Meigen. Linacre, Freebirech, Moorhall, Cowley; up to August 31st, thus extending the period given by Verrall.
S. ribesii, L. Common everywhere.
S. vitripennis, Meigen. Common everywhere.
 †*S. latifasciatus*, Macquart. Wingerworth.
S. corollæ, Fabr. Not common. Holymoorside, Spital, Whaley, Upper Langwith.
 †*S. luniger*, Meigen. Common everywhere.
S. balteatus, De Geer. Common everywhere.
 †*S. cinctellus*, Zett. Common everywhere.
S. auricollis, Meigen. Loads, Wingerworth.
S. umbellatarum, Fabr. Freebirech.
 †*S. compositarum*, Verrall. Common and widely distributed.
 †*S. labiatarum*, Verrall. Not common. Cordwell, Pratt Hall.
 †*S. lasiophthalmus*, Zett. Wingerworth.
 †*Spherophorea scripta*, L. Common and widely distributed; var. *dispar*, Loew. Spital.
 †*S. menthastri*, L. Grange Hill, Barlow, Spital, Heath; var. *picta*, Meigen. Spital, Holymoorside, Grange Hill, Moorhall, Upper Langwith, Whaley.
 †*S. flavicauda*, Zett. Brimington; var. *nitidicollis*, Zett. Spital.

Baccha elongata, Fabr. Wingerworth.

Ascia podagrica, Fabr. Holymoorside, Spital, Whaley, Upper Langwith.

Rhingia campestris, Meigen. Spital, Barlow, Grange Hill.

VOLUCELLINÆ.

Volucella pellucens, L. Widely distributed, but not very abundant.

ERISTALINÆ.

Eristalis tenax, L. Common.

E. intricarius, L. Cathole, Spital.

E. arbustorum, L. Very common everywhere.

E. pertinax, Scopoli. Very common everywhere.

Myiatropa florea, L. Spital, Tupton, Barlow.

Helophilus pendulus, L. Hundall, Cathole.

MILESINÆ.

Xylota segnis, L. Holymoorside, Cordwell Valley.

Syrirta pipiens, L. Common everywhere.

Chrysochlamys cuprea, Scopoli. Walton, Tupton.

Sericomyia borealis, Fallén. Ramsley Moor, Ley's Fen.

In the preceding list twenty-five species (those marked with a †) appear to be new records for Derbyshire. The only previous record that we have been able to find for North-East Derbyshire is *Chrysochlamys cuprea*.

Spital, Chesterfield.

BIOLOGICAL AND SYSTEMATIC NOTES ON BRITISH THYSANOPTERA.

BY C. B. WILLIAMS, M.A., F.E.S.

(The John Innes Horticultural Institution, Merton, Surrey, England.)

(Continued from page 245.)

Kakothrips pisivora (Westwood).

I HAVE already ('Annals of Applied Biology,' i, pp. 222-246) given an account of the life history of this injurious species under the name of *K. robustus* (Uzel). The name *pisivora*, Westwood, was given to the larval form and I considered at that time that *robustus*, Uzel, would for that reason have to stand. There is, however, no doubt that larval names when recognisable will have to be permitted, as in some groups, the Aleurodidæ for example, most of the species are only known in the larval and pupal stages.

In the above paper figs. 9 and 6 have been interposed, while fig. 8 is upside-down. Also under fig. 11 the words "wide-

spread, causes damage" should read "distribution confirmed by the author." The above regrettable misprints occurred owing to my absence from England during the time the paper was in the hands of the printer.

During the past year (1915) several further observations have been made. This year the damage in this district (Surrey) was more severe than ever before noticed. The first specimens were found on May 26th, and from that date they increased in numbers rapidly until by June 9th they were in countless numbers in the terminal clusters of unopened leaves and flowers. The opening of the flowers being later this year, the attack resembled more closely that described by Trybom in Sweden. Half-a-dozen terminal clusters gave about 150 adult thrips. On the following day (June 10th) one first stage larva was found, while eggs were in profusion on the terminal clusters and in the stamen sheaths of the flowers. By June 25th first and second stage larvæ were abundant in all the flowers and on the pods, and by July 5th, when nearly all the larvæ were large, over 60 per cent. of all the pods were more or less severely damaged by them. In nearly all cases the pods nearest the base of the plants, that is the earlier ones, were almost undamaged, while those near the top were so severely attacked that in many cases the flower dried up without setting any pod, while those pods which did start were small, deformed, and contained no seed at all. Most of the larvæ were feeding quite openly on the pods, only a few being hidden by the remains of the flower, and specimens examined during the night were found to be as active then as during the day-time. At this stage it would be possible to kill a large percentage by spraying. On July 7th there was an extremely heavy, almost tropical rainstorm, yet immediately after it quite a large number of larvæ were still feeding openly on the pods, chiefly on the lower surfaces. In the first fortnight in July nearly all the larvae descended, but a few fed ones were found on till the end of July.

Careful observations were made on larvæ in earth in closed cages to see if any small proportion would emerge as a second brood, but out of many hundred larvæ not one emerged during the autumn.

The occurrence and early disappearance of the males is further illustrated by the following collections:

| | | | | |
|-----------|---|---------|---|--------|
| June 10th | . | 177 ♀ ♀ | . | 73 ♂ ♂ |
| „ 19th | . | 105 ♀ ♀ | . | 9 ♂ ♂ |
| „ 25th | . | 146 ♀ ♀ | . | 7 ♂ ♂ |
| July 2nd | . | 144 ♀ ♀ | . | 0 ♂ ♂ |

On various dates during June several specimens of a Chalcid, *Pirene scylax*, Walker, were found closely associated with the Pea Thrips both at Merton and at Cobham, Surrey, and also at Hever, Kent, but it was not possible to prove any direct connection between them.

On June 25th a Thrombidiid mite, *Actineda vitis*, Schrank, was found on infested peas carrying a larva of the pea-thrips which it was sucking. Mr. S. Hirst, who kindly identified the specimen, tells me that it is a predaceous mite generally common on miscellaneous plants.

I was also able to feed larvæ of the predaceous thrips *Æolothrips fasciatus* on larvæ of the pea-thrips in captivity. One larva of *A. fasciatus* sucked and killed three larvæ of *K. pisivora* in about three hours. I have found both adults (commonly) and larvæ (occasional) of this species in pea flowers but have not actually seen them feeding on the pea-thrips in the wild state. There is little doubt, however, that they do so as the species is normally predaceous and is indeed the chief enemy of *Limothrips cerealium*, an abundant species which occasionally damages corn.

In recording the distribution abroad of *K. pisivora* in my previous account (*loc. cit.*) I overlooked the record of Schille ('Ent. Zeitschr.', 1912). He mentions having taken the species, not common, in flowers of *Echium vulgare*, *Orchis*, *Rosa centifolia* and *Pisum saccharatum* at Rytro im Popradtale, Galicia.

In addition to the above flowers which are all new to the list I have already given, I have taken the species in the flowers of the yellow melilot (*Melilotus officinalis*).

Odontothrips loti, Haliday.

This species, which occurs in the flowers of *Lotus corniculatus* in England, is quite distinct from *O. ulicis*, of which it has recently been considered a synonym. In *O. loti* the wing is dark except at the base, but there is a slight though distinct fading of the dark area from the base outwards, whilst in *O. ulicis* the dark colour is uniform throughout the outer part of the wing. In *O. loti* the teeth on the apex of the fore-tibiæ are both abbreviated, the internal one very short and bearing a short spine at the tip, the external one a little longer and bent downwards. In *O. ulicis* both are much longer.

Teniothrips primulae, Haliday.

On April 19th, 1914, this species was abundant on the flowers of primrose in the New Forest, Hampshire. The females largely outnumbered the males. A random collection consisted of sixty females and five males. Specimens brought home were placed on potted primrose plants and immediately started laying eggs. The eggs were embedded in the prominent ribs on the underside of the leaves, chiefly the midrib, in the flower-stalk and in the ribs on the calyx. The abdomen is first curled up in an inverted U and the tip of the ovipositor applied to the plant surface, the abdomen is then gradually straightened and the ovipositor, which finally becomes at right angles to the body, is forced into the

tissue. The end of the body is then worked up and down and the hole made by the blades of the ovipositor enlarged. This rocking movement continues with short intervals of rest during the whole time that the ovipositor is inserted into the plant. At no time during the process was the egg, which is comparatively very large, seen to pass bodily into the plant, and it is quite probable that it "flows" in in a manner similar to that described by Chapman ('Trans. Ent. Soc.,' 1914, p. 173) for sawflies.

The time between the first insertion of the ovipositor and its withdrawal varied in several timed observations from 1 min. 20 sec. to 2 min. 40 sec. The female proceeds, after a rest, to move a short distance and lay another egg. One female was observed to lay five eggs in fifteen minutes.

One female shows ten fully-developed eggs in its abdomen, the most anterior being partly in the thorax. It is probable from this that the eggs mature in batches, and that those of a batch are laid close together. Most other species of thrips, however, only mature one or two eggs at a time, and lay at short intervals over a long period.

The eggs are of the normal kidney shape, and are laid with the posterior end more deeply embedded than the anterior, which is usually quite near the surface. They are nearly always laid with their long axis parallel to the length of the stalk or rib in which they are laid. They are about 0.33 mm. long by 0.2 mm. broad. By May 3rd several of the eggs (the first of which were laid on April 20th) hatched, giving a duration of thirteen days for the egg stage. By May 25th one of the larvæ was almost full fed, and shortly after this, I believe, entered the ground. The subsequent history of the species is still uncertain, but the occurrence of three females in flowers of woodsage (*Teucrium scorodonia*) at Box Hill, Surrey, on July 1st, 1914, and one female hibernating in moss in the New Forest on November, 1913, indicates that probably the larvæ from the primroses in the spring would reach the adult stage the same year, and may possibly produce a second generation in other flowers.

Besides the above records I have the species from the Isle of Man (April, 1912) and from Cockermonth, Cumberland, in the flowers of primrose (*Primula vulgaris*) and cowslip (*Primula veris*).

Teniothrips inconsequens (Uzel) (= *Teniothrips pyri*, Daniel).

I have long considered that *Physopus inconsequens*, Uzel, was closely related to *Teniothrips pyri*, Daniel. I have now had the opportunity of comparing specimens of *inconsequens* from the collection of Dr. Uzel with both American and English *pyri* and can find no important difference between them. The

American species seems to have a slightly more constant number of spines in the outer half of the fore vein. A number of counts of Californian specimens gave 4 fifteen times, 5 four times, and 7 once. Specimens from fruit trees in England gave 4 thirteen times and 5 nine times. Specimens from flowers of laurel (England) gave 4 six times, 5 four times, 6 three times, 7 once. Two specimens from Bohemia, from the collection of Dr. Uzel, gave 4 twice and 5 twice, while specimens from young leaves of horse-chestnut in England gave 3 once, 5 twice, 6 five times, and 8 once. Apart from this no structural difference can be found. The identity is also confirmed by the fact that Uzel mentions *Prunus cerasus* as one of the food-plants of *Physopus inconsequens*. It is much to be regretted that the name of a species of such economic importance has to be changed, but under the circumstances the name *pyri*, Daniel, 1904, will have to give way before the much more unsuitable name *inconsequens*, Uzel, 1895.

The species has without doubt been in Europe for many years, not usually, however, being injurious. T. Major, in a 'Treatise on Insects Most Prevalent on Fruit Trees and Garden Produce' (London, 1829), says, on pp. 87-90, on the "thrip" on peach and nectarine, that "as soon as the least verdure appears, both larvæ and adults are found, the latter becoming nearly black." They commence feeding on the edges of the young leaves as soon as they put forth in the spring, and also prey on the bloom before it expands. As thrips are so commonly seen on flowers, he suggests planting rows of Virginia stock and *Convolvulus minor* as trap crops!

The above account of the habit and time of appearance leaves very little doubt that this is the same species, so that we have evidence of the species existing in England nearly a hundred years ago.

There are also other reasons for considering that the species is a native of Europe and only an accidental introduction into the United States. There are (1) the presence of both sexes in Europe, while females alone are found in the United States. In the latter country reproduction is entirely parthenogenetic, all the specimens being the progeny of one or a few females originally introduced. This might account for the slightly less variability found in the American specimens. (2) The rapid increase in numbers and spread in range of the Pear Thrip in America since its original outbreak indicates an introduction into a locality free from natural enemies. It would be interesting to discover the controlling influences of the species in Europe. (3) The fact that the various fruit trees which are attacked in the United States are all introductions from Europe. (4) The fact that a nearly related species (*T. primule*) is found in Europe, but no other species of the same genus has yet been discovered

in America. (5) The unusual life-history of the species, which spends about ten months of the year in the larval and pupal stages underground without feeding, lends itself to transmission over long distances in the soil attached to the roots of fruit trees. The traffic from Europe to America in young nursery stock has been, and still is, very large, whereas practically only the ripe fruit is carried in the reverse direction, and by the time that the fruit is ripe enough for picking, all adults of the year have died and the larvæ are already underground.

From the above it may be considered as practically certain that the species was introduced into California from Europe in the larval or pupal stage among the soil attached to the roots of fruit trees. Its spread from there to other parts of the United States, and recently into Canada, may have been by the same means, or by the rapid transference of adults by railway trains, etc. It is also possible that a fresh introduction from Europe might have occurred, but this appears to be less likely in view of the fact that the species does not appear to be anything like so abundant in this continent.

The distribution of the species as now known includes Bohemia (Uzel), Italy (Buffa), England (R. S. Bagnall, C. B. W.), United States, Canada. In England both Mr. Bagnall and myself have found it on laurel flowers (*Prunus lauro-cerasus*), as well as on the flowers of fruit trees at Cambridge and Gibside respectively, and Bagnall also obtained the specimens mentioned above as on young leaves of horse-chestnut (*Æsculus hippocastanum*) and Sycamore (*Acer platanoides*) at various localities in the North of England.

Uzel records the species on *Æsculus hippocastanum*, *Acer platanoides*, *Prunus cerasus*, *Anemone nemorosa*, and *Populus tremula*.

Buffa's record ('Atti del Soc. Tosc. di Sc. Nat.' xxiii, 1907, p. (in separate) 61) refers to specimens taken in August at Campella, Trentino, at an altitude of about 4000 feet. The date is unusual, and the record may possibly be some other species.

Physothrips latus, Bagnall.

I obtained four females and one male of this rare species swept from miscellaneous herbage at Oxshott, Surrey, and have compared them with the type specimen. The species is larger than the measurements given by Bagnall, being quite as large as *P. ulmifoliorum* (Uzel *nec* Haliday),* to which it is most closely related. It can be easily separated from this species by the lighter colour and the presence of the long postocular spines.

* *Physopus ulmifoliorum*, Uzel, is not the same as *Thrips ulmifoliorum*, Haliday. Mr. Bagnall will probably have written on this subject before this appears. The synonymy is briefly *Oxythrips ulmifoliorum* (Hal.) = *Scirtothrips ulmi* Bagn. (*Physopus ulmifoliorum*, Uzel *nec* Haliday) = *Physothrips* sp.? probably *consociata* Targ. Tozz. Both species occur in England.

The male, which has not previously been seen, is paler than the female, with the first antennal segment very pale, the second and third yellowish, the fourth yellowish at the base to greyish-brown at the tip, the fifth yellowish at the extreme base, the rest of the fifth and segments 6, 7, and 8 greyish-brown. There are no stout spines on the ninth tergite. In the male, as in the female, there is a long, fine, slender comb on the posterior margin of the eighth abdominal tergite.

Thrips nigra, sp. nov.

Female (Macropterous).—*Measurements*.—Total body length 1.1 mm.; head length 0.096 mm., width 0.140 mm.; prothorax length 0.120 mm., width 0.200 mm.; pterothorax length (dorsally) 0.200 mm., width 0.272 mm.; abdomen width about 0.320 mm.; wing length 0.70 mm., width 0.052 mm.

| | | | | | | | |
|------------------------|----|----|----|----|----|----|----|
| Antenna: Segment . . . | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Length (μ). . . | 20 | 38 | 47 | 41 | 35 | 51 | 21 |
| Width (μ). . . | 29 | 27 | 21 | 21 | 20 | 21 | 7 |

Colour.—Body uniformly dark brown; legs similar except for the tip of the fore tibiae, which are a little paler. Antennal segments 1, 2, 6, and 7 as dark as the body; 3 paler, particularly at the base, 4 darker than 3, 5 almost as dark as 6. Ocellar pigment red-brown. Wings pale brown at the base, then smoky brown from the basal quarter to the tip, particularly near the anterior and posterior margins, some specimens being quite distinctly pale along the middle of the wing. Hind wing very pale smoky brown.

Head almost one and a half times as wide as long, widest across the cheeks, which are distinctly arched. *Eyes* somewhat large, projecting a little laterally; distance between the eyes one and a half times the width of an eye; distance from the eye to the back of the head almost equal to the length of the eye. *Ocelli* well forward, forming a slightly obtuse triangle, the posterior ocelli half their width from the margin of the eye. Ocellar spines short and inconspicuous, one on each side of the anterior ocellus. A row of three short spines behind each posterior ocellus on a level with the hind margin of the eye, and one or two short spines on the cheeks. The hind part of the head, almost to the level of the eyes, distinctly striated. *Mouth-cone* reaching two-thirds across the prosternum, rounded at the tip. *Antennae* two and two-thirds the length of the head; comparatively stout; the first segment slightly tapering, the second barrel-shaped with a slight constriction at the base; the third tapering at each end with a distinct pedicel at the base; the fourth and fifth each with a distinct neck at the base; the sixth widest at its basal third, tapering gradually to the apex; the seventh continues the line of the sixth and tapers slightly to a rounded point. Short, forked trichomes dorsally on the third and ventrally on the fourth segments.

Prothorax one-quarter longer and two-thirds wider than the head, two long spines at each hind angle, two short ones on the hind margin; one short, forwardly directed spine at each fore angle; only minute spines on the fore margin and scattered over the pro-

notum. *Pterothorax* normal. *Legs* normal, somewhat stout. *Wings* fully developed, strongly curved forward in the outer two-thirds; pointed at the tip. Veins on the fore wing not very distinct. On the costa 20-24 spines, on the fore vein 6-7 near the base and three in the outer half, the proximal one somewhat more separated from the other two; on the hind vein 11-14 (one abnormal specimen has on one wing only 7 with a gap between the most apical and the rest); for colour see above.

Abdomen normal. No comb on the hind margin of the eighth tergite. The tenth tergite split dorsally for about three-quarters of its length.

Described from six females taken on the underside of leaves of elder (*Sambucus nigra*) in the garden of a city square in Kensington, London, on October 17th, 1915. The leaves of the plant were distinctly injured by the feeding of the adults. No larvæ were seen.

Type in the author's collection.

Thrips (Bagnallia) calcarata, Uzel.

I received about a dozen females of this species from Mr. A. W. Rymer-Roberts, who had found them on the opening leaves of lime (*Tilia vulgaris*) at Windermere, Westmorland, England, on May 10th, 1915. The species has not so far been recorded from this country.

Thrips nigropilosus, Uzel.

A single female was taken among wheat at Merton, Surrey, England, on July 27th, 1915. The specimen had been compared with others from the collection of Uzel. A character mentioned in his description is the rather conspicuous transverse row of six very dark hairs on each of the abdominal tergites. These hairs in other species of the same genus are usually very short and inconspicuous. This species has not been previously recorded for England.

Bolacothrips jordani, Uzel.

A single female beaten from a stack of cut sedge at Wicken Fen, Cambridge, on March 1st, 1914. This species has not previously been recorded from England. The genus, characterised by Uzel as being wingless and of narrow form, is of somewhat doubtful standing. An examination of *B. jordani* indicates that it would be very difficult to separate from a wingless specimen of the genus *Thrips*. Macropterous and brachypterous forms of this latter genus are known, and there is no reason why apterous forms should not occur. *B. nigricornis*, Bagnall, is described from a single male which may well have a winged female, and it is also possible that *B. jordani* might have a winged form also.

It seems best, however, to keep the genus for the present, until the above suggestions can be verified or disproved.

Sub-Order TUBULIFERA.

Family Phlæothripidæ.

Haplothrips flavitibia, sp. nov.

Measurements.—Total body length 1.45 mm.; head length 0.192 mm., width 0.180 mm.; prothorax length 0.130 mm., width 0.240 mm.; pterothorax length (dorsally) 0.288 mm., width 0.332 mm.; abdomen width about 0.360 mm.; tube length 0.128 mm., width at base 0.060 mm.

| | | | | | | | | |
|------------------|----|----|----|----|----|----|----|----|
| Antennæ: Segment | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Length (μ) | 23 | 48 | 52 | 54 | 56 | 53 | 49 | 23 |
| Width (μ) | 31 | 27 | 26 | 29 | 26 | 24 | 21 | 14 |

Total antennal length 0.37 mm.

Colour.—Head, body, all femora, and the first antennal segment dark blackish-brown. All tibiæ and tarsi clear yellow (some specimens have the base of the mid and hind tibiæ slightly darker, but otherwise exactly resemble the type specimen). The second antennal segment brown, paler distally, the third, fourth, fifth, and sixth yellow, the two latter a little clouded at the tip, the seventh and eighth smoky brown. Wings quite colourless except at the extreme base of the fore wings.

Head a little longer than wide, widest about mid-way, cheeks slightly arched. *Eyes* not prominent; distance between the eyes equal to width of the eyes; distance from the eye to the back of the head about one-quarter longer than the eye. *Ocelli* far forward, the anterior directed straight forward on the frons, which is raised into a distinct sub-hemispherical hump. The only long spines on the head are one behind each eye. One distinct and a few faint striations near the hind margin of the head. *Mouth-cone* somewhat pointed, reaching about three-quarters across the pro-sternum. *Maxillary palps* two-segmented, the basal segment short. *Antennæ* almost twice as long as the head. The first segment short, tapering slightly to the apex; the second constricted near the base into a neck, which is darker in colour than the rest of the segment; the fourth stouter than the third, the third widest at its apical fifth, the fourth at its apical third, the fifth at its apical quarter; the sixth and seventh more parallel-sided, constricted slightly at the base; the eighth conical, rounded at the tip.

Prothorax nearly twice as broad as long, about two-thirds as long and one and one-third as wide as the head. A long blunt spine at each anterior angle and two at each hind angle, the outermost on a small separate sclerite; all the other spines, including the anterior marginals, minute. *Pterothorax* normal. *Legs* normal, fore tarsi unarmed. *Wings* fully developed, constricted in the middle. Six to nine secondary hairs in the posterior fringe of the fore wing near the apex.

Abdomen normal. Tube two-thirds as long as the head; twice as long as wide at the base; almost twice as wide at the base as at the apex. Terminal hairs as long as the tube.

Described from six specimens beaten from a hedge of haw-

thorn (*Crataegus oxyacantha*) at Merton, Surrey, England, in July, 1913, and July, 1914.

Type in the author's collection.

This species is most easily recognised by its pale yellow tibiæ, in which it resembles *H. tibialis*, Hood, from America. All the specimens I have were also noticeable for the fact that they stained the balsam in which they were mounted bright orange. This was probably colouring matter from the alimentary canal, and may give some clue to their food. No other species of the genus *Haplothrips* has been noticed to have any similar effect.

NOTES AND OBSERVATIONS.

NOTES ON LEPIDOPTERA TAKEN AT TONBRIDGE DURING 1916.—This, in my opinion, has been the most disastrous year I have experienced since I commenced collecting in 1908. I commenced sugaring in April; the results were very poor; night after night absolutely nothing came. I could only give up very little time to collecting larvæ, so had to trust entirely to what I could pick up at sugar. Without any exaggeration, I do not think I even saw a dozen insects, all told, till the end of July. Then they began to come fairly freely, but nothing worth taking; in fact, I only took one specimen each of *Plastenis subtusa* and one of *P. retusa* till the middle of August. After this *Catocala nupta* became very common, in fact at the end of the month I could have taken twenty a night. The "Sallows" then commenced to show up with *Omphalocelis lunosa* in numbers, but at the end of September all again stopped quite suddenly. About the middle of September I caught a nice *O. lunosa* with almost black hind wings, similar to a few others I had before taken. I also took a fine female *Calocampa vetusta*, the only one I have ever seen in this area. I found larvæ of *Ochria ochracea* quite common in thistle stems. Most had turned to pupæ at the beginning of August. Golden-rod also produced numerous larvæ of *Eupithecia*. This now brings me to a subject I have thought about a good deal for some years. Has it been noted that there seems to be a tendency in a great many moths to appear in periodical cycles, and then disappear again? I have kept careful notes, and find that in the year 1909 *C. nupta* was very common; a few, of course, show up every year, but they were not again common till this year. The "Sallows" and *Amathes circellaris* were very common in 1909, and again this year, but few in years between. *Orrhodia vaccinii* and *O. ligula* did not show up till 1914 and 1915; they were then quite common. This year they are scarce. I always sugar the same trees, year by year, and all the surroundings are the same. In 1908 *Leucania comma* was one of the commonest moths at the sugar patch, but has been conspicuously absent since that year. I have only mentioned the common species that have come under my notice in what I may call a prominent manner, in hope that some collector of large experience may give me his views. Some butterflies we know, such as the Holly Blue, disappear from their usual haunts, and

after a time again appear in numbers; but I have not in any book seen the question raised in connection with Moths. I have at the same time noticed that climatic and fruit seasons seem to have some bearing on the case; for instance, in 1916 and 1909, when *C. nupta* and the "Sallows" were so common, plums were very plentiful. Possibly the same kind of season is suitable for both fruits and moths, both years being damp. I can, of course, understand that all species are commoner one year than another, but there seems to be such a periodic return and disappearance that there must be some reason. I have this season worked a good deal with the Rev. C. E. Raven; he has seen these notes, and agrees with me that the subject is a most interesting one. I may add that I keep full notes each year of my catches and the climatic variations of the seasons.—R. H. RATTRAY, Colonel; 68, Dry Hill Park Road, Tonbridge, Kent, October 20th, 1916.

ON REARING DIANTHÆCIA IRREGULARIS.—Young larvæ were obtained on July 22nd, 1913, by Mr. (now Lieut.) Charles Mellows and myself; on July 18th, 1914, July 23rd, 1915 (very small), and ova, no larvæ, on July 25th, 1916. When young they feed best on the natural food. From a bunch of *Silene otitis* taken home in a tin I put two or three stems of the flowers and seeds in each of a number of small bottles of water. If crowded together the stems soon become mouldy. On these the young larvæ thrive, and also fresh larvæ are reared from ova brought home with the food. When changing the food place fresh bottles of flowers and seeds so that they mingle with the old. When half grown they will take to the green seed pods of bladder and white campion. I have not yet tried red campion or ragged robin, and failed with pinks and sweet william seeds. They will now begin to bury in the sand during the day, especially so after the last change of skin. The sand given should be "Freckenham sand" brought home for the purpose, and not a sand that binds or any form of earth. By the middle of September most of the larvæ will have pupated, but some were later this year. You can tell by fresh food being untouched and no fresh frass when they have buried for good. Look for appearance of the imagines about the middle of June. My latest emergences were two on June 26th, 1916.—R. STANWAY PARRIS; Bishop's Stortford.

ANOSIA PLEXIPPUS IN IRELAND.—In 'The Field' for November 4th the capture of a very fine specimen of *Anosia plexippus* in Co. Cork is recorded by Major H. Chavasse, stating it is such a perfect specimen that it might just have emerged from the pupa. By Major Chavasse's desire, I have pleasure in recording this important capture in 'The Entomologist,' as it is the first known occurrence of this American species in Ireland. Although twenty-nine specimens have hitherto been seen or captured in the south of England, Wales, I. of Wight, and one in Guernsey, it is a curious fact that no examples have previously been met with in Ireland, especially as the greater number have occurred in the south-western counties of England, as many as nine occurring in Cornwall; and by the course taken in its migratory flight across the Atlantic, one would suppose the western coast of Ireland would be the most accessible landing place. The first occur-

rence of this butterfly in Britain was in 1876, when four specimens were recorded, one at Neath, September 6th; two in Sussex, middle of September and October 17th; and one in Dorset. The last record was at Sandown, I. of Wight, September 13th, 1908. I may add, Major Chavasse has very kindly lent me this beautiful specimen for figuring. It is a female, and its full expanse measures 109 mm. When closely examined under a lens the specimen shows traces of being slightly worn, by the loss of some of the scales and by very fine scratches on the wing surface; the ground colour also is rather duller than in bred examples, otherwise it is perfect. The abdomen has considerably shrunk having the appearance of being quite empty. These facts suggest that the insect has migrated. Major Chavasse is to be congratulated on making this important and interesting addition to the Irish fauna.—F. W. FROHAWK; November, 1916.

ENTOMOLOGICAL JOTTINGS FROM THE FRONT.—A few notes on the lepidoptera of the Somme valley may be of interest to your readers. At the end of May this year I was stationed at a place where I was likely to be for more than the usual ten days, and so turned my attention to my old hobby. We first tried to find some *Cerura vinula* larvæ to amuse us, but though there were numerous poplar trees near we did not find any. The first I found were on a small bush of *P. alba*, and then they were to be taken in plenty on this and *P. tremula*, which was growing all round the woods there. While searching these I also found the following larvæ; *Amorpha populi*, chiefly singly, but on one leaf I found seven ova and on another five. These were laid in patches, and evidently by one moth in each case. The larvæ varied from blue green to bright yellow green, and only in a very few cases were red spotted. About half my pupæ produced imagines the same year. *Notodonta ziczac*, all were double brooded, one very light larva taken from willow. *Clostera anachoreta* and *reclusa*, all double brooded. *P. palpina*, *dictæa*, *A. megacephala*, and *rumicis*. *Sphinx ligustri* were very plentiful, and also *Macroglossa stellatarum*. The latter I watched depositing eggs at close quarters. It did not settle, but seizing a leaf with its legs paused a second, with its wings still in motion. When disturbed it returned again several times to the same plant. The resulting imagines unfortunately emerged in October when packed for transit to England, and were in consequence spoiled. One *Mimas tilia* was found on lime and another on elm; the latter refused lime or anything else except elm. Very few moths came to the lamps in the room. One *B. rubi* was taken by this means and ova obtained. Sugar was tried on one night only, but with very little result, except with *G. derasa*, of which there were two or three on each tree. Butterflies observed included *P. machaon*, *M. galatea*, *A. paphia* (but not nearly so commonly as last year a few miles from the same place), *A. aglaia*, *L. sibylla*, *A. iris*, *G. c-album*, *A. levana*, *C. hyale*, but no *edusa*. After we had moved farther north we found the larvæ of *C. elpenor* swarming in all the ditches.—H. C. JEDDERE-FISHER, Major.

NEUROPTERA AND ODONATA FROM SALONICA.—Captain Studd, F.E.S., sent to Mr. A. Jones from Salonica a number of insects, amongst which were the following: *Palpares libelluloides*, Linn.,

one female; *Calopteryx splendens*, Har., one male; *Crocothemis erythræa*, Brullé, one male; *Orthetrum brunneum*, Fonscol., one male; *Onychogomphus uncatatus*, Charp., two males, one being teneral; *Platynemis pennipes*, Pallas, one male; *Sympetrum fonscolombii*, Selys, two females, one being teneral. Unfortunately they were in rather poor condition, and were sent home in such a way that most of the bodies were pressed until they were almost as thin as tissue paper. As wings alone are scarcely sufficient for the identification of all dragonflies, one is a little diffident in affixing names in some instances if the bodies are not in fair condition. However, there is very little doubt in this case.—W. J. LUCAS; Kingston-on-Thames.

LATE APPEARANCE OF PARARGE MEGÆRA.—On the 13th inst. a fine calm bright day after a period of three weeks of continual and heavy rain, I was surprised at seeing a bright example of this species flying along a hedgerow by the side of the road between this place and Bidford. It appears to be a remarkably late occurrence.—GERVASE F. MATHEW; Instow, North Devon, November 15th, 1916.

LATE APPEARANCE OF ARGYNNIS (DRYAS) PAPHIA.—The following dates this year for *A. paphia* may perhaps be of interest: August 10th, August 21st, August 24th, August 26th, August 28th, September 7th, September 8th, September 13th, September 17th, September 26th. After August 10th I saw no perfect specimens, although damaged ones were very plentiful. These observations were made in South Tyrone, East Fermanagh, and about three miles from Downpatrick, co. Down.—G. COULTER; Kingsford's House, Rossall School, Fleetwood.

ARGYNNIS PAPHIA IN SEPTEMBER.—On the first of the month I saw a few on the wing in the New Forest, but did not notice any afterwards. It is, I think, usually over in that district before September. I might add that I found *Pararge egeria* particularly common in the Forest, and usually do so.—W. J. LUCAS.

DIANTHÆCIA CARPOPHAGA IN SUFFOLK.—In response to Mr. H. M. Edelsten's note on *Dianthæcia carpophaga* (*antea*, p. 259) I may say that some years back I bred some remarkably light specimens from the Suffolk coast almost opposite to Harwich. These also were feeding on *Silene maritima*. Some of my Folkestone specimens are approaching them, but none are so devoid of markings as those from the Suffolk coast.—A. W. MERA; Outwood, High Road, Loughton.

COLIAS EDUSA IN WEST CORNWALL.—On September 23rd last I saw a *Colias edusa* flying over the golf links at Lelant (about three miles from St. Ives). It appeared to be a fresh one. This is the only *C. edusa* I have seen this year. Last year I saw none in this district, though for many years previously I had seen them there late in September and in the first week of October.—HAROLD HODGE; 9, Highbury Place, London, N.

POLYGONIA C-ALBUM IN KENT.—It may be of interest to record the capture of a specimen of *Polygonia c-album* near Walmer. It was flying on the cliffs about the middle of September last. I saw it alight on a hawthorn bush, and captured it while it was settled.

At the time I thought it was a battered specimen of *V. urtica*, but kept it, as it was the first I had seen that day. I believe, from reading South's 'The Butterflies of the British Isles,' that it has not occurred in the Dover district since October, 1899.—E. F. WILLIAMS; Denstone College, Rocester, Staffs.

DRAGONFLIES BRED IN 1916.—I have found this a bad year for breeding dragonflies. I think the coldness of June was unfavourable to their emergence. It certainly made many species late. I have bred *Brachytron pratense* (one female; nymph from Byfleet, the first nymph of this species I have taken there); *Æschna grandis* (nymphs from Byfleet); *Cordulia aenea* (nymph from Horning, near Wroxham, Norfolk); *Libellula depressa* (nymph from West Cornwall); *Agrion puella*. Four nymphs of *Cordulegaster annulatus* from Cornwall died on the verge of emergence. For a week or more one might say they were trying to come out, but were unable to bring off the great change. It was most unseasonably cold at the time (June), and I think that was fatal to them. Emergence demands a great physical effort, and in cold weather these nymphs (as a good many others, I believe) have not the strength needful. I have noticed for many years now a close correspondence between temperature and successful emergence of dragonflies.—HAROLD HODGE.

RECENT LITERATURE.

Yorkshire's Contribution to Science. By THOMAS SHEPPARD, M.Sc. 5s. net. London: A. Brown & Sons, Ltd., 1916.

At the 53rd Annual Meeting of Yorkshire Naturalists at Leeds on December 5th, 1914, Mr. Sheppard delivered his presidential address on "Yorkshire's Contribution to Science." This appears in the pages of the 'Naturalist' for 1915, and the book before us treats the same subject more systematically and in much fuller detail than do the pages of the 'Naturalist.' The somewhat humorous address is followed by chapters on: Publications arranged topographically; Existing Magazines and their Predecessors; Magazines now extinct; County and Riding Societies; Yorkshire Topographical and other Magazines; Magazines generally; Scientific Societies; Geological Publications; Archæological and Antiquarian Publications; Books of Reference. The whole will be useful and interesting to any naturalist who is concerned with the literature of his subject. To a non-Yorkshireman the last five chapters will perhaps appeal most, as they are quite general and do not refer specially to Yorkshire. The illustrations of old title-pages, emblems, seals, etc., are very interesting.

W. J. L.

OBITUARY.

With great regret we have to announce that Mr. Charles Adolphus Briggs, of Rock House, Lynmouth, died on October 17th last. A further notice will be published in January.

EXCHANGE.

[The publication of Notices of Exchange, or of Advertisements, in the 'Entomologist' is in no way a guarantee for the British nationality, authenticity, or good condition of the Species. This Notice is not given to throw doubt on the bona fides of Exchangers or Advertisers, but to absolve the Editor from responsibility, in case the liberty allowed should be abused.] *Marked * are bred.*

NOTICES OF EXCHANGE should be received by the 21ST OF EACH MONTH to insure insertion. Not more than SIX LINES can be allowed for each.

Duplicates.—*T. quercus**, *M. fuciformis*, *A. ridens**, *H. dipsacea*, *B. roboraria*, *B. abietaria**, *E. pusillata**, *T. variata* (not obeliscata) (few), *D. abietella*; all on black pines. *Desiderata.*—Very numerous. Condition must be perfect, and data full. Colour of pin and style of setting immaterial.—*F. C. Woodforde*; 2, *Isis Street, Oxford.*

Duplicates.—*Ophiogramma**, *Solidaginis*, *Minorata*, and *Sinuana*; pupæ of *Or. Desiderata.*—*Strigula*. *Asella*, *S. Urticæ*, *Albovenosa*, *Cannæ*, *Leucostigma*, and var. *Fibrosa*, *Retusa*, *Capsophila*, *Olivacea*, *Turfosalis*, *Muricata*, *Asthena*, *Sylvata*, *Rubiginata*, *Pygmæata*, *Helveticaria*, *Minutata*, *Lariciata*, *Sexalisata*, *Sagitata*, *Griseata*, and *Plumes.*—*Francis C. Woodbridge*; *South Mead, Gerrards Cross, Bucks.*

Duplicates.—*Conspicillaris* (fine bred) and 4 *Barrettii*. Also a few each of the following: *Anomala*, *Littoralis*, *Hera*, *Umbra**, *Prasinana**, *Carpophaga**, *Mendica**, *Fuliginosa*, *Adusta*, *Areola*, *Quercifolia**, *Vernaria**, *Dolabraria**, *Prunaria**, *Pendularia*, *Salicata*, *Dubitata*, and many others. *Desiderata.*—Very numerous. Lists exchanged.—*W. B. Butler*; *Southgate, Wellington Road, Taunton.*

Duplicates.—Bred: *Erosaria*, *Linnaria*, *Fuscantaria*, *Aprilina*, *Carpophaga* (pale form), *Plantaginis*, *Reclusa* (fine), *Diluta*, *N. strigula* (a few). Pupæ: *Lunaria*. Ova: *Erosaria*, *Aprilina*, *Protea*, *Pennaria*. *Desiderata.*—Fine *Sinapis*, *Aglæa*, *C-album*, *Sibylla*, *Actæon*; pupæ of many macros; ova, etc.—*Thos. Salvage*; *The Plaquet, Arlington, Sussex.*

Duplicates.—*Aurinia**, *Tithonus*, *T. rubi*, *Pavonia**, *Flavicornis*, *Perla*, *Menyanthidis*, *Fulva*, *Rurea*, *Graminis**, *Brunnea*, *Festiva*, *Umbrosa*, *Typica**, *Rubricosa*, *Gothica**, *Incerta**, *Rufina*, *Macilenta*, *Satellitica*, *Chi*, *Oxyacanthæ*, *Nebulosa*, *Glaucæ**, *Pedaria*, *Hirtaria*, *Rupicaprarica*, *Leucophearia*, *Aurantiaria**, *Æscularia**, *Testata**, *Plagiata*, *Atrata*. *Desiderata.*—Numerous pupæ and imagines to extend and renew.—*G. Fleming*; 9, *Fairview Terrace, Merthyr Tydfil.*

Duplicates.—*Grossulariata* var. *Lutea*, var. *Lacticolor*, *Corydon* var. *Semisynggraph*, and numerous other *Lepidoptera*, *Coleoptera*, *Aculeata*, etc. Also many numbers of 'E. M. M.' and 'Entomologist.' *Desiderata.*—'E. M. M.' (1st series), Nos. 6, 8, 38, 66, 70.—*B. S. Harwood*; 2, *Fern Villas, Melford Road, Sudbury, Suffolk.*

Duplicates.—*Dissimilis**, *Velleda*, *Fibrosa*, *Ambigua**, *Fulva*, *Lubricipeda* var. *Fasciata**, *Plantaginis**, *Coracina*, *Captiuncula*, *Mundana*, *Lutosa*, *Valerianata**, *Togata**, *Cilialis*, *Inquinateus*, *Caledoniana*; *Variegana* vars. *Sauciana*, *Geminana*, *Cinerana*, *Brunnichiana*, *Schulziana*, *Congelatella*, *Occultana*, *Vectisana*, *Dorsana*, *Rusticana*, *Nanana*, *Strobilella**, *Herbosana*, *Suboccelana**, *T. corticella*, *Oec. fulvigutella**, etc. *Desiderata.*—Good *Pyrales*, *Tortrices*, etc.—*T. Ashton Loft-house*; *The Croft, Linthorpe, Middlesbrough.*

Duplicates.—*C-album*, *Complana*, *Lurideola*, *Falcataria**, *Prasinana*, *Plantaginis*, *Tridens**, *Megacephala*, *Retusa**, *Tincta*, *Vestigialis*, *Saucia*, *Suffusa*, *Ambigua*, *Genistæ*, *Viminalis**, *Parthenias*, *Notha*, *Papilionaria**, *Vernaria**, *Advenaria*, *Blomeri*, *Omicronaria*, *Extersaria*, *Subsericeata*, *Murinata*, *Hastata*, *Jasioneata**, *Venosata**, and others. *Desiderata.*—*Ichneumoniformis*, *Myopiiformis*, *Sphegiformis*, *N. strigula*, *Muscarda*, *Sericea*, *Ligniperda*, *Testudo*, *Asella*, *Trifolii*, *Fagi*, *Trimacula*, *N. reticulata*, *Leucophæa*, *Furva*, *Depuncta*, *Palæacea*, *Cæsia*, *Chrysozona*, *Nubeculosa*, *Gnaphalii*, *Venustula*, *Sparsata*, *Sexalisata*, *Ruberata*, *Munitata*, *Adæquata*, *Polygrammata*, *Paludata*, *Sagittata*, and others.—*H. A. McNaught*; 41, *The Tything, Worcester.*

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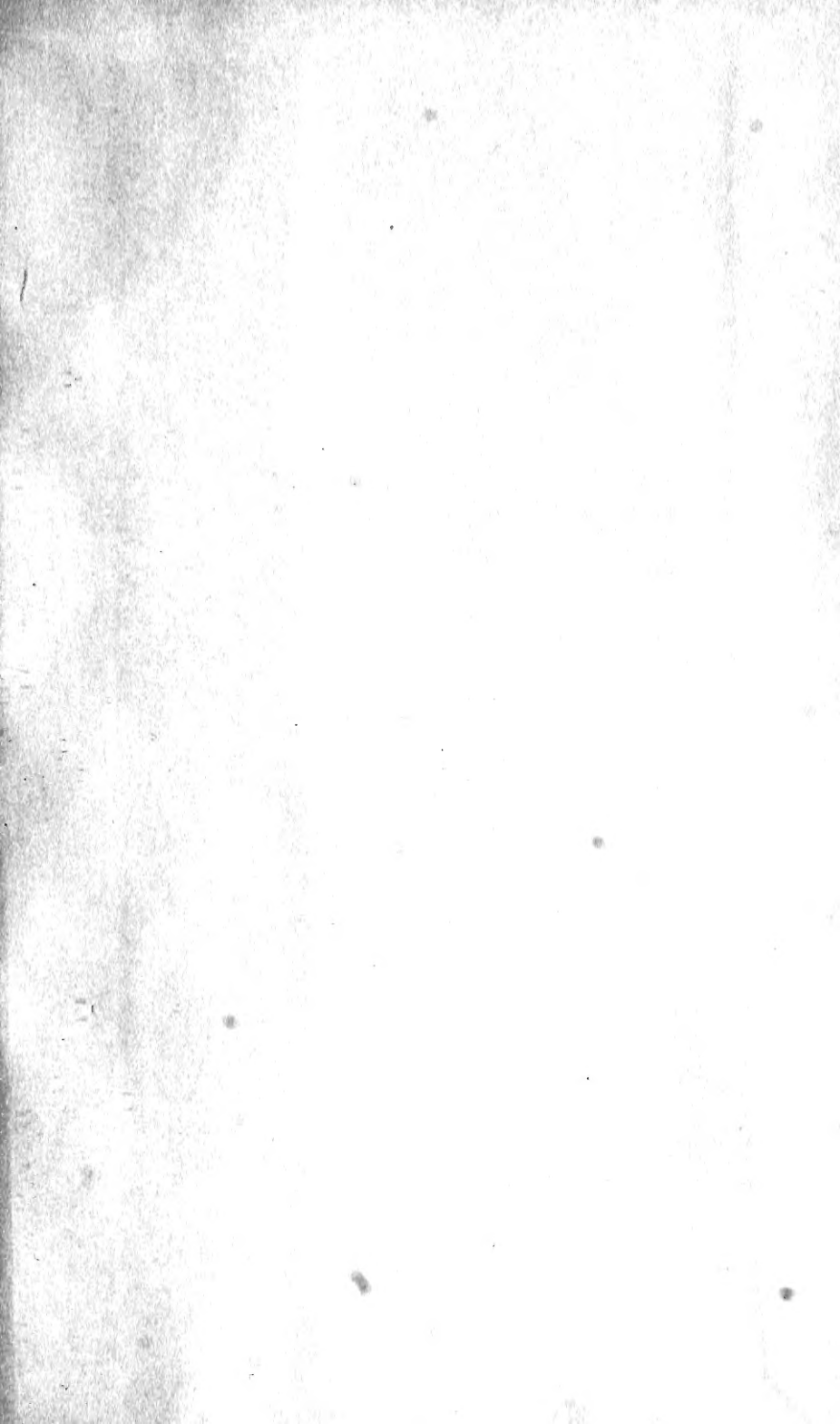
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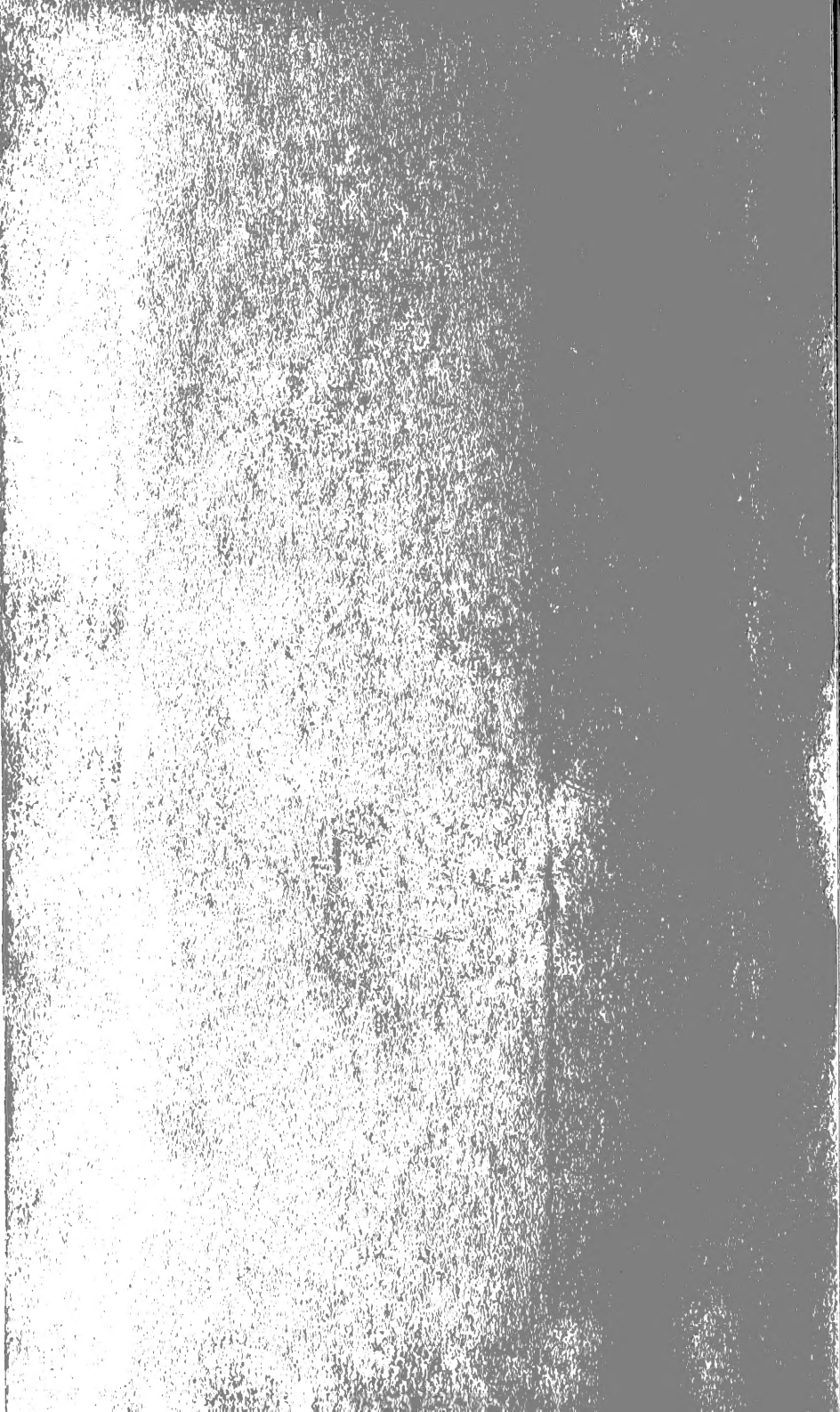
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