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Great deeds are done and great discoveries made.’

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ADDENDA.

P. 313, l. 33, after *megera* add *Satyrus cordula*.

ERRATA.

- P. 303, l. 25, for *pherestes* read *pheretes*.
 P. 312, l. 5, for *cordulea* read *cordula*.
 P. 313, l. 38, for eighty-nine read ninety.
 P. 315, l. 20, from bottom, for *climene* read *clymene*.

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SOME REMARKS ON THE ATLANTIC FORMS OF *SYMPETRUM STRIOLATUM*, CHARP.

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

IN the 'Revue des Odonates' (1850), p. 43, in discussing the *Libellula ruficollis* of Charpentier, de Selys writes as follows:— "M. Hagen m'a communiqué deux des trois exemplaires types reçus de Portugal par M. de Charpentier; ce sont de vrais *striolata* mâles très adultes, mais en mauvais état de conservation. . . . Les pieds sont comme tournés au gras et les lignes jaunes sont très-étroites, surtout sur les cuisses (qui au premier abord paraissent noirâtres), mais elles existent. La taille est très grande, mais pas sans exemple en Belgique." Lower down on the same page we read: "J'ai vu dans la collection de Miss Ball à Dublin, des exemplaires mâles adultes qui avaient aussi les pieds très-peu lignés de jaune."

In the "Revision des Diplax paléarctiques" ('Annales de la Soc. Ent. Belg.,' xxviii. p. 35 (1884), de Selys describes a race of *S. striolatum* from Madeira under the name of *nigrifemur*, of which he says:—"Les femurs sont noirâtres sans ligne jaunâtre, et aux tibias le jaunâtre n'occupe qu'une raie externe étroite. La taille est très grande: abdomen ♂ 27: ♀ 26-29. Aile inférieure ♂ 30-33; ♀ 30-33 . . . les parties noirâtres des côtés du thorax sont très foncées, de sorte que les deux bandes jaunâtres qui les divisent, sont fort tranchées."

These are the first indications of the existence of what may be termed an Atlantic race of *S. striolatum* characterized by darker femora, and usually by more strongly pronounced lateral thoracic markings than in the more typical forms.

The next occasion on which exceptionally dark *S. striolatum* are alluded to, the insects in question came from a somewhat unexpected and in some respects rather remote point, and the imagination of those who had to do with them seems to have been rather exercised concerning them.

Mr. Lucas in 'Entomologist,' May, 1900, p. 139, recorded the capture at Stornoway by Mr. Fremlin of two females of a *Sympetrum*, and wrote of them as follows:—"The conclusion to which we must come, seeing there are two specimens thus pre-

cluding an aberration, appears to be that the insects belong to a form of *S. striolatum* somewhat resembling *S. scoticum* (probably a local race), or else that both insects are hybrids between the two species. Mr. McLachlan, who has examined the insects, inclines to the latter opinion." A good figure accompanies this record.

Further, in 'Entomologist' for June, 1912, p. 171, Mr. Lucas records a pair of dragonflies captured by Colonel Yerbury at Lochinver, Ross-shire (I presume Sutherland is meant), which are said to be the very counterparts of the Stornoway specimens. He gives to these examples the name of *S. nigrescens*, and considers them either a new species or a very distinct race of *striolatum*. In his remarks there seems still to be a tendency to associate the insects in some way with *S. scoticum*, and one is tempted to regard his description as a little forced to maintain this. Unfortunately Mr. Lucas does not compare his specimens with those from other localities in Scotland, England, Ireland, or elsewhere. There is accordingly room for some further observations.

When Mr. Lucas's original remarks appeared in 1900 I was not greatly interested in the subject. In 1912 his suggestion of the existence of a species of *Sympetrum* localized in the extreme north-west of Scotland seemed inconceivable, and considering the known powers of *Sympetrum* as a flier, the idea of a local race restricted to the same region was almost equally difficult to accept. After comparing the description with that of the var. *nigrifemur*, which it at once recalled, I gave the matter no further consideration until I received an enquiry from Dr. Ris asking me what I knew of *S. nigrescens*, the description of which had been brought under his notice by Mr. Herbert Campion. With the ready co-operation of my friend and neighbour Mr. William Evans, I was able without any delay to send Dr. Ris specimens from the west of Scotland evidently similar to Mr. Lucas's, and, together with these, series of *S. striolatum* from the north of Ireland and the New Forest for comparison. Since then, by the kind assistance of friends and correspondents, I have examined quite a number of examples from different localities, and the conclusion come to is that the form described by Lucas extends with a certain amount of variation, both individual and local, over the whole western fringe of Scotland; while examples from Ireland, especially from the north and west, although more variable and in some respects intermediate, still retain some of the same characters, and in any breaking up of the species into races would fall to be associated with the Scottish form rather than with the typical one. Fortunately Dr. Ris visited Brussels in the autumn, and was able to re-examine the types of *nigrifemur*. His conclusions on the whole subject will appear in the additions to his great work on the Libellulinae, but I believe that I have

his sanction to state that our Scottish insect will fall in his revision of *S. striolatum* under the subspecies *nigrifemur*.

Just after sending the material to Dr. Ris, Mr. G. G. Blackwood, of Edinburgh, brought to me most opportunely a very nice little series (four males, one female) of *S. striolatum*, in very mature condition, which he had taken at Mallaig, Invernessshire, on September 4th last; and having found it useful to tabulate the principal characters of these and of the more typical English form, I give here a reproduction of this tabulation in part, along with two diagrams showing the lateral thoracic markings, taken respectively from males from Thorney, Cambridgeshire (Fig. 1) and Mallaig (Fig. 2).

ENGLISH. (Male.)

Line at base of the frons ends at the eye, without going downwards.

Humeral and second lateral sutures very narrowly marked with black. The first lateral suture in its upper part hardly marked at all (sometimes, however, the narrow median field (F, G) may be lightly outlined in fuscous).

Usually five fairly well-defined yellowish spots surrounded by black on the sides of the thorax above the legs. These spots are distributed thus on

A } mesinfræpisternum.

B }

C : mesepimeron.

D } metinfræpisternum.

E }

F { This field is the metepisternum,
and in the typical forms is
G } not divided into spots.

The above spots may be more or less confluent; thus A, B may be confluent or just separated by a narrow neck, rarely quite separate; C may touch E or may be distinctly separate; D may be partially confluent with E or narrowly separated.

Sternum mostly yellowish, the sutures sometimes marked with blackish.

WESTERN SCOTTISH. (Male.)

Line extends downwards somewhat, as in *vulgatum*.

Humeral suture more heavily marked with blackish. Narrow middle field usually strongly outlined in fuscous and divided by a broad diagonal line, the two enclosed spots (F, G) varying in size, but the one nearer the stigma always smaller and triangular.

Note.—Even in an otherwise very dark example, the infuscated outline of the middle field is slight and the diagonal division hardly marked.

Spots A, B, C, D, E variable, but all much reduced in size, and in the Mallaig examples never confluent.

Sternum mostly blackish posteriorly, with a yellowish oval marking on either side of the middle line, these markings diverging caudad and having a yellowish tail (the black condition is no doubt in part the result of age).

ENGLISH. (Male.)

Trochanters with a large black spot; femora and tibiae externally yellowish, the yellow on femora divided by a strong black line.

Abdomen beneath marked longitudinally with black.

Hind wings 27-30 mm.

WESTERN SCOTTISH. (Male.)

Legs in the Mallaig specimens practically all black except distal half of anterior trochanters and the yellow lines on all the tibiae. While there is no reason to doubt that the legs are much blacker always than in the typical forms, there is here and there just the faintest trace of yellow on the femora, the relics of a certain amount of that colour which has become gradually obliterated through age (see on this point the slight discrepancy in Mr. Lucas's two descriptions).

Very broad black markings occupy the greater part of each side of the ventral suture, the red being reduced to mere streaks. Rounded spots near genitalia small.

Black lateral longitudinal markings much more strongly developed than in the typical forms.

Hind wings 25.5-27 mm.



Two males (coll. W. Evans), Glen Aros, Mull (August 6th), and Morvern, Argyllshire (July), agree very well with the Mallaig examples, that from Mull being especially dark. A female from Moidart, Inverness-shire, in September (coll. Evans), has the thoracic spots rather larger, and the femora distinctly lined with yellow.

A fine male from Talladale, Loch Maree, Ross-shire (August 11th), which has the sides of thorax very darkly marked, has distinct narrow yellow lines on the femora, while a female also from the Loch Maree district is very similar to the Moidart female (male and female, coll. J. J. F. X. King). Two very small specimens (male and female, the latter teneral, hind wing, male, 24 mm.) are also in King's collection, without label, but

believed to be from the island of Coll. In these the boundaries of the middle field are heavily shaded, and the legs are narrowly lined with yellow. Further, Mr. King reports two males from the island of Islay (July 13th), which are of the true western Scottish form, the lateral markings of thorax agreeing with diagram No. 2, excepting that spot *a* is rather larger, the dark boundary of the upper part of the field being narrow.

Three examples from Tayvallich, in Kintyre, deserve special notice (two males and one female, coll. A. M. Stewart, Paisley). The tendency of the line at the base of the frons to go downwards is not so much pronounced, being more strongly marked downwards in the female than in the males. The narrow middle field of the thorax is distinctly outlined in fuscous, but the diagonal line is less clearly developed (partly, I think, a matter of age). Thoracic spots rather larger than in the northern examples, but *c*, *d*, *e* always well separated by broad black margins; in one male *a* and *b* widely separated; in the other two connected by a narrow neck. The yellow spots on the metasternum long oval, the yellow tails becoming definite long wedge-shaped markings; following these is an irregular semi-circular black marking of varying breadth, the space enclosed being yellowish, but tending to become fuscous and probably becoming blackish with age. In the males the narrow yellow lines on the femora are distinct; but in the female they tend to become infuscated. Ventral surface of abdomen perhaps somewhat discoloured, but apparently not differing from the northern specimens, and in great part black.

The above are from the northern part of Kintyre, and they constitute a natural link with the Irish forms. The extreme southern point of the long peninsula of Kintyre is only a matter of twelve and a half miles distant from the Irish coast, surely a mere trifle to a migrating *Sympetrum*.

From Emyvale, Co. Monaghan, Ireland, I have before me a series of four males and three females. They are rather young, but they have much in common with the Scottish forms. The femora are lined with yellow, but the legs are over all darker than in the typical forms. The thoracic lateral spots are variable in size, but in some they are quite as small as in some of the Scottish specimens; *a*, *b*, *c*, *d*, *e* are completely isolated in all of them; the narrow middle field is always outlined in fuscous, and in three of them (one male and two females) the diagonal line is clearly marked. Six of these have more or less dark shading at the side of the eye.

By the very kind assistance of Mr. J. N. Halbert, I have been able to examine a series of specimens obligingly lent by the National Museum, Dublin, and originating from many different points in Ireland. They are from the following localities, *viz.*:—

Males (one from each locality):—1. Rostrevor, Co. Down,

September 2nd. 2. Dublin. 3. Cappagh, Co. Waterford. 3a. Cappagh, Co. Waterford (coll. J. J. F. X. King). 4. Cappoquin, Co. Waterford, August 3rd. 5. Glencar, Co. Kerry. 6. Caragh Lake, Co. Kerry, July 30th. 7. Killarney, Co. Kerry, July 15th. 7a. Killarney, Co. Kerry, August 7th (coll. King). 8. Mallaranny, Co. Mayo, July. 9. Westport, Co. Mayo. 10. Clare Island, Co. Mayo, July. 11. Achill Sound, Co. Mayo. 12. Coolmore, Co. Donegal. 13. Derry. 14. Poyntz Pass, Armagh, September 26th.

Females (one from each locality):—1. Cappagh, Co. Waterford. 2. Waterville, Co. Kerry, July 27th (teneral). 3. Parknaskilla, Co. Kerry. 4. Westport, Co. Mayo. 5. Ardara, Co. Donegal.

Hind wing, male, $26\frac{1}{2}$ –28; female, $27\frac{1}{2}$ –29.

In analysing the above, it may be said, with regard to the males, that the femora are in the darker condition alluded to under the Emyvale specimens, any exceptions being unimportant. The thoracic spots A, B, C, D, E (with one or two exceptions where A, B are nearly connected) are of variable and usually moderate size, but they are practically always completely isolated, and in 6, 9, and 11 run rather small, approaching the Scottish form. The middle field of the thorax, however, is frequently hardly outlined at all; this is the case in 1, 2, 3a, 4, 5, 6; in the others it is outlined, although sometimes rather faintly; in 9 strongly, with traces of the diagonal line. The sternum, in nearly every case, is marked with black, sometimes rather strongly; and the under side of the abdomen seems much blacker as a rule, especially in the anterior segments, than in the more typical forms. The shading at the side of the eyes is more or less marked in 3a, 6, 7, 7a, 9, 12, 13, 14, and in the others hardly or not at all indicated. The females are less satisfactory in condition. The thoracic spots A, B, C, D, E are all isolated except A, B in 1, 2, 4, in which they are narrowly connected; the middle field is always outlined.

Further Irish material in Mr. King's collection, examined by him, seems to be very constant in regard to the generally darker condition of the legs, and also the usually darker condition of the under side of the abdomen, but is in other respects variable. In a male from Wexford; male, Westport; male, Killarney, and two males from Cappoquin, the lateral markings of the thorax are much as in diagram No. 1; while females from Killarney and Cong, Co. Mayo, are almost similar in that respect. One female from Athlone is almost a typical *striolatum* as regards the thorax; another from the same locality is an intermediate. One from West Meath has the middle field outlined in fuscous, while another from the same county is described as very near to an example from Islay.

Three males from the Isle of Man, also sent by the Dublin

Museum, are interesting. They tend towards the intermediate condition, the spots, especially c, d, e, being smaller and the legs darker than in the typical form.

Finally, a female taken by myself at Christiansand, Norway (June 17th), may be mentioned. Although very young and the infuscation of the yellow on the femora only slight, the *nigri-femur* characters hold good in respect of spots a, b, c, d, e being all well separated, the fuscous outline of the middle field being heavily marked, the diagonal line being also broad and well defined. Hind-wing 27 mm.

The distribution of *Sympetrum striolatum* in Scotland has been fully and carefully worked out by Mr. Evans ("Odonata of the Forth Area," Proc. Roy. Physical Soc., xvi. pp. 87-96, 1905, and 'Annals Scot. Nat. Hist.,' 1911, pp. 14-25). It seems worthy of notice that, while the species apparently occurs all along the western seaboard of Scotland, including at least the larger islands, it is found rarely in the east of Scotland, and almost certainly does not breed there. Further, I am inclined to believe that the ordinary northern limit of *S. striolatum* as a British breeding species on the east coast must be drawn considerably south of the Scottish border, probably about the Humber, but further observations are required to verify this. Mr. Porritt says that he has no doubt that the species breeds regularly in the low-lying lands at Askern and probably all over that (the Doncaster) district, but not in the hilly districts of the county, i. e. north, north-east, east, and most of the south-west, although it seems to occur sporadically in most parts of the county. He also thinks it may breed in the Hull and Goole district, although he has never seen it there.

Ireland and the west of Scotland have in common a comparatively mild and moist winter climate, and this condition may not only render possible the existence of *S. striolatum* in the west and north, while it fails on the east coast of our country, but also account for its melanic tendencies. Very likely these tendencies vary from season to season, and no doubt the influx of migrants from other areas has something to do with the presence of intermediates.

13, Blackford Road, Edinburgh: November, 1913.

NOTES ON THE LIFE-HISTORIES OF *HESPERIA TESSELLUM* AND *H. CRIBRELLUM*.

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

HERRN HERMANN RANGNOW, when recently collecting in the Ural Mountains, was fortunate enough to discover the larvæ and food-plants of the above-named insects, and has permitted me to record his observations in this Journal.

Hesperia tessellum.

Caterpillars were found from the middle of May to the 10th of June on a species of *Phlomis* (certainly from the description, *P. tuberosa*). The larvæ spin the two edges of a leaf together on the upper surface, and live within this leaf. The colour of the larva is mouse-grey, with a black head and yellow collar. There are two black rows of dots on the back, an excellent characteristic of the species. The imago begins to emerge after the middle of June, and there is apparently a partial second brood in the beginning of August.

Hesperia cribrellum.

The larva of this species is indistinguishable from that of *H. carthami* var. *mœschleri*, and lives spun up among the leaves of a species of *Potentilla*. The caterpillar is full-fed in May, and the imago emerges at the beginning of June.

A BUTTERFLY HUNT IN SOME PARTS OF UNEXPLORED FRANCE.

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

(Continued from vol. xlv. p. 17.)

(iv) *Isère and Drôme. The Vercors.*

AFTER a year's silence on the subject of "fresh woods and pastures new" explored in France, I am again able to take up my pen to continue the series of short papers published by me in the 'Entomologist' for 1911-12. And I am the more encouraged to do so when I hear that my brother naturalists and collectors not only read these papers, but actually follow in my footsteps; and this at other seasons of the year than those of my travel. So that, as time goes on, we may hope to obtain not only a fleeting record of the captures and observations of a week or two spent in the several localities, but a solid contribution to the knowledge of the lepidoptera occurring there from year's end to year's end. Most of us are compelled to do our collecting at fixed times of the year—usually in July and August—in the holiday season in fact. It has seldom fallen to my lot to get abroad before the last week of June, when the first flight of most of the southern species of the plains is over. And this year I did not leave London before July 1st.

For some time past I had had my entomological eye, so to speak, fixed on the western Dauphiny, that is to say, the country west and south of Grenoble, between the Isère and the Drôme, and within the departments bearing the names of the respective rivers. An application to the Cyclists' Touring Club of France for information of this region brought me among other fascinating

booklets that published by the "Syndicat d'Initiative de Valence-sur-Rhône et de la Drôme." A glance at its contents decided me to try the country known collectively as the Vercors, and a cyclist friend having passed through the Lans valley earlier in the summer and given satisfactory account; I took the morning tourist-car from Grenoble on July 2nd, one of the many now "doing" the Alps and outlying "massifs" in connection with the P.L.M. and Sud Railways. By these means rapid communications have been opened up with well-known entomological centres, and a vast region of new country placed within easy reach of the main lines. But after five weeks' experience of them I cannot say that I view the automobile alpine—by the way the Academy is divided as to whether it is masculine or feminine—as an unmixed blessing. From the tourist's point of view the cars travel far too swiftly—it is impossible to enjoy the scenery; while at present many of the mountain roads are wholly unfit for motor traffic, and the shaking amounts to positive torture of mind as well as of body. For when the setting boards are full the anxious collector is speculating all the time how many pins have got loose in the boxes, and trembling for the fate of his rarities. On several occasions, notably on the road from Barcelonnette to Prunières, the railway station on the Briançon line, irreparable damage was done in the way of broken antennæ and split wings. Those who do their setting, as I do, *en route* will do well, therefore, to examine the boards before and after any involuntary game of Cup-and-Ball of the kind. Further, the turns and twists of the mountain roads, bad enough in the old diligence days, are nerve-shattering at the pace taken by the French chauffeur; and, worst of all for the entomologist, except when going slow uphill, the delight of spotting species by the roadside is destroyed; even more so of the occasional walk ahead with net or pill boxes by footpath short cuts, while the horses toil round the dusty zigzags. It was really quite a relief when, on one occasion at least, I found the motor, for want of passengers, superseded by the decayed and decrepit diligence, otherwise consigned to indefinite æstivation. But against these drawbacks may be reckoned the rapidity of the journey. Localities formerly reached in a day's drive are now but a few hours distant. While the completion of the Annot tunnel on the Digne-Nice line has at length united by rail and motor the Basses-Alpes and the Alpes-Maritimes. In the "fifties" it took Bellier and Guillemot two days and two nights in the diligence from Grenoble to Larche. The journey, with intervals, now occupies barely twelve hours.

The Vercors may be reached either from Valence or Grenoble, the usual starting point being Pont-en-Royans; but wishing to explore the Lans valley, as well as to see something on foot of the Gorges of the Bourne, to which the road leads through

Villars, I chose the longer route. From Sassenage the road is all up-hill, with steep gradients, and, as the motor slowed down, I was able to see something of the larger butterflies at all events on the flowery banks and rocky promontories through which we wound. The morning was fine; the sun full on the slopes below the Gorge d'Engins, and butterflies were in force with *Satyrus cordula* (males) in the ascendant, and very soon the familiar *Erebia stygne*. Occasional *Parnassius apollo* sailed lazily down the gullies, and the "blues" were represented by *Plebeius argus* (*ægon*). *Aporia cratægi* swung from the ox-eyed-daisy-heads as we topped the Gorge and entered on the long, green, highly cultivated valley of the Lans, and there even the "whites" became scarce until we reached the charming little country-house Hôtel du Parc, where I put up for a couple of days; nor should I have pressed on so soon had not the weather, from warm and sunny, changed suddenly to cool, with much cloud hanging low upon the hills I had hoped to climb. Flying down the road on the afternoon of the 2nd I saw one freshly emerged *Papilio machaon*—the only one of its kind met with until the very end of July—while a stroll towards the Gorges of the Bourne brought me to much promising ground, the waste places gay with the flowers of a fine red thistle-like *Centaurea*, usually most attractive to my game. The next day, therefore, I walked down the Gorge, which is singularly beautiful with its forest and rushing stream, as far as the bridge where the road divides, that to the left towards St. Martin-en-Vercors, that to the right towards Pont-en-Royans.

The weather was all against collecting, but before mid-day there were fitful gleams of sunshine, and at one or two points by the roadside butterflies were flying, but difficult to reach owing to the extreme steepness of the slopes, which, by the way, were rosy with an abundance of ripe alpine strawberries. *Erebia stygne* was the commonest insect with *A. cratægi*, and on one small patch, full of wild balsams not yet in flower, *Euchloë cardamines* and the spring form of *Pieris napi* were surprisingly fresh, in contrast to *Brenthis euphrosyne* and *Pararge hiera*, both of which species had seen their best days; a small dark race of *P. mæra* evidently just emerging. One fresh male, *Melitæa dictynna*, was put up among some raspberry bushes, where *M. athalia* also occurred singly. *Aglais urticæ* and *Pyrameis cardui* showed the hibernators and their progeny overlapping. The Lycænids were *Polyommatus icarus* and (one) *Lycæna arion*. But it was now so cold and the wind so high that I had to give up collecting; the only other butterflies observed being *Thymelicus flavus* (*thaumas*), *Chrysophanus dorilis* var. *subalpina*, and one male *C. virgaureæ* picked up crushed on the gravel path in front of the hotel. July 4th was equally windy and cool—fine without sun—and the mountains still canopied with

cloud, so that I had little hope of achieving much in the way of a bag on the path to the Col Vert—a mountain walk decidedly reminiscent of the green unproductive Plombs of Cantal, described by me in the 'Entomologist' (vol. xlii. p. 266), the similarity being heightened by the clumps of golden *Genista sagittalis*—a food-plant by the way of *Nomiades cyllarus*, as M. Rehfous tells us.* The presence of innumerable herds also warned me of what I might expect, and the few butterflies met with, chiefly *Cœnonympha pamphilus* and *Cupido minimus*, were actually kicked out of the herbage. Waking next morning to the same depressing weather conditions, I took advantage of the motor for Pont-en-Royans, which makes the tour of the Gorges, and after an interesting and exciting journey found the sun shining brightly upon the most picturesque of riverside towns. Thence the road mounts by the Petits Goulets to the Grands Goulets, and on to Baraques, where I spent the rest of this and the succeeding day with decidedly better results. Here there is plenty of excellent collecting ground towards the northern entrance to the Gorges, as well as between Baraques and La Chapelle-en-Vercors, whither I was bound; and I only regret that time prevented my making a longer stay, and that I had not been able to include Pont-en-Royans itself in the plan of campaign. *Agriades corydon* males were flying on the dusty road outside Pont-en-Royans, and *Parnassius apollo* was soon in evidence; *S. cordula* and *E. stygne* common at the gates of the Grands Goulets in the Vallée d'Echevis on the 5th and most of the 6th under a hot sun. Both *Thecla ilicis* and *T. spini* pervaded the low sloe-bushes, with decidedly *passées* *P. podalirius* females evidently ovipositing, and rather worn opercular *Limenitis camilla*. *Cœnonympha arcania*, *Aphantopus hyperanthus*, *Pararge megæra*, and *Melanargia galatea*, were all common and fresh; the first perfect males of *Satyrus hermione* basked on the warm rocks and feasted upon the usual dainties! Brilliant *G. rhamni* affected the same small coppices by the roadside, and a large tawny-winged butterfly which flew into my net proved to be a newly emerged male *Eugonia polychloros*.

An even better terrain for butterflies, however, lies about a mile and a half out of Baraques on the road to La Chapelle, my next objective. At this point the mountains descend in easy slopes to the road, and there is an abundance of shrub and flora; the same red *Centaurea*, as before mentioned, again proving a most effective lure for many species. Following a cart track up the hill I was soon at work on what should have been a most productive locality if only the sun had obliged. The afternoon was far advanced before it came out at all strongly, and then nearly everything had gone to roost. The morning of the 7th

* 'Bull. Soc. Lépid. Genève,' vol. ii. fasc. 4, p. 241.

did however yield an hour or two of warmth, and whenever the sun broke through for a minute or two butterflies became tantalisingly profuse. I was especially anxious to investigate the Hesperids of Drome, but though I worked hard at this point and quartered every acre of the likely-looking ground, I only succeeded in netting one of the elusive Black-and-White Skippers which whizzed past me at long intervals, but seemed never to rest upon the wing and to disappear like magic the moment the light failed. This one example is of considerable interest all the same. It is a splendid male *Hesperia alveus*—a true mountain species as we now know, and entirely different from *H. armoricanus*, the “*alveus*” of the plains as heretofore supposed. The coloration of the under side is also quite different to that of my Pyrenean and Swiss Alpine examples, the ground tint being deep rich green and not yellow- or olive-green, in this respect resembling a single example of the same species taken by me last year at Herkulesbad. Another surprise was the first *Colias* captured—*C. phicomone*—a male, the largest I have seen; and this at the lowest altitude I ever encountered the species—about 3000 ft. (Mr. Wheeler places the range in the Central Alps from 4000 ft. to 8000 ft., but mentions one even lower record, 2240 ft., Oberstalden (Frey)). Of the Lycænids, *Polyommatus hylas* was the most distinguished—a few males—and *Aricia medon* (*astrarche*) the commonest; and the latter, if not actually abundant, at least flying together in some quantity. *Plebeius argus* males were also well to the fore, and there were plenty of *Lycena arion* males flitting with *M. galatea* over a little patch of wheat at the foot of the slopes, the blades swaying in the wind seeming also to have a peculiar fascination for *P. apollo* as it made a regular up-and-down hill flight. *C. hyale*, very swift on the wing, was common. But before noon the clouds were up, and the night at La Chapelle-en-Vercors, in the cleanest of little inns, so cold and grey, that I was again on the road south at five in the morning, bound for the Col de Rousset in the *voiture publique* which here, at all events, has not been snuffed out by the motor. At this time of day, with a dour sky and keen wind blowing, the road from La Chapelle to La Britière and Rousset at the foot of the Col seemed uninviting. From the latter village, however, the road becomes decidedly interesting, and with sun and blue sky later in the day would no doubt be productive, though it is still quite northern in character—forest-trees and flora alike.

Finally, plunging into a long tunnel, we emerged at the Refuge just below the actual summit of the Col de Rousset, and at a step we had passed from the cool beech forests and pallid verdure of the north to the true Midi of barren lavender-haunted mountains, and aromatic wastes presently animated with the myriad insect-life that moves and has its being under

the gracious influence of the sun. Above, a mist still hung over the topmost cairn surmounting the tunnel. Three thousand feet below lay Die glittering in the sun, and the sound of the bells of the incoming diligence, mingling with those of the herds on the dewy hill-pastures, was borne upwards with the wind of the morning which is the breath of Provence. An hour or so, with hot coffee and rolls, in the still chilly "gazebo" of the Refuge, and the sun was on the Col itself, and presently, as we moved downwards, the limestone ravines became alive with *Erebia stygne*, *Parnassius apollo*, and *Satyrus cordula*, *Argynnis adippe*, *Issoria lathonia*, *S. alcyone*; and in the lavender region "Blues" battling with the strong wind which now blew up thick clouds of dust until we were all as white as any Pierid of them all. Lower down, where the lavender and wild-thyme were in full blossom, *Colias edusa* put in an appearance; and I noted the first *Chrysophanus alciphron* var. *gordius* males, gleaming like jewels on the purple spikes of bloom with azure *A. thetis*, *P. hylas* and *A. escheri*, the richly-purpled "Blue" flying with them, being no doubt that latest of rediscovered Lycænids, *Agriades thersites*, though I did not recognize it at the time. I had hardly reached Die railway station, however, when a whirlwind of dust, precursor of a thunder shower, of exceptional violence enveloped me; and grateful, indeed, was the rain upon the parched Avenue du Chemin de Fer, as I endured it for a half hour in a fly-haunted, frowsy restaurant, before the train—the slowest "omnibus" surely that ever crept—bore me away to Veynes, and late in a warm night, now "full of stars," to Digne of many pleasant memories, entomological and otherwise.

LIST OF RHOPALOCERA TAKEN AND OBSERVED AT VILLARS-DE-LANS (ISÈRE), AND IN THE VERCORS (DRÔME):—G. G. = Grands Goulets. G. B. = Gorges de la Bourne. La Ch. = La Chapellen-Vercors.—*Hesperia alveus*, La Ch.; *Augiades sylvanus*; *Thymelicus lineola*, *T. flavus*; *Chrysophanus dorilis* var. *subalpina*, G. B.; *C. virgaureæ*, Villard, *C. alciphron* var. *gordius*, above Die; *Lycena arion*, La Ch., G. B.; *Cupido minimus*, Villard, La Ch.; *Aricia medon*, G. B., La Ch.; *Polyommatus icarus*, *P. hylas*, La Ch.; *Agriades escheri*, above Die; *A. corydon*, Pont-en-Royans, *A. thetis*, and probably *A. thersites*, south side Col de Rousset; *Plebeius argus*, G. B., La Ch.; *Celastrina argiolus*, La Ch.; *Thecla ilicis*, *T. spini*, G. G., La Ch.; *Papilio podalirius*, G. G., *P. machaon*, Villard; *Parnassius apollo*, above Pont-en-Royans, G. G., La Ch., Col de Rousset; *Aporia crategi*; *Pieris brassicæ*, *P. rapæ*, *P. napi*, G. B.; *Euchloë cardamines*, G. B.; *Leptidia sinapis*, *Colias phicomone*, La Ch.; *C. hyale*, *C. edusa*, Col de Rousset; *Gonepteryx rhamni*, G. G., La Ch.; *Pyrameis atalanta*, *P. cardui*; *Vanessa io*, La Ch.; *Aglais urticae*, *Eugonia polychloros*, G. G.; *Pararge mæra*, *P. hiera*, G. B.,

P. megæra; *Satyrus hermione*, G. G., La Ch., *S. alycone*, Col de Rousset, *S. cordula*, above Grenoble, Pont-en-Royans, G. G., La Ch., Col de Rousset; *Epinephele jurtina*, *E. tithonus*, La Ch.; *Aphantopus hyperanthus*, G. G., La Ch.; *Cœnonympha arcania*, *C. pamphilus*; *Erebia stygne*, Gorge d'Engins, G. G., G. B., Col de Rousset; *Melanargia galatea*.

(To be continued.)

SOME NOTES ON THE LEPIDOPTERA OF LA SAINTE BAUME, VAR, S. FRANCE.

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

I. BUTTERFLIES.

WE spent part of our two last summers at La Sainte Baume in Provence, a neighbourhood little explored, I think, by English collectors. Our experience extended from June 24th to July 2nd in 1912, and from June 21st to July 5th in 1913. As a hunting-ground it proved a most interesting locality to the lepidopterist, both for butterflies and, more particularly perhaps, for moths.

The range of mountains known as La Chaîne de la Sainte Baume attains an average height of 2000 ft., and forms a bow-shaped ridge running nearly parallel with the Mediterranean. To the west the range terminates in the bold perpendicular mass of limestone known as the Pic de Bretagne (3129 ft.), just within the Department of Bouches-du-Rhône. From thence the mountains, with a slight curve to the north-east, run across the Department of Var, and come to a fine climax in the Pointe des Beguines (3362 ft.). After this the ridge rapidly declines in height, and merges in the generally hilly surface of this part of Provence. The north part of the chain, on which is the famous Grotto, from which the mountains take their name, is precipitous, making almost a straight line against the sky between its two extreme points. All the lower half of this side is clothed with what is claimed to be virgin forest. It contains few really fine trees; but is exceptional in character for these regions. At the foot of the mountains extends the tableland known as the Plateau du Plan d'Aups, some 1800 ft. above sea-level. Here, immediately under the Grotto, is the Hôtellerie de la Sainte Baume, our headquarters.

The Hôtellerie deserves a few words to itself, both on account of the kindness of our host and hostess and also owing to its history. The building was originally a religious house in charge of the Dominicans, who were dispossessed by the Government in 1904. It was purchased by its present owners, largely with a

motive of preserving its religious uses. And to those to whom it appeals, there is an extraordinary charm in the devotional atmosphere surrounding the place. For centuries it has been a sacred spot to the warm-hearted and highly imaginative Provençals. The centre of this feeling is a Grotto three-quarters of an hour walk above the Hôtellerie, in which, according to tradition, St. Mary Magdalene spent the last thirty-three years of her life in penitential devotions. This large cave has been transformed into a spacious church. At the back is a narrow natural platform in the rock, upon which the Saint is said to have performed her devotions, called Le Rocher de la Pénitence. Below is a reclining figure in marble of the Magdalene, a gift of the famous Mgr. Dupanloup. The Grotto has for centuries attracted annually great numbers of pilgrims, among whom have been both Popes and Kings. It is still in the present day the most highly esteemed goal of Provençal devotees.

There is a beautiful little modern chapel in the Hôtellerie, containing some good mural paintings. Here Mass is celebrated every morning, and all the staff and many of the visitors attend.

The Plateau du Plan d'Aups is reached by carriage and good roads, ascending in the usual sweeps and zigzags, either from Aubagne *via* Gémenos on the west, or *via* Nans from St. Maxmin on the east. There is also another way from Auriol, joining the Gémenos road outside the village of Plan d'Aups.

The plateau itself, of curious geological formation, is a stony, arid plain, covered with stunted vegetation and a few small isolated fir trees; flowers, at least at midsummer, are few. The mountains of Sainte Baume wall it in on the south side, and corresponding hills of less altitude, and more irregular, on the north; at the east and west are deep valleys, through which the above roads descend. The north side of the plateau is curiously seared by irregular ridges of rock running from east to west, about which is a considerable growth of broom and scrub, often concealing dangerous holes and fissures between the up-standing rock. All this is good ground for "Hairstreaks," and "Blues" especially.

On the first two days the wind rather interfered with collecting, afterwards the weather was perfect. On June 22nd, therefore, I confined my work to the north side of the plateau where the shrubs and rocks afforded some shelter, and there were many warm corners. One of my first captures was an excessively small female *Chrysophanus alciphron* var. *gordius*. This insect, I fancy, is very far from common in this neighbourhood. I only took one other this year; that also a female. But their condition did not in the least suggest that the species was over. Last year I only took one male. *C. phlæas*, the only other "Copper" seen, was also quite a rarity. Perhaps later broods would be more abundant. At this date *Thecla spini* was just

emerging, but became very common later. The specimens were not so large as those I have taken at Digne and La Granja; more like the Rhone valley (Swiss) examples, but with the white line and blue spot on the under side more pronounced. *Thecla ilicis*, abundant, was generally worn; and var. *esculi* perhaps commoner still, but I did not find *T. ilicis* var. *cerri*. Of *T. acaciae* I was able to secure a few in fine condition and of large size; still it was very scarce, and considerably more alert than its congeners. One is accustomed to see *Plebeius argus* (*ægon*) very abundant at times, but never have I seen anything like the multitude of this little "Blue" extending over so wide an area. They fly in numbers over the whole plateau, and hang from every grass stem. The males were all of the form we expect in the south, with shining silvery white under sides. The females showed some variety. They were pretty evenly divided between all brown forms, and others suffused in various degrees with blue, but in many cases in both forms there is a very fine but strongly defined white line on the upper side hind wing just before the fringe. I sent one or two of these to Mr. Wheeler for inspection; who writes: "The white line on the upper side hind wing is very remarkable. I have only noticed it hitherto in *medon*, and it is hardly so marked in any specimens I have ever seen, even of that species." Of course, one effect of the white line is to throw up the orange chevrons into greater prominence. The orange in most cases (though not always) is continuous on both wings almost to the costa of the fore wing. In one beautiful brown specimen there is a series of small, but very distinct, blue spots on the inner side of the orange marks, on the upper side hind wing, faintly suggesting the marking of *Orion* var. *ornata*. One other male aberration is destitute of all spots on the under side of fore wings, including the *discoidal*, except the outer row, thereby outdoing *Icarus* var. *icarinus*; and in the lower wings the three spots nearest the anal-angle are long and elongated.

The next day I turned my steps towards the woods on the east, especially one protected by a notice "Chasse Gardée"—which I took not to exclude a butterfly net. Here I saw the first of a coming shower of *Gonepteryx cleopatra*, a male. Last year, by the way, I was rather surprised to see several females two or three days before a male appeared. *Melanargia syllius* had been not uncommon, but was much worn. The best thing was *Leosopis roboris* which appeared in increasing numbers during our stay. I saw no ash at Sainte Baume; evidently the food-plant here is oak; some German authors give also privet, and even elder. The specimens were finer than those of Digne, and the species much more abundant. *Brenthis hecate* also began to show itself on the edge of the wood, and *B. dia* was of exceptionally large size. I also got a very nice banded male of *Melitæa athalia*. All the *athalia* were dark, and very strongly

marked. *M. parthenie* was in its last stage of tattered garments. On the 24th *Limenitis camilla* was not infrequent on the road descending to Nans, and *G. cleopatra* (females) and *Satyrus alcyone* first appeared. On June 25th I made across the plateau in the opposite direction to climb the Col de Bretagne. I afterwards found that there is a much better path and much better sport by the forest under the mountains. All the way insects were most abundant. In one or two openings, or little meadows, which slope southwards from the edge of the wood to the plateau, I saw, I think, a greater number of butterflies than I have ever seen in an equal space—not excepting Swiss localities. *L. camilla* was specially noticeable. I have often seen *L. sybilla* in flocks, but never before *camilla*, though the latter is, I should say, a more widely distributed species.

At the top of the Col, just under the perpendicular mass of the Pic de Bretagne, *Polyommatus escheri* was well represented by strikingly fine specimens of both sexes. One female shot with blue was the first I have seen of this form. I sent it to Mr. Wheeler, who informs me that "this slightly blue form of female *escheri* is stated by Turati to be common in the Alpes Maritimes." Mr. Wheeler further says that there is another form about as blue as *corydon* ab. *semisyngrapha*; this has been named *subapennina* by Turati, and is not very scarce on the lower slopes of the Apennines; and that he himself has taken one such at Fiesole, which he exhibited before the Entomological Society, London, in 1909. These, I suppose, are comparatively newly noted varieties, as I find no allusion to any *blue* forms of the female either in Staudinger, Rühl, Wheeler, or the new editions of Spuler's or Berge's 'European Butterflies.*' *P. escheri* was to be taken all over the district, but it was on the Col that it evinced the greatest beauty of form. In this walk *Pyrameis cardui* was often to be seen, six and eight at a time. *Agriades thetis* (*bellargus*? *adonis*?) was also there, both worn and in good order. The males generally large and of a deep blue, rather of the lilac tone of colour, and frequent among them ab. *puncta*, Tutt. Last year I had taken a very beautiful male hybrid, *polonus*, and hoped, but in vain, to renew my good fortune this year. A few ragged *icarus* were to be seen, and a

* The *Polyommatus escheri* of the Bouches du Rhône has a special form, and, though not so large as Andalusian examples, is generally larger than those found on the Central Alps. M. Oberthür makes special mention of the female form (Lépid. Comparée, fasc. iv. p. 214), to which he has given the name var. *foulquieri*, after M. Gédéon Foulquier, of Marseilles, who, with Dr. Siepi, has done so much to introduce lepidopterists to the fauna of this interesting region. I do not think either of them report the form analogous to *syngrapha*; but the "slightly blue" form is not uncommon in the hill districts of the south-east. I have myself taken it at Nyons (Drôme), Allos (Basses-Alpes), and St. Martin-Vésubie (Alpes-Maritimes); and, in the words of M. Oberthür, these, like var. *foulquieri*, "montrent près du corps, des atomes bleus."—(H. R.-B.).

new brood began to appear before we left, but I should say the species was not very abundant. The same remarks apply to *Cupido minimus* and *Nomiades semiargus*; while of *Aricia medon* (*astrarche*) I saw but one, freshly emerged, near Nans at the end of my visit.

While writing of the "Blues" I will here make a leap of a few days. On June 30th we moved down to the Hôtel de Lorges, near old Nans, at the foot of the road ascending to the plateau of Plan d'Aups. This hotel is some 800 ft. lower down than the Hôtellerie. Late in the afternoon my wife and I, after having taken rooms and arranged our baggage, went for a short stroll. She called my attention to what she thought to be a strange form of *corydon* at rest. I caught it and pill-boxed it, but could only see the under side, which looked like a somewhat unusual *P. meleager*. When killed it proved to be a typical male *Dolus*. Of course on the next day we were on the look-out for more, but it was not until two days later that it turned up again, and then not on the same ground. The first specimen was taken on the rocky sides of the hill upon which the ruined château stands, but the rest were taken in the clearings of the wood and edges of fields skirting the wood. On July 6th I got six males and four females, and Mrs. Lowe two of each sex. In this locality *Dolus* presents the double interest of affording specimens both of the type and of var. *vittata*, usually assigned solely to the Department of Lozère. I left before the species was fully out, but my captures show of the type eleven males and seven females, against five males and one female var. *vittata*. It must be noted, however, that some of these reckoned of the type form have a decided tendency to the streak on the upper side hind wing which distinguishes the variety. They might be called var. *intermedia*. This is particularly true of certain of the males.

All former specimens in my cabinet came from Florac and Mende, the gifts of Mr. Jones and Mr. Rowland-Brown, and are of course var. *vittata*. On comparing these with this year's catch at Nans, it is at once evident that the Nans specimens are on an average considerably larger than those from the Mende district—a much darker blue, and also have a very much broader black edge to the wings. It is quite easy to pick out a Nans specimen if you mix them together.

Agriades corydon began to appear on July 2nd at Nans, and came out very slowly—the males with rather dark and sharply defined margin; the females did not show up before we left. I took one very beautiful example of var. *cinnus*.

One fine female, *Libythea celtis*, was taken between Nans and Sainte Baume off flowers of bramble. But I never saw another, neither could I see any plants of *Celtis australis*. At Sainte Baume *Satyris alcyone* had appeared on June 24th; at Nans,

S. hermione came to hand with wings hardly dry on June 30th. Of the Argynnids *Brenthis hecate* was fairly common and widely distributed. *B. dia* passing, but had been remarkably fine and very common. Of the big brotherhood, *Argynnis niobe* var. *eris*, was the first to be seen, and not common; next *A. adippe* and *A. aglaia*; and, lastly, *Dryas paphia*; these would all be doubtless common later.

The little *Cœnonympha dorus* was very local, and never abundant; *C. arcania* not in great numbers. *C. pamphilus* gave me several nice forms, two var. *bipupillata*, one fine ab. *thersites*, and, lastly, a beautiful female, in which the round spot towards the apex of fore wings is of enormous size, with white pupil on under side 3 mm. in diameter, or the exact size of the letter O in Queen Victoria's name on a florin of 1890. This aberration I have decided to call *glaucopis*, until I hear that it has been named before.

Before leaving on July 5th I had an hour or so in the immediate neighbourhood of our hotel, and was lucky enough to take a very perfect aberration of *Melitæa didyma* (female). These things are difficult to describe, and one is very conscious of M. Oberthür's reasons for demanding a figure of all named varieties. The striking feature of this specimen is the wide expanse of clear colour on the disk of all wings, devoid of the usual black markings. It is yellow of the lightest *occidentalis* forms, and the fore wings have no central markings whatever between the single sharp zigzag black edge of the fringe and two basal spots, which are open rings; above these, next the costa, are two open marks which form the figure 30. The lower wings are of the same ground colour as the upper, and all black marks are gathered together in a central band formed by wedge-shaped dashes. On the *under side* the primaries, which are of a darker reddish tint than on the upper side, are traversed by a central band of seven black dashes. The secondaries, of a pale cold yellow, have the central light band strongly defined between rows of large black spots, after which the wing is self-coloured up to the black line before the fringe. I have given to this, in honour of the locality, the name ab. *magdalena*. The following is the complete list of butterflies from Sainte Baume district noted by me, seventy-four in all, exclusive of varieties.

PAPILIONIDÆ.—*Papilio podalirius*, *P. machaon*.

PIERIDÆ.—*Aporia cratægi*; *Pieris brassicæ*, *P. rapæ*, *P. napi*; *Euchloë belia* var. *ausonia* (one); *Leptidia sinapis*, scarce; *Colias edusa* and var. *pallida* (one), *C. hyale*, scarce; *Gonepteryx rhamni*, *G. cleopatra*.

NYMPHALIDÆ.—*Limenitis camilla*; *Pyrameis atalanta*, *P. cardui*; *Eugonia polychloros*; *Polygonia c-album*; *Euvanessa*

antiopa; *Melitæa phœbe*, *M. cinxia* (one), *M. didyma*, *M. athalia*, *M. parthenie*; *Argynnis niobe* var. *eris*, *A. aglaia*, *A. adippe*; *Dryas paphia*; *Brenthis hecate*, *B. dia*, *B. euphrosyne* (one worn).

SATYRIDÆ.—*Pararge egeria* var. *intermedia*, *P. mæra*, *P. megæra*; *Satyrus hermione*, *S. alcyone*, *S. circæ*; *Hipparchia semele*; *Epinephele jurtina*, *E. pasiphæ*; *Cœnonympha pamphilus* and vars. *C. dorus*, *C. arcania*; *Melanargia syllius*, *M. galathea* var. *procida*.

LIBYTHEIDÆ.—*Libythea celtis*.

LYCENIDÆ.—*Chrysophanus alciphron* var. *gordius*; *C. phlæas* and var. *eleus-cæruleopunctata*; *Cupido minimus*; *Nomiades semiargus*; *Polyommatus dolus* and var. *vittata*, *P. hylas*, *P. escheri*, *P. icarus*; *Agriades thetis* and *hyb. polonus*, *A. corydon* and ab. *cinnus*; *Aricia medon*; *Plebeius argus*; *Celastrina argiolus*; *Leosopis roboris*; *Thecla spini*, *T. ilicis*, *T. esculi*, *T. acaciæ*; *Callophrys rubi*; *Zephyrus quercus*.

HESPERIDÆ.—*Erynnis alcææ* (one); *Hesperia carthami*, *H. alveus* var. ?*; *Pyrgus sao*; *Thymelicus actæon* common, *T. lineola*, *T. flavus*; *Pamphilus sylvanus*.

NOTE ON THE OVIPOSITION OF *RHYSSA*.

BY L. N. G. RAMSAY, M.A., B.Sc.

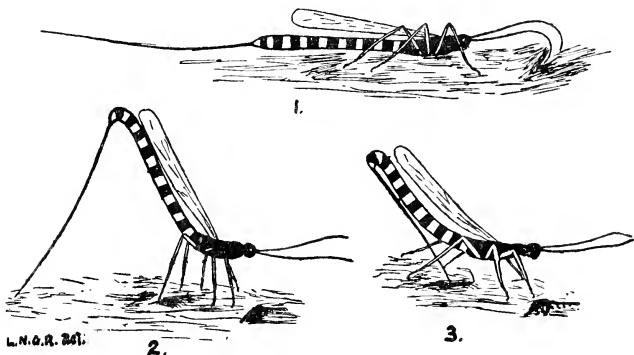
THE remarkable insects of the genus *Rhyssa* have for long been known to prey on the wood-boring larvæ of Siricidæ, introducing their eggs into the tunnels of the latter by means of their enormously elongated ovipositor. The ovipositor is sometimes even found sticking in a *Sirex*-infested log (as, for example, the specimens exhibited in the insect gallery at South Kensington), but, I understand, the manner in which the insect contrives to insert this unwieldy appliance into the tree-trunk has not hitherto been fully described. I hope, therefore, that the following account may be of interest to entomologists.

The event described was witnessed in the summer of 1909, while I was staying in the southern part of the Black Forest, to the west of the Wehratal. On the afternoon of August 29th, while skirting a wood—the very finest conifers of the Black Forest flourish in this locality—I happened to pause beside a pile of small pine-logs, and as I stood there one of these extraordinary insects appeared and settled on one of the logs. I will quote verbatim from my notes written the same day:—"It sat still for some time, and then began to walk about, feeling every hole and

* Probably *H. bellieri* var. *foulquieri*.—(H. R.-B.)

corner in the rough bark with its long antennæ. After a minute or two of this it stopped, and drew up its long body, doubling the long black ovipositor underneath itself; it had to hitch itself up several times before it got the long needle into position underneath, with the tip in a crevice. Then it gripped the bark with its claws and gradually thrust the ovipositor about half an inch into the bark, then suddenly flew away, perhaps because it had completed laying the eggs, perhaps because I had gone too close."

Immediately after, I made the rough sketches of the beast which accompany this note. These are probably a little larger than life, although the insect was a very large one. I noted that the abdomen was black and white, the legs pale, and the antennæ black.



EXPLANATION OF FIGURES (diagrammatic).—1. The insect reconnoitring the bark with its antennæ. 2. Getting the ovipositor into position. 3. The insect just before flying away; the ovipositor thrust home in a crevice. (Sketched from life.)

At the time I was unaware of the insect's identity, but on seeing the specimens of *Rhyssa* exhibited at the Natural History Museum this year, I at once recognised my old acquaintance, and comparison of the other species of the genus in the cabinet collections there leaves little, if any, doubt that this was *R. persuasoria*.

The figures will help to indicate the manner in which the insect succeeded in bringing its unwieldy ovipositor to bear on the log. As mentioned above, these were drawn before I left the spot (with the exception of the second, which I have added now to make the action clearer), and they are reproduced without any change from my original rough drawings. As the insect

had already taken its departure, they are necessarily crude, as it was the only example of its kind on which I had ever set eyes. For this and for their obvious artistic defects I shall make no further apology, as they are merely intended to convey the manner in which the insect accomplished its object.

Sharp* figures (after Riley) the allied genus *Thalessa* in the act of oviposition, and states that in both these genera the ovipositor "is brought into use by being bent on itself over the back of the insect, so as to bring the tip vertically down on to the wood, through which it is then forced by a series of efforts; the sheaths do not enter the wood."

It is evident that this description does not tally with the foregoing observations on *Rhyssa*. The insect figured by Sharp follows his statements in having its long ovipositor bent on itself, out of its normal and approximately straight form, into an almost complete circle. From purely physical considerations, is it not a little difficult to understand how a non-muscular structure could be curved at will in this way? The possibility suggests itself to the present writer that the insect there figured, after having inserted its ovipositor in the manner described in this note for *Rhyssa*, may have pivoted its body through an angle of 180° around the flexible fixed ovipositor, in its efforts to thrust the latter into an unusually resistant piece of wood. This might easily happen through the insect's shifting its feet again and again to obtain a better purchase, and would explain the whole matter very simply, as the ovipositor in such a case would naturally assume the position figured.

[There can be no doubt at all that Mr. Ramsay's notes refer to *R. persuasoria*, L., which has an extremely wide distribution through Europe to Canada and the United States in the West, and the Himalayas in the East, since it is to the best of my knowledge the only species attacking pinetophagous larvæ. *R. approximator*, Fab., is said by Holmgren to attack *Xyphydria prolongata*, which feeds in oak; and there are several interesting accounts of the American species' economy (Canad. Entom. xi. 1879, p. 15, &c.) and Harrington has (*l. c.* xix. p. 206) put on record "The Nuptials of *Thalessa*." Mr. Ramsay appears to take it for granted that these insects bore for themselves an egg-passage through the solid wood; but it is by no means proved that they do not oftener introduce them along the tunnel of the host larva (*cf.* Morl. Ichn. Brit. iii. p. 25, et Revision Ichn. Brit. Mus. ii. p. 10).—CLAUDE MORLEY.]

* 'Cambridge Natural History, Insects,' pt. i. p. 554, 1895.

A MONOGRAPH OF THE GENUS *OSPRHYNCHOTUS*, SPINOLA.
 Family ICHNEUMONIDÆ: Subfamily CRYPTINÆ: Tribe CRYPTIDES.

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

THIS genus has been twice excellently described; in the first place, by Spinola (Magaz. de Zool. xi. 1841, p. 45), and later, in ignorance of any previous knowledge of it, by de Saussure (Distant's 'Naturalist in the Transvaal,' 1892, p. 229, under the name *Distantella*), though neither author assigned it a very definite classified position. That it is distinct from *Acroricnus*, Ratz. (= *Linoceras*, Tasch.), I am able to state from an examination of the typical species of both genera; Dalla Torre treated Ratzburg's genus as synonymous, but Schmiedeknecht in 1904 correctly tabulated the palæartic kinds under *Acroricnus*, which differs from *Osprhynchotus* in possessing two strong metanotal transcarinæ in place of only a subbasal one, in having the hind tibiæ normal and not incrassate throughout, in its lack of central setæ beneath the hind onychii, in its less compressed abdomen, posteriorly broader head with less excavate frons, in its centrally intercepted nervellus; but most especially in having the mouth parts but slightly produced, whereas in true *Osprhynchotus* species they are rostriform, with both cheeks and clypeus no shorter than the face, surmounted by strongly exerted labrum and ligula, extending in all to three and a half millimetres below the scrobes in the typical species. "*Osprhynchotus*" *peronatus*, Cam. (Entom. 1902, p. 182; placed in "*Linoceras*" by its author at 'Spolia Zeylanica,' 1905, p. 97) is an *Acroricnus* and very common in India, whence I have seen it from the Khasi Hills, Simla, Labatach, Sikkim, Shillong, and the Kangra Valley. I may be permitted to here bring forward the unknown female of *Acroricnus syriacus*, Mocs. (Magy. Akad. Term. Ertek. xiii. P. 11, 1883, p. 12, male), which differs from the male in little but its terebra, and this is as long as the abdomen, excepting the petiole; it is a true member of that genus and was captured by Escalera during 1900 at Kuh Sefid in south-west Persia.

The large size and nigrescent or brunneous wings of *Osprhynchotus* render it one of the most conspicuous genera of the Ichneumonidæ. That considerable confusion has existed concerning the synonymy of the species is owing to the fact that Brullé, in my opinion, described an extremely rare one in 1846, and that Tosquinet mistook it for the commonest in 1896.

W. A. Schulz's remarks upon this genus (Zool. Annalen, 1911, pp. 35-37), all the species of which he there wishes to regard as synonymous, appear to have been based upon insufficient material; he professes to have seen five examples of my last species, thirteen of my first, and an unrecorded number united under my second to fourth. Among these he failed to

discover any plastic distinctions sufficient to justify specific rank (though I consider the difference in shape of the areolet and brachial cell to be constant), and thinks the "distribution of red-brown colour varies greatly, apparently according to individual developement"; to me this variation appears very slight, and that of the hind tibial colour even less so. The synonymy of the whole genus is repeated in the same critic's "Zweihundert alte Hymenopteren" (Berl. Ent. Zeit. 1912, p. 63), where *O. violator*, Thunb., alone is allowed to stand, though far antedated by *O. objurgator*, Fab., as I pointed out in 1909.

TABLE OF SPECIES.

- (8). 1. Wings, basal abdominal segment and part of thorax black.
 (3). 2. Areolet externally subrectangular above; brachial cell apically less explanate; anus pale; flagellar pale band usually six-jointed. 1. *violator*, Thunb.
 (2). 3. Areolet externally rounded above; brachial cell apically strongly explanate; anus black; flagellar pale band usually four-jointed.
 (5). 4. Propleuræ and temples utterly glabrous; hind tibiæ white only to their centre. . . . 2. *objurgator*, Fab.
 (4). 5. Propleuræ striate and temples pilose; central hind tibial flavous band extending far beyond centre.
 (7). 6. Hind tibial black band longer than calcaria: length 27 mm. 3. *gigas*, Kriech.
 (6). 7. Hind tibial black band not longer; length 21 mm. 4. *ruficeps*, Cam.
 (1). 8. Wings brown, basal abdominal segment and nearly whole thorax red.
 (10). 9. Wings basally paler; flagellum and hind legs red and not pale banded 5. *pulcherrimus*, Kirby.
 (9). 10. Wings unicolorous; flagellum and hind legs black, pale banded 8. *flavipes*, Brullé.

1. OSPRHYNCHOTUS VIOLATOR, Thunb.

Ichneumon violator, Thunb. Mem. Acad. Sc. Petersb. ix. 1824, p. 303; cf. Roman, Zool. Bidr. Uppsala, i. 1912, p. 288. *Osprhynchotus capensis*, Spin. Mag. Zool. xi. 1841, p. 75, male, female. *Distantella trinotata*, Sauss. Nat. Transvaal, 1892, p. 230, female.

Maximilien Spinola beautifully figures (*loc. cit.* pl. lxxv.) both sexes with details of the head and of the male abdomen, which latter is not apically pale; he regarded the genus as a "Sous-famille des Ophionides" and derived his generic name from the rostriform mouth; only three examples of both sexes were known to him, from the Cape of Good Hope. I have examined what Mr. W. L. Distant assures me is the type specimen of Saussure's elaborately described genus *Distantella*, and find it to be entirely synonymous with *O. capensis*, Spin.

This genus has since been employed by both Cameron* and Schmiedeknecht, with the erroneous characters ascribed to it by Ashmead (Proc. U. S. Nat. Mus. 1900, p. 41), for very different insects, whose position is consequently untenable. Though Saussure records only a single female from Pretoria, there is a long series of (presumably) cotypes from that locality in Distant's collection, now in Mus. Brit.; the former was at a loss where to place the genus and adds, "Je ne crois pas pouvoir le placer, ailleurs que dans la tribu des Cryptiens." There are a score of females in Mus. Brit. found by Dr. Smith in 1844 in South Africa, in 1852 in West Africa, in 1859 at Knysna in South Africa, later at Sterkfontein, &c., in the Transvaal, Queenstown in Cape Colony, and in March, 1900, at Slievyra, in Natal. I have also seen it from Bonnefoi, in the Transvaal, in the Deutsches Entomologisches Museum of Berlin.

2. OSPRHYNCHOTUS OBJURGATOR, Fab.

Ichneumon objurgator, Fab. S. I. 1781, p. 426; *Cryptus objurgator*, Fab. Piez. 1804, p. 79, female. *Osprynchotus heros*, Schlet. Ann. Soc. Ent. Belg. 1891, p. 33, female; Tosq. l. c. 1896, p. 248, male, female.

This species is described:—Head and thorax dull red and punctate; male face white; antennæ black, white-banded; abdomen black, smooth and shining, apically compressed; legs black, the front ones dull red with tibiæ dull stramineous, the hind tibiæ and sometimes their tarsi pure white-banded; wings infusate-violaceous; length, male 20 mm. and female 28 mm. All this, as I have already pointed out (Entom. 1909, p. 135), exactly agrees with the type of Fabricius's species, which is still preserved in the Banksian Cabinet in the British Museum. This species is extremely constant in the coloration of its hind tibiæ, and the score in Mus. Brit. all have pure white hind tibial bands, extending only to the centre, in both sexes. Schletterer's female was from the equator in the Congo, Fabricius's from "Africa æquinoctiali"; Tosquinet gives it a range through Togoland, the Cameroons and Senegal, to Sierra Leone; and it appears pretty constant to that latitude, for I have seen examples only

* *Distantella pilosella*, Cameron (Journ. Bombay Nat. Hist. Soc. 1909, p. 729) is a true *Cryptus*, sensu Thoms., male. Of Cameron's other Indian species of *Cryptus*, *C. luculentus* (Entom. 1905, p. 85) = *tarsoleucus*, Schr.; *C. himalayensis* (Tr. Ent. Soc. 1904, p. 106) = *Hedycryptus*—not a good genus—*filicornis*, Cam. (Zeits. Hym.-Dip. 1903, p. 299); *C. orientalis* (Manch. Mem. 1897, p. 16) = *obscurus*, Grav.; *C. nursei* (J. Bomb. N. Hist. Soc. 1906, p. 285) = *insidiator*, Smith; *Buathra*—not a good genus—*rufiventris* (Tr. Ent. Soc. 1903, p. 234) must be included and is probably hardly distinct from *apparitorius*, Vill.; nor is *C. bibulus* (Tr. Ent. Soc. 1904, p. 106) from *C. albatorius*, Vill. *Cryptus indicus*, Cam. (Manch. Mem. 1897, p. 15) = *Mesoleptus annulipes*, Cam. (*lib. cit.* 1900, p. 103) = *Syzeuctus annulipes*, Morley, Fauna of India, Ichn. 1913, p. 236.—C. M.

from Sierra Leone in 1838 (Rev. F. D. Morgan), Sierra Leone (J. J. Simpson and W. G. Clements in 1893), Shengay in the north Sherbro District of Sierra Leone in 1910 (W. Addison), Kokona on March 26th, 1912, Gigbema on August 22nd, 1912, Bunbumbo on August 15th and 16th, 1912, and Kamagbouse on April 6th, 1912; from Nigeria at Ilorin on June 3rd, 1912, Minna during 1911 (J. W. Scott-Macfie), and on October 18th, 1910 (J. J. Simpson), Oshogbo, in southern Nigeria, in 1910 (Dr. T. F. G. Mayer); from the Congo in 1843 (Dr. Richardson) and 1890 (Miss Sharpe); from the East Neave has sent several females from the Tero Forest, near Buddu, taken at the end of September, 1911, at 3800 ft., and near Kumi and Lake Kiogo at 3500 ft. in the Uganda Protectorate during the preceding August. The Deut. Ent. Museum has it from Togo and the Cameroons.

3. OSPRYNCHOTUS GIGAS, Kriech.

Osprynchotus gigas, Kriech. Mem. Accad. Sc. Bologna, iv. 1894, p. 86, female.

This I believe to be the commonest species of the genus. It is described:—Black; head transverse, posteriorly obliquely constricted and red with the facial orbits paler, fulvescent; antennæ black with scape red, and the eighth to twelfth joints pale fulvous; mesonotum rugosely punctate, and not at all red; metanotum rugose; scutellum somewhat convex, punctate, centrally subglabrous, with the prescutellar lateral laminae red-marked; abdomen glabrous and nitidulous, with terebra 12 mm. in length; front legs red, with infusate tarsi; the posterior black with a band, occupying about two-thirds of the hind tibiae, pale flavous; most of the apical half of the hind metatarsi, and whole of the second to fourth joints, concolorous; wings dark violaceous, with their apices broadly black; a subpellucid mark beyond the stigmal base, and three hyaline fenestræ in the disco-cubital, second recurrent and outer areolar nervure; length, $27\frac{1}{2}$ mm. Kriechbaumer's above account is not very accessible and was overlooked by Tosquinet; I, consequently, give it in extenso from his part of the paper "Rassegna degl' Insetti Raccolti nel Mozambico dal Cav. Fornasini."

I have seen a hundred and forty specimens of both sexes (the male differs in no way but its paler red capital colour) which agree exactly with this description from Abyssinia, British East Africa, Uganda, German East Africa, Nyassaland, Moçambique, Delagoa Bay, north and north-east Rhodesia, Natal; and a male in the Rev. T. A. Marshall's collection which is labelled "Senegal," but several of his African localities were incorrect, and the present species seems rare or wanting towards the east of the Continent. I have seen both sexes in the Deut. Ent. Museum from Three Sisters, near Barberton, in the Transvaal, where they occurred during October and December.

4. OSPRHYNCHOTUS RUFICEPS, Cam.

Osprrhynchotus ruficeps, Cam. Ann. S. African Mus. 1906, p. 142, female.

Male and female. A black species, with flagellar band stramineous; female with head, under side of scape, and most of prothorax red; male with face, under side of scape flavous, thorax black; both sexes have the hind tibiæ flavous with extreme base, and a band at their apex not longer than their calcaria, black; hind tarsi flavous with a band at their base shorter than the calcaria, and onychii, black; wings violaceous; length, 21 mm., terebra, 10 mm. I greatly doubt if this species be aught but a small and southern form of the last; Cameron did not know *O. gigas*, Kriech., and the present species seems separable from it only in its smaller size and narrower black hind tibial band. It was described from the Umvoti River in Natal; and I have seen a dozen examples, agreeing in the above characters, from East Karoo, in Cape Colony (A. Howarth), Port Natal, in 1856 (Mr. Plant), Howick, in Natal (J. Cregoe), the Transvaal on November 29th, 1896 (A. Ross and A. J. Cholmley, 1906), Johannesburg and Sterkfontein (H. P. Thomasset), and Pretoria (Distant).

5. OSPRHYNCHOTUS PULCHERRIMUS, Kirby.

Cryptus pulcherrimus, Kirby, Bull. Liverpool Museum, iii. 1900, p. 14, and 'The Natural History of Sokotra and Abdelkuri,' by H. O. Forbes, 1903, p. 237.

The type was taken at Homhil (one female) at 1500 ft. in Eastern Sokotra on January 23rd, 1899; and cotypes:—One female at Dahamish at 350 ft., in Sokotra, on December 24th, 1898; one female at Goahal Valley, in Eastern Sokotra, on January 16th, 1899, and one male at Thluteed at 1200 ft., in Sokotra, on January 15th, 1899. All these are in Mus. Brit. The lack of all black or red markings renders this species conspicuously distinct; its mouth is no less rostriform than in its congeners, and I was in error (Entom. 1911, p. 212) in ascribing it to the genus *Acroricnus croricnus*, Ratz.

6. OSPRHYNCHOTUS FLAVIPES, Brullé.

Hist. Nat. Ins. Hym. iv. 1846, p. 135, female; (?) Tosq. Mem. Soc. Ent. Belg. 1896, p. 246, male, female.

This species was originally recorded from Senegal only; subsequently, Tosquinet, whose description looks like a compound of Brullé's and that of *O. gigas*, Kriech., adds such diverse localities as Togoland, Angola, the Cape, Tanganyka, the Congo, and Scioa, but I place no reliance upon his knowledge of the present genus. In my own experience, which is slender, this species is extremely rare, and has, I believe, been misunderstood by all subsequent authors. Schulz professes to recognize it from both Senegal and Senegambia. I have seen but a single

female, labelled "Gambia" in the British Museum, which would point to a range nearly as restricted as that of the last species; this female exactly agrees with Brullé's description in every way, especially in the red basal segment and the terebral length of twelve millimetres, not only eight as indicated by Tosquinet. The species referred to under the present name by Col. Bingham, (Trans. Zool. Soc. xix. 1909, p. 179) from Mount Ruwenzori, is *O. gigas*, which was at that time mistaken for it in the National Collection. The coloration of *O. flavipes* is quite distinctive:—Head, thorax, scape and extreme apices of antennæ rosy; the last with only two joints white; mesonotum and metanotum sometimes more or less, but never entirely, nigrescent; abdomen black, with the basal segment entirely red; legs ferrugineous with the hind femora, tibiæ and tarsi black, the basal half of their tibiæ and second to fourth tarsal joints very pale flavous; wings brownish, not at all nigrescent, but with violaceous reflection; length, female, 25 mm.

TWO NEW MYRMECOPHILOUS APHIDES FROM ALGERIA.

BY FRED. V. THEOBALD, M.A., F.E.S., Hon. F.R.H.S., &c.

THE two new Aphides described here were taken by Mr. P. A. Buxton and Mr. R. Gurney in ants' nests in Algeria; one of them was also found with termites. So far only a single aphid has been recorded from the nests of white ants, namely, *Termitaphis circumvallata*, Wasmann (Tijdschr. v. Entomol. xlv. 1902, p. 105, pl. 9, fig. 7, a-c*).

Professor Robert Newstead informs me that he is describing another peculiar form from termite nests in the West Indies.

One of the two species described here is very marked, and this I have placed in a new genus for which I propose the name *Rectinasus*. The other comes in the genus *Forda*, although the adult female presents a somewhat different form to the other known Fordas. The ant hosts are given with the species described.

Genus RECTINASUS, nov. gen.

Antennæ of five segments, long, often over half the length of the body, rather thin, the first and second segments small, of about equal length, third and fifth long, about equal in length, fourth short, slightly longer than the second, the first and second have a short blunt spine, at the apex and base respectively. Eyes small. Proboscis long, from two-thirds the length of the body to a little longer than the body, carried at a marked angle to the body, often nearly at right angles; acuminate, hairy. Setaceous mandibles and maxillæ long. Body segmented. Cornicles absent. Legs rather long and thin, but somewhat thicker in young forms.

* This insect has since been placed in a new family.

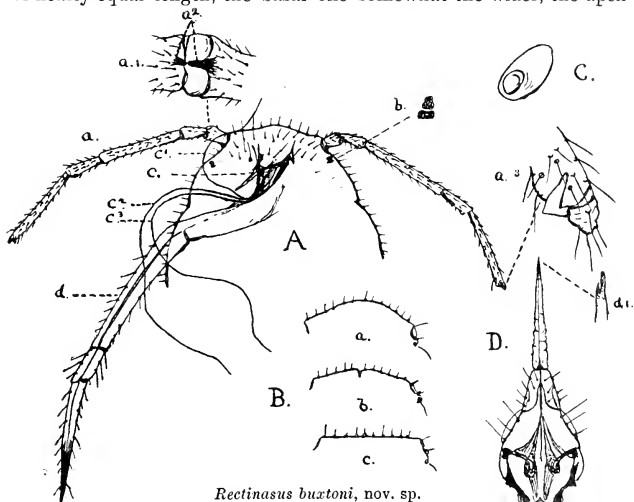
The marked characters of this genus are the antennæ and the projecting long proboscis.

The viviparous apterous female only known.

Found in company with ants.

Rectinasus buxtoni, nov. sp.

Apterous viviparous female.—Ochreous yellow to pale yellow and almost pearly white, pubescent; legs and antennæ brown; proboscis black at the apex, brown to nearly the base in some, paler in others. Eyes black. Frons more or less porrected. Vertex convex to flat, broad, hairy. Antennæ of five segments, the two basal ones small, of nearly equal length, the basal one somewhat the wider, the apex



Rectinasus buxtoni, nov. sp.

A. Head of apterous viviparous female; a, antennæ; a¹, joint of first and second segments, showing spines a²; a³, apex of antennæ; b, eye; c, labrum; c¹, maxillæ; c² and c³, mandibles; d, proboscis. B. Variations in head a, b, and c. C. Lateral tubercle. D. Labrum, d¹ apex further enlarged.

of the first and base of the second with a small dark, blunt, median projecting process, pointed towards one another, third segment long, fourth short, but longer than the second, fifth as long as the third, ending in a short, blunt nail, a small round sensorium at the apex of the fourth and a peculiar shaped one at the base of the nail on the fifth; all the segments hairy, in some the antennæ are nearly as long as the proboscis, in others shorter. Proboscis carried at a marked angle to the body, bent near the base, acuminate, the apex of the last segment, which is long and thin, black, hairy; setaceous mandibles and maxillæ long; labrum moderately long, porrected, base with some hairs. The proboscis varies in length, usually about two-thirds the length of the body, but may be longer. Frons often porrected.

Pronotum constricted from the rest of the body, which is oval.

Abdomen with short hairs on the anterior three-fourths, longer ones behind with shorter ones between. Cauda rounded to cone-shaped, very hirsute, hairs long. Pore-like, oval, flat tubercles at the sides.

Legs rather long and thin, projecting; femora wider than the tibiæ, tarsi of two segments, the basal one small, all the segments with fine short hairs.

Length.—1·5 to 2·3 mm.

Habitat.—Lambèse, Batna, E. Algeria.

Time of Capture.—April 5th, 1913.

Notes.—A large number taken in ants' nests (*Pheidole pallidula*, Nyl.), under the same stone as a nest of the termite (*Leucotermes lucifugus*, Ross), and three specimens from nest of *Bothryomyrmex meridionalis* by Mr. R. Gurney at the same time. The head varies somewhat in form; in some it is convex in front, in others flat, and some appear to have a median sulcus. The relative length of the antennæ and proboscis also varies; in young forms they are about the same length, in older ones the antennæ are considerably shorter than the proboscis. With regard to the connection with termites there is some doubt, for Mr. Buxton sends the following from his notebook:—"Ant, Aphis and Termite all under the same stone. The termites probably not in association, but ants and aphides actually in the same nest."

The termite has been determined by Holmgren as *Leucotermes lucifugus*, Ross.

Forda rotunda, nov. sp.

Apterous viviparous female.—Dull white above, much domed; flattened below, brown, the marked segments darkened apically.

Antennæ less than one-fourth the length of the body, thin, of five segments, the two basal ones short, about the same length, the basal one wider than the second, third segment the longest, slightly narrower than the second, about as long as the fourth and fifth together, the last two equal, a single round sensorium near the apex of the fourth and one large one and one or two small round ones at the base of the very short, blunt nail on the fifth, the last two segments brown, the rest yellowish, all the segments with fine short hairs.

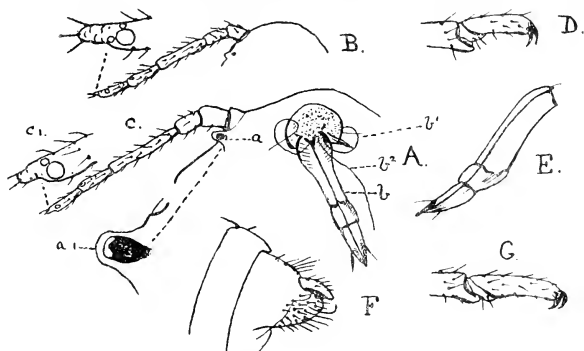
Eyes small and black, projecting from the side of the head. Vertex rounded or curved, nude. Proboscis short and thick, reaching just past the second coxæ, dark at the tip, with two subterminal setæ; setaceous mandibles and maxillæ rather short, the former spirally curled; proboscis bent under the body and more or less closely applied to it. A few hairs on the posterior of the body; cauda very hirsute, hairs curved apically; no trace of segmentation on the white domed dorsum which has the appearance of white kid; markedly segmented on the brown venter.

Legs brown, first and second pairs very short, the femora thick and nearly as long as the tibiæ; tarsi of two segments, the same length in the first two pair of legs; third pair of legs longer, just

projecting beyond the body, femora much thicker and shorter than the tibiæ; tarsi longer than in the two front pairs; the basal segment of the feet, small; tibiæ and tarsi hairy, hairs very fine and short.

Length.—3 mm.

Immature viviparous female.—Colour varying from pale yellow to dull brownish grey. Legs pale yellowish brown. Antennæ with the last two segments pale brown; two basal segments short, about equal length, the basal one broader than the second, the third the longest, about as long as the fourth and fifth, which are equal, a sensorium on the apex of the fourth and one at the base of the short blunt nail on the fifth, with two to four smaller ones surrounding



Forda rotunda, nov. sp.

A. Head of mature apterous female; c, antennæ; c¹, further enlarged apex; b, proboscis; b¹, mandibles; b², maxillæ; a, eye; a¹, eye further enlarged. B. Head and antennæ of immature female. D. Front tarsus. E. Proboscis. F. Lateral view of cauda. G. Hind tarsus.

it, all the segments with small hairs. Eyes small and black, not so projecting as in the adult. Proboscis reaching just to the third coxæ, of similar form to the adult. Legs longer in proportion than the adult, well projecting from the body, otherwise similar. Cauda rounded, hairy, hairs long and curved apically.

Length.—2 to 2.5 mm.

Habitat.—Hamman Meskoutine, E. Algeria.

Time of Capture.—April 3rd, 1913.

Notes.—One mature female and four immature ones taken in ants' nests (*Tapinoma erraticum*).

There is no doubt that these are all one species, although the mature form looks very different, its swollen appearance, its white kid-like upper surface and flat brown venter with marked segmentation is very characteristic, the younger forms are more *Forda*-like, whilst the adult approaches a *Tycheoides* in appearance but the antennæ are *Forda*-like. The hairy cauda is prominent in all.

The types of both species have been placed in the National Museum at South Kensington.

THE FOSSIL ORTHOPTERA OF FLORISSANT,
COLORADO.

BY T. D. A. COCKERELL.

ORTHOPTERA are uncommon in the Tertiary rocks, and usually poorly preserved, although they must have abounded in former times as now. Probably most of the species were better able to escape destruction during volcanic eruptions than smaller and more fragile insects. The Miocene shales of Florissant have yielded no fewer than thirty-three species, and although this must be but a small fragment of the Orthopterous fauna of that time, it is sufficient to give us some idea of the types existing perhaps a million years ago. Two new species have been recently discovered by Professor Wickham, and are described below.

The Forficulidæ are represented at Florissant by the extinct genus *Labiduromma*, Scudder, with no fewer than ten species. Earwigs are the only Orthoptera in the shales which can be called common.

Blattidæ are represented by three genera still living in America, each with a single species. It is possible that the species referred to *Zetobora* is really an *Ischnoptera*, and identical with the described member of that genus.

The Mantidæ are represented by three species, referred to two genera, both believed to be extinct. Scudder has described one Phasmid, placing it in *Agathemera*, a neotropical genus still extant. In the Acridiida we find the apparently extinct genus *Tæniopodites*, Ckll. of the Acridiinae; three species of *Ædipodinae*; and three of *Tryxalinae*. All these Acridians, whenever their generic characters can be made out, seem to belong to extinct genera. In the Locustidæ we have *Palæorehnia*, Ckll., a remarkable extinct genus referred to Phaneropterinae; a very dubious member of the Pseudophyllinae; *Lithymnetes*, Scudd., an extinct genus placed in the Oriental and Australian group Phyllopharinae; a Conocephaline referred to the living genus *Orchelimum*; two Decticinae, belonging to the living genera *Capnobotes* and *Anabrus*; and two species of the widely distributed *Gryllacris*, of the subfamily Gryllacridinae (*Gryllacrinae*, Kirby, Scudder).

As the list stands, less than a third of the species seem to belong to modern genera, and it is quite possible that if we had complete specimens of these, at least some of them would prove to be incorrectly assigned. On the other hand, it may be that some of the genera described as extinct are still living. The whole matter must stand subject to future revision, should better materials be brought to light; but we can at least say this, that the Miocene Orthoptera of Colorado were, on the

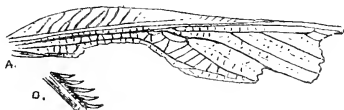
whole, strikingly different from the existing fauna of that region, and were like those of warmer regions to the south. The apparent resemblances in some cases to the Old World fauna may possibly be deceptive, but if they are not, they fall in line with the indisputable occurrence of such Old World genera as *Glossina* and *Halter*.

ACRIDIIDÆ.

Tyrbula scudderi, n. sp.

Hind leg with femur $17\frac{1}{2}$ mm. long, $3\frac{1}{3}$ wide, superior carinæ strongly marked; many broad oblique brown bars, broader than the intervals between them. Tibia of same leg $18\frac{2}{3}$ mm. long, $\frac{1}{2}$ mm. wide, the hind margin with sixteen large, two medium, and four small spines, the uppermost (small) one $3\frac{2}{3}$ mm. from base of tibia, the first large spine 7 mm. from base; the large spines formed as in *T. multispinosa*, but so closely set that their bases almost touch, and the longest spines are nearly $1\frac{1}{2}$ mm. long; the longer spine at apex of tibia is about 1 mm. long. Tarsus 6 mm. long.

Tegmen as preserved about 29 mm. long, but if complete it would probably be about 32 mm.; width about 5 mm. A slight indistinct marbling, but no distinct spots or bands. Venation as indicated in



Tyrbula scudderi, Cockerell. A. Tegmen. B. Tibial spines.

the figure; the costal region broadly expanded, with oblique, rarely branching veins, much as in *Stirapleura texana* as figured by McNeill; the first subcostal branch must be very short, as it is not clearly visible, the base of the costal field being suffusedly brown without well-preserved veins; the rest of the venation shows a general resemblance to that of various Tryxalines, with the following peculiarities: radius branching about middle of tegmen, the branches continuing close together, joined by numerous cross veins, approaching in apical field, but diverging again, the lower branch giving off below at least three long oblique veins; media branching a little beyond the radius, the branches widely divergent, forming an open fork, but gradually approaching as they go toward margin; cubitus simple, ultimately joining first anal. In the figure the stems of the media and radius are too close together; with a good lens they can be seen to be distinctly separate, joined by numerous small cross-veins, but the media is only half as far from the radius as it is from the cubitus.

Miocene shales of Florissant, Wilson Ranch (*H. F. Wickham*). I make the leg the type, because it shows parts which can be compared with the descriptions of Scudder's two species of *Tyrbula*. The tegmen was on another piece of shale, but I

feel confident that it belongs to the same species. This is probably Scudder's supposed *T. multispinosa* from Florissant; but the true *T. multispinosa* is a different insect, from the Eocene of Wyoming. The Wyoming species is the type of the genus, and very possibly better material of it would indicate that the Florissant insects belong to a different genus.

MANTIDÆ.

Lithophotina costalis, n. sp.

Tegmen, as preserved (base and apex wanting), about 18 mm. long, actual length probably 25; pallid, the veins appearing light reddish, perhaps green in life; similar to *L. floccosa*, but with the costal field much larger (nearly 2 mm. broad near middle), and the inferior branches of the media not forked. The first superior branch of the radius is nearly 2 mm. before the apical fork (or origin of last inferior branch) of media. The subcostal vein is thin, but quite distinct, and is joined to the radius by oblique cross-veins, some having a sigmoid curve. The costal field is finely reticulated, agreeing herein with *Stagnomantis* and not with *Photina*. The width of the tegmen in middle is a little over 8 mm.

Miocene shales of Florissant, Wilson Ranch (*H. F. Wickham*).

REVERSION OF ARCTIC *EREBIA LIGEA* VAR. *ADYTE*, HB., AND ALPINE *PARARGE MÆRA* VAR. *ADRASTA* TO THE TYPE-FORM. HIBERNATION OF *PYRA-* *MEIS ATALANTA* AND *PARARGE EGERIA* VAR. *EGERIDES*.

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

MR. WILLIAM CARTER, of Hamburg, has been good enough to furnish me with a copy and translation of a paper communicated by Herr August Selzer to the Entomological Society of Hamburg, which contains several items of considerable interest to those of us who study the bionomics of the western palæarctic butterflies. For some time in the arrangement of the genus *Erebia* considerable doubt appears to have existed as to the actual species of which Hübner's *adyte* is a variety. If any such doubt remains at the present, it should be finally dispelled by the results of the breeding experiments successfully carried through by Herr Selzer who, from ova obtained from Lapland *adyte*, has derived typical *ligea*.

Adyte was common enough at Abisko, Swedish Lapland, when I was collecting there in July, 1906 ('Entomologist,' xxxix. p. 247), and it was here, also, that Herr Selzer took the females from which he bred the typical form in Hamburg.

They were placed upon grass immediately, and commenced laying; the ova were kept out of doors, and the larvæ emerged in the February of 1911, being half-grown at the end of June, when they proceeded to æstivate. Reappearing at the end of August, they fed up and pupated, being now kept in a warm room. The first imago appeared on October 12th, the last on December 31st.

The larvæ differed considerably in appearance from the ordinary form of Harz *ligea*, being darker and plainly striped. In nature *ligea* ova lie over the winter, and Herr Selzer says that "the larvæ which emerge in the spring hibernate the winter following," an imago rarely occurring late in the summer; so that the life-cycle of the typical *ligea* of the Harz extends apparently through two years.

A comparison of *adyte* imagines from the Engadine and from Zermatt showed them to be identical with the Lapland form. Those in my own collection do not differ materially from examples from Cortina, the Brenner, &c., and, as I said before (*loc. cit.*) of the Abisko specimens, the superficial differences from the type are not marked in the male to any great degree. But those bred from Herr Selzer's Abisko ova were absolutely identical with the *E. ligea* from the Harz Mountains. Mr. Carter kindly sent me also a photograph illustrating in detail the results of this experiment, but, unfortunately, I am unable to reproduce it in this Journal, owing to the size of the block. It would be interesting to discover how far Lapland *adyte*, bred under natural conditions in Hamburg, would approximate to the type. But, as Herr Selzer claims, the contention as regards the specific identity of *adyte* and *ligea* may now be considered settled.

As throwing further light on the subject of type reversion, Herr Selzer proceeds to record his experiences with *Pararge mæra* var. *adrasta*. From females of this variety captured at Zermatt, sent to Hamburg for the purpose, ova were obtained, the larvæ still differing slightly from Harz typical form. But no difference was observable between the resulting imagines and the typical form. So that it may be inferred that the change back, due no doubt to altered conditions of climate and temperature, comes about in the pupal phase principally, as has been demonstrated, I think, by the experiments of Mr. Merrifield and others.

Two further notes by the same author, communicated to the 'Internationalen Entomologischen Zeitschrift' (No. 42, Jan. 18th, 1913, p. 293) on the subject of hibernation are also exceptionally interesting to British lepidopterists. Herr Selzer says that he found a freshly emerged *Pyrameis atalanta* at Heiligenhafen, on the Baltic, in the early part of June, and regarding this as an indication that the butterfly passes the winter in the pupal phase, he searched the same spot later in

the year for larvæ, found them, and through the winter of last year had live pupæ in his cages. He further tells us that of the larvæ of *Pararge egeria* var. *egerides* (usually single-brooded in the Harz) obtained from captured females in June, half fed-up and emerged in Hamburg in the following September, the rest pupating at the end of that month and in October, and in this phase hibernating for a spring emergence.

A NEW MOSQUITO FROM SAMOA.

BY FRED. V. THEOBALD, M.A., F.E.S., &c.

Pseudotæniorhynchus samoensis, n. sp.

Head brown, with narrow pale border around the eyes and pale line in the middle, a dark patch on each side; black upright scales all over the head. Proboscis almost black, with a median creamy band. Thorax deep brown, with somewhat marked median lines and two pale spots before the bare space in front of scutellum. Abdomen deep blackish-brown, unbanded except for a narrow pale basal broken band on the last segment, with basal, almost white, lateral spots; venter with third and fourth segments with basal pale bands, the fifth with a line of pale scales at the apex, others with traces of basal bands. Legs deep brown, narrowly banded, the bands mainly basal, but traces on the apices. Wings brown scaled.

♀. Head shiny blackish, with a few small pale narrow-curved scales and numerous upright black forked scales all over it, a line of pale narrow-curved scales around the eyes and small flat grey and dark lateral scales, a median nude line appearing pale; proboscis rather thick, black with a median pale creamy band, black chætæ ventrally at the base; palpi moderately long, black-scaled; clypeus deep brownish black.

Thorax black, with small, narrow-curved thin brown scales, very dense, two spots of similar but pale golden scales before the bare space in front of the scutellum, traces of two median parallel bare lines showing as dark lines, with two lines of paler hairs in the middle and others at the sides; lateral chætæ black, very dense over the wing-roots and a number on each side of the bare space passing back to the scutellum; scutellum paler, with small narrow-curved dark scales and long black posterior border-bristles, dense on the lateral lobes: metanotum brown; pleuræ black and grey with some small flat whitish scales.

Abdomen black, unbanded, with small basal creamy white lateral spots, which are prominent on the last segment, nearly forming a band; posterior border hairs pallid; venter with basal pale bands, the fifth with a white band near or on the apical border; on the sixth and seventh segments the basal lateral spots spread out along the sides of the segments to some extent.

Legs dark brownish black, the fore pair with a small apical yellow spot on femora and tibiæ and on the first four tarsals basal pale

bands; in the mid pair very similar, but slightly more prominent; in the hind the banding still more prominent, in all traces of it on the apices of the segments; femora and tibiae with numerous black chætæ; ungues small, equal and simple.

Wings rather narrow, with dense brown scales, rather broad and straight with shorter and broader median vein-scales; first fork-cell longer but about the same width as the second fork-cell, their bases about level; stem of the first not quite half as long as the cell; stem of the second about half as long as the cell; posterior cross-vein much longer than the mid cross-vein close to it. Halteres with pale stem and large fuscous knob with pale scales, especially at the apex.

Length, 4.8 mm.

Habitat.—Apia, Samoa.

Observations.—Described from a single perfect female sent me by Dr. K. Friederiks, Government Zoologist of Samoa; two specimens were taken in a privy.

It forms a very marked species of *Pseudotæniorhynchus*, easily told by the brown thorax having no posterior pale spots and by the abdominal ornamentation. The type I have presented to the Liverpool School of Tropical Medicine.

Dr. Friederiks tells me the other mosquitoes found in Samoa are *Stegomyia fasciata*, Fab.; *Stegomyia pseudoscutellaris*, Thorp; *Culex fatigans*, Wied; and a species of *Mansonia* (i. e., *Tæniorhynchus*).

SYNONYMY OF *ICHNEUMON OBLITERATUS* AND *I. BARBIFRONS*.

By CLAUDE MORLEY, F.E.S.

SOME time ago Dr. T. A. Chapman was so good as to present me with a female of *Ichneumon obliteratus*, Wesmael (*Ichn. Miscellanea*, 1855, p. 18), which emerged on August 21st, 1910, from the pupa of *Brenthis pales*, found at Furka, in Switzerland, on 28th of the previous month. When first describing the species, Wesmael knew but a single female: "M. le Dr. Kriechbaumer a pris cette femelle aux environs de Coire, en Suisse." Giraud (*Ann. Soc. France*, 1877, p. 398) says Fallou bred it—evidently still the female only—and adds in a footnote, "L' *I. obliteratus* provient de chenilles d' *Argynnis pales* prises en juillet 1866, autour de l'hospice du Simplon, dans le Valais," Switzerland. Berthoumieu in 1894 simply epitomises this (somewhat incorrectly), and adds "Holstein," in Prussia, apparently on his own authority. "Mâle inconnu."

Dr. Chapman has just sent me three more females with a single male, bred during August, 1912, at Col d'Iseran, in the

Graian Alps of Savoie, France, about fifteen miles north of Mt. Cenis, at 9000 ft., from pupæ of *Gnophus cælibaria*. The females are conspecific with the above, and the male is quite certainly its alternate sex, which has not hitherto been associated with it, though described by Holmgren in 1878 (Verh. z.-b. Ges. Wien, xxviii. p. 173, in his "Enumeratio Ichneumonidum exhibens species in alpibus Tiroliaë captas") in the male sex only under the name *Ichneumon barbifrons*, on account of the elongate capital pilosity found only in this sex, or to a much less degree in the female. His description is excellent, but he indicates no more exact locality, and no one has since recognized the species.

Monk Soham, Suffolk: October 15th, 1913.

NOTES AND OBSERVATIONS.

UNUSUAL PAIRING OF MOTHS.—I was interested to see in the 'Entomologist' for November, 1913 (vol. xlv. p. 314), Mr. A. E. Hodge's note upon the pairing of a male *N. xanthographa* with a female *C. graminis*. Some years ago, whilst living in London, I had a male *E. versicolor* pair with a female *Prodromaria*. Many ova were laid, but these proved infertile and soon shrivelled up.—G. BERTRAM KERSHAW; West Wickham, Kent, November 3rd, 1913.

NOTE ILLUSTRATING MILDNESS OF THE PAST SEASON.—I captured a very worn male of *Percnoptilota fluviata* on my study window on September 30th, a perfectly fresh male on October 25th, and a third male in good condition on November 26th. This seems to indicate the maturing of two broods after the end of September. *Vanessa urticae* appeared in the garden on November 24th. A bat was hawking round street lamps on November 23th.—E. N. C. STOWELL; Laleham, Bexhill-on-Sea, December 12th, 1913.

NOTE ON REARING DASYPOLIA TEMPLI.—In July of last year I collected a number of larvæ of *D. templi* in the neighbourhood of Kinloch Rannoch, but from over thirty larvæ I only bred two insects, all the rest being stung. This year, in July, I collected more larvæ in Cornwall, and practically all these attained the imago stage. The Scotch insects emerged on September 20th and 26th, while the Cornish insects did not begin to appear until October 28th, and continued till November 12th. This may have been caused by the difference in the two seasons, but I think it more probable the Scotch winter being earlier, insects from there habitually emerge at an earlier date. The larvæ are easy to find in infected plants of *Heracleum sphondylium*, and very easy to rear, in my experience. All that I did was to dig up with a trowel infected plants and replant them in a large tin or rhubarb pot, together with a few uninfected plants—and this I covered with a perforated zinc cylinder with a muslin top. The larvæ required no attention, and when full

fed left the plants and pupated in the surrounding earth, without any cocoon.—PERCY C. REID; Feering Bury, Kelvedon.

DRAGONFLIES BRED IN 1913.—I have bred this year *Gomphus vulgatissimus* (one), *Aeschna grandis*, *Cordulia aenea*, *Libellula quadrimaculata*, *Sympetrum striolatum*, *Pyrrhosoma nymphula*, *Ischnura elegans*, *Erythromma najas*, and *Calopteryx virgo*. The nymph of *Gomphus vulgatissimus* was obtained in the New Forest in May. It is the first time I have taken one of this species, though I have for some years collected nymphs (and bred, too) in the same place in the forest, on one day at any rate, in early summer. I got no *Cordulegaster annulatus* this year, though they have generally turned up there, or, more accurately, have been turned up. A few hours on the Ouse, near St. Ives, in early June produced many *Ischnura elegans* and one nymph—an Anisopterid—which I have not yet been able to identify. It is growing fast, living mainly on small snails; but it is now taking to worms, which it refused for a long time.—HAROLD HODGE; 9, Highbury Place, London, N.

PLEBEIUS (LYCENA) MEDON (ASTRACHE) IN DOVEDALE.—Referring to the note of Mr. St. John (vol. xlv. p. 314), I was in Dovedale in July, 1908, and found this species quite common and I secured, as did Mr. St. John, quite a good series of thoroughly typical specimens. Insects generally were decidedly scarce, though I took one specially prettily marked blue female of *Polygonmatius icarus*. *Nudaria mundana* was not uncommon on the walls of the outbuildings of some of the farmyards, whilst *Boarmia bistortata lariciaria*, Dbl. occurred in the dale. I also took one or two pretty *Cerostoma sequella*—and, apart from lepidoptera, *Sirex gigas* females were seen several times, though I only took a single specimen.—G. T. BETHUNE-BAKER.

A DRAGONFLY AT SEA.—On September 6th, somewhere in mid-sea, between Kevel and Helsingfors, I saw the insect flying about over the deck. It subsequently settled on a chair, where it was caught by a fellow-passenger, who gave it to me. The presence of this dragonfly seemed curious, since there was no land within a good many miles, neither had we touched land since leaving England.—JOHN B. HICKS; Stoneleigh, Elmfield Road, Bromley, Kent, November 8th, 1913.

WASPS ACTIVE IN DECEMBER.—On December 5th I was much interested watching wasps, apparently workers, going in and out of a nest in the ground. This must be unusual.—E. C. STOWELL; Laleham, Bexhill-on-Sea, December 12th, 1913.

POLIA FLAVICINCTA IN GLAMORGANSHIRE.—I took this moth at sugar on October 2nd last in my garden. I can find no record of its being taken in this county before.—E. U. DAVID; Yscallog, Llandaff, November 24th, 1913.

NOLA ALBULA IN HANTS.—I have much pleasure in reporting the capture of *Nola albula* whilst collecting in Hampshire (about July 18th and 19th). My friend, Mr. Danby, has two specimens, and I

have one. Others were taken, but unfortunately got damaged in travelling. Am I right in believing this to be a new record for the county?—ARTHUR BUSS; 43, Gleneldon Road, Streatham, S. W.

ACRONYCTA MENYANTHIDIS EMERGING IN NOVEMBER.—On looking in my pupa-cage on November 3rd, I was surprised to find that a female specimen of *Acronycta menyanthidis* had emerged from pupæ sent me from "Barnard Castle," all collected this year. They were kept in a glass-top bottle in a room with no fire, temperature about 55° to 60°. I thought it would be interesting to record this, because I can find no record of so late an emergence.—H. L. DOLTON; 27, Brunswick Street, Reading, November 17th, 1913.

EARIAS CHLORANA IN GLOUCESTERSHIRE.—In August, 1912, the Rev. G. M. Smith found about a dozen larvæ of this species feeding on the osiers growing on the Severn bank near Gloucester. One or two imagoes emerged in the following September, but the rest hibernated as pupæ and came out at intervals during May, June, and July of this present year. It is curious that this species has not apparently been observed in this county hitherto.—C. GRANVILLE CLUTTERBUCK, F.E.S.; 23, Heathville Road, Gloucester, November 16th, 1913.

HYPOTION (CHÆROCAMPA) CELERIO IN HANTS.—A specimen of *C. celerio* was caught by a cat in a house in this parish last September. The locality is less than a mile from the sea, between Lymington and Christchurch.—(Rev.) J. E. KELSALL; Milton Rectory, New Milton, November 22nd, 1913.

DAPHNIS (CHÆROCAMPA) NERII.—One of these very rare visitors occurred here this season, and was captured on September 16th. The moth was seen on the wing at about 4.15 p.m. by two small village boys, who eventually succeeded in their endeavours, with the aid of their caps, &c. The following day it was brought to my house (partly for identification), being a pitiable sight but still alive; it is, nevertheless, sufficient to serve as a record. My friend Mr. Brown of Ainsdale kindly lent me the moth for exhibition at the November meeting of the Lancashire and Cheshire Entomological Society.—W. A. TYERMAN; Derby Villa, Ainsdale, Southport, November 19th, 1913.

CATOCALA FRAXINI IN LANCs.—A specimen of *Catocala fraxini* (Clifton Nonpareil) was caught at Grange-over-Sands, Lancs, September 7th, 1913, in the grounds of Yewbarrow Hall, the residence of Evan A. Leigh, Esq.—J. DAVIS WARD; Limehurst, Grange-over-Sands.

COLIAS EDUSA REARED IN KENT.—On May 23rd, 1913, my son brought to me a female *Colias edusa* he had caught with his cap in a waste field not fifty yards away from our house. I succeeded in keeping it alive for three weeks. During that time it kindly obliged with one hundred and fifty ova; these I placed singly in airtight tins with a glass top, my intention being to try for a second brood, but the larvæ grew so slowly that I had to abandon the idea. The first imago emerged on August 15th and the last on September 9th. I

might add the larvæ were kept indoors and out of the sun, so probably this had something to do with slow growth. Altogether I bred a nice long series, but with little or no variation.—A. J. EXETER; Watling Street, Dartford, Kent, October 17th, 1913.

COLIAS EDUSA IN MIDDLESEX.—In previous *Edusa* years I have usually observed one or two examples here in August or September. But this season the "clouded yellow" has not put in an appearance. However, my cousin, Dr. R. P. Cox, of Ealing, informs me that in August several visited his garden; and he reports it also to have been not uncommon at Shipley, in Sussex, and at Torquay.—H. ROWLAND-BROWN; Harrow Weald, December 15th, 1913.

NOTES ON COLIAS ELUSA, &c., IN ESSEX.—I first noticed *C. edusa* here on August 20th. The next day I visited a small field of lucerne about ten minutes' walk from my house. On the way a bright looking female *edusa* passed me in the road, but my net was in my pocket. On reaching the field not a specimen of *edusa* was to be seen, but after waiting for nearly an hour, a male flew by and settled on one of the lucerne flowers and was captured, and in the course of half an hour I saw three more, and caught two of them—both males. There was a fair amount of bloom on the lucerne, and it was a warm bright afternoon, but butterflies were very scarce. I only noticed single examples of *Pyrameis atalanta*, *P. cardui*, *Vanessa io*, a few fresh *V. urticae*, and one or two each of *Cænonympha pamphilus*, *Lycæna icarus*, *Chrysophanus phlæas*, and *Adopæa lineola*. *Pararge megæra* was the most numerous, and there were a few *Pieris rapæ* and *P. napi* which were noticeable on account of their small size. Two of the *napi* I caught are, I think, the smallest I ever saw, measuring barely 1½ in. across the wings. A few *Plusia gamma* were buzzing about amongst the flowers, and one or two *Nomophila noctuella* (*S. hybridalis*) were disturbed from the herbage. On August 25th I saw a large female *edusa* flying along the high road. The next day I went to Walton-on-the-Naze, as I thought that might be a more likely neighbourhood, and I particularly wanted to get a female *C. edusa* for eggs. On arriving at Walton I walked out to the eastward of the town, by the footpath on the top of the cliffs, and when about half way to the Naze saw a bright-looking female flying about willow herb some distance below me, but she would not come within reach, nor could I get down to her. Further on I was pleased to see, on my left, a large clover field one mass of bloom—indeed, I smelt it long before I saw it. Here I thought I should surely find all the *edusa* in the neighbourhood congregated, but was disappointed, for when I got into the field, nothing was to be seen but a few *rapæ*, *napi*, &c. I stopped there for more than an hour, sat under a hedge, eat my lunch, and smoked a pipe, but no *edusa* would come. It was gloriously hot and bright—just the day for them. After this I walked a little further along the coast, beyond the Naze, and then turned back, as it was time to go to the station for my train home—and I had hardly done so when a male *edusa* came dashing along and was secured. On the 28th I saw another male at Dovercourt, and this was the last.

On August 27th I received five living females from my friend Commander Gwatkin-Williams, R.N., who had taken them the day before at Broadstairs, where *C. edusa* appears to have been rather plentiful. They were placed under muslin hoods over growing plants of white clover and birdsfoot trefoil in flower-pots, and put in a warm place in the garden. Next day I saw a good many eggs had been laid, and by the time the last female died, two or three hundred ova had been deposited. The eggs were pearly-white at first, but soon changed to orange, and by September 2nd some had become lead colour, and larvæ began to hatch out the following day. The young larvæ were dingy-olive, with shining black heads, and their first act was to devour their egg-shells, then, after they had rested a bit, they wandered about, and finally settled either in the middle or at one of the corners of a leaf, and began to nibble at the upper cuticle, making small blotches. They laid up for their first change on September 10th, and some had got through by the 12th, and were then dull green, with minute black dots and short pale hairs. I will not give any further account of their progress, as that has been done so many times by other writers. The pots were kept in a window facing south, and everything went well with the larvæ until the temperature began to fall towards the beginning of October, when many of the smaller ones began to sicken and die off. Some of the larger ones by this time were nearly full grown. On October 9th I noticed one had attached itself to the side of the muslin hood, and the next day became a pupa. By the 17th there were a dozen pupæ, but scores of larvæ had died, and those remaining would not eat, and eventually they all perished. None of them appeared to make any attempt to hibernate. By this time it was getting very much colder, and I had started a fire in my sitting-room. All the pupæ were now pinned to a sheet of cork, and this was placed under a glass cylinder, with a French Clocke over it, on a table close to the window, where they got the full benefit of the sun. On the 26th the first pupa began to change colour, and by the 31st the wing cases were bright orange, and the black margins of the wings plainly visible, and on November 2nd, about noon, I observed the butterfly trying to escape from its chrysalis, and it had evidently been trying for a little time before I noticed it, as its wings were hanging down partially developed, so I lifted glass and cylinder and, with a pair of forceps, managed to free it, but it was then so feeble it could not grasp anything, and I had to hold it by its front legs, after which I managed to tie a piece of silk round them, then passed the silk over a pin in a piece of cork and left it, and eventually the wings grew to their full size, though one of them was slightly puckered, but I managed to smooth this out when I set it. Other pupæ were changing colour at this time, but most of the butterflies seemed to be unable to emerge, and I only bred five altogether, *viz*: November 2nd, one male; November 6th, one female; November 9th, two males; November 11th, one male. Unfortunately I have no greenhouse, if I had I should no doubt have bred a larger number of the butterflies.—GERVASE F. MATHEW; Lee House, Dovercourt, November 17th, 1913.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, November 5th, 1913.*—Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., President, in the chair.—Mr. A. P. Semenoff Tian-Shanski was elected an Honorary Fellow in the place of the late Prof. O. M. Reuter.—The following gentlemen were elected Fellows of the Society:—Messrs. Hugh Warren Bedford, Church Felles, Horley; Harold S. Cheavin, F.R.M.S., F.N.P.S., Clematis House, Somerset Road, Huddersfield; Charles Alban William Duffield, Stowting Rectory, Hythe, and Wye College, Kent; W. Egmont Kirby, M.D., Hilden, 46, Sutton Court Road, Chiswick, W.; Louis Meaden, Melbourne, Dyke Road, Preston, Brighton; F. V. Bruce Miller, Livingston, N. Rhodesia; Alexander David Peacock, 137, Wingrove Gardens, and Armstrong College, Newcastle-on-Tyne; H. Ananthaswamy Rao, Curator of the Government Museum, Bangalore, India; Percival Nathan Whitley, New College, Oxford, and Brankwood, Halifax.—The question of the change of title of the Society was opened for discussion, but the preponderance of feeling appeared to be somewhat against any change.—The President brought before the meeting the necessity of forming a fund for the care of that portion of Wicken Fen left by the late Mr. G. H. Verrall to the National Trust, and at his request Mr. Rowland-Brown expressed his readiness to act as Treasurer for any subscriptions given by Fellows of the Society.—Dr. G. B. Longstaff exhibited a series of seventeen *Thais rumina*, L. (including a female of the var. *canteneri*, Feld.), taken in March, 1913, at Ronda, and called attention to the characters suggestive of a distasteful butterfly.—Mr. W. J. Lucas, three species of *Panorpa*, including a female of the scarce scorpion-fly, *Panorpa cognata*.—Mr. H. Lupton, a specimen of *Thalpochara ostrina*, taken in the middle of June, 1913, about four miles from Ilfracombe. Also two specimens of *Dianthæcia luteago* var. *ficklini*, taken in the middle of the same month on the coast of N. Devon.—Dr. G. D. H. Carpenter read notes in connection with his exhibit of *Epitoxa albicincta*. He also exhibited a case of miscellaneous insects and communicated notes upon them.—Mr. Donisthorpe exhibited males, winged females, and a dealated female and workers of the very rare ant, *Solenopsis fugax*, Latr., taken at Blackgang, Isle of Wight, on August 26th, 1913.—Mr. E. E. Green, an aberrant example of *Pyrameis (Vanessa) indica*, Herbst, from Ceylon.—Comm. J. J. Walker, a female specimen of the gigantic Neuropteran, *Corydalus orientalis*, McLach., taken by a native collector at Chuchow.—Mr. L. W. Newman, the following Heterocera:—(1) *Calymnia (Cosmia) trapezina*. A melanic female—a worn specimen taken at sugar in Bexley Woods. (2) *Zonosoma (Ephyra) annulata* and *pendularia*; a long and very varied series of both species, showing extreme light, dark, and intermediate forms and one very pink *Z. pendularia*. (3) A series of hybrid *Z. pendularia*, female, and *annulata*, male; specimens showing the markings of *pendularia* most pronounced and the coloration of *annulata* prominent.—The following papers were read:—“New or little-known Heterocera from Madagascar,” by Sir G. H. Kenrick, Bart., F.E.S. “The Culicidæ of Australia,” by Frank H. Taylor, F.E.S. “Descriptions of New Species of Staphylinidæ

from India," by Malcolm Cameron, M.B., R.N., F.E.S. "*Pseudacræa eurytus hobleji*, Neave, and its models on Bugalla Island, Lake Victoria, with other members of the same combination," by G. D. H. Carpenter, B.A., M.D., F.E.S. "*Pseudacræa boisdouvali*, Doubl., and its models with special reference to Bugalla Island," by the same. "The inheritance of small variations in the pattern of *Papilio dardanus*, Brown," by the same.

Wednesday, November 19th, 1913.—Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., President, in the chair.—It was announced that the Council had decided to make an annual grant of two guineas towards the maintenance of Wicken Fen.—The following gentlemen were elected Fellows of the Society:—Messrs. B. G. Adams, 15, Fernshaw Road, Chelsea; Barnard Ormiston Dickinson, B.A., 57, Castelnau, Barnes, S.W.; Alfred Oliver Rowden, 3, Archibald Road, Exeter; Oscar Whittaker, Ormidale, Ashlands, Ashton-upon-Mersey, Cheshire.—The following Fellows were nominated by the Council as Officers and Council for next year:—President, Mr. G. T. Bethune-Baker, F.L.S., F.Z.S.; Treasurer, Mr. A. H. Jones; Secretaries, Commander J. J. Walker, M.A., R.N., F.L.S., and Rev. G. Wheeler, M.A., F.Z.S.; Librarian, Mr. G. C. Champion, A.L.S., F.Z.S.; other Members of the Council: Messrs. E. A. Butler, B.A., B.Sc.; J. E. Collin; S. Edwards; Dr. H. Eltringham, M.A., D.Sc., F.L.S.; C. J. Gahan, M.A.; A. E. Gibbs, F.L.S., F.Z.S.; E. E. Green; G. Meade-Waldo, M.A.; Dr. G. W. Nicholson, M.A., M.D.; Hon. N. C. Rothschild, M.A., F.L.S., F.Z.S.; H. Rowland-Brown, M.A.; and C. J. Wainwright.—Mr. A. H. Jones exhibited specimens of both sexes of *Plebeius zephyrus* var. *hesperica*, taken by him in June last, at Albarracin in Spain; *P. zephyrus*, type, and var. *lycidas* were also exhibited for comparison. Also from Albarracin, *Melitæa desfontainii* var. *bætica*, Rbr., the Spanish form of *M. desfontainii*, Godt., (an Algerian butterfly); both sexes were exhibited.—Mr. E. E. Green, two Pierid butterflies, of distinct genera, taken in *coitû* at Aripu, Ceylon, viz., *Appias libythea*, Fab., male, and *Teracolus limbatus*, Butl., female.—Mr. W. J. Kaye, a large and very variable series of *Heliconius doris*, L.—Dr. Chapman, some Erebias, showing parallel variation in several species in different localities. He raised the question whether this was a case of mimicry, and a considerable discussion followed.—Dr. F. A. Dixey, a drawer containing specimens of the genus *Pieris*, with drawings of their scent-scales, and remarked upon them.—Mr. A. Bacot, slides showing the development of Plague bacilli in the alimentary canal of the flea, and the method of infection through the mouth, and read an important paper on the subject.—Dr. K. Jordan, some specimens of a lepidopterous larva discovered by the Rev. A. Miles Moss, F.E.S., who, when collecting near Parà, noticed a Saturniid caterpillar with black intersegmental bands and long branched spines, a species of *Automeris*, some of the black bands of which appeared to be swollen. To his amazement these swellings, when touched, quickly slid over the back of the caterpillar to the other side with the hurried motion of a Pyralid larva, and indeed turned out to be small lepidopterous larvæ as black and glossy as the bands of the *Automeris* caterpillar.—The following papers were read:—"Revision of the Mexican and Central American Malachiidæ

and Melyridæ, with descriptions of new genera and species," by George Charles Champion, F.Z.S. "Four new genera and species of Hymenoptera from Australia," and "Three new species of Australian Hymenoptera," by A. A. Girault, communicated by A. M. Lea, F.E.S., Government Entomologist, South Australia.—GEO. WHEELER, M.A., *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 9th, 1913.—Mr. A. E. Tonge, F.E.S., President, in the chair.—Large additions to the Society's reference collection of British Lepidoptera from Mr. W. G. Dawson were announced.—Mr. Lucas read a paper: "The Shorthorned Acridians of the British Isles," and illustrated his remarks with lantern slides of all the species.—Mr. Ashdown exhibited Lepidoptera taken by him in Switzerland in June and July last.—Mr. Colthrup, a snail shell from which he had bred a Dipteron, presumably parasitic in the snail.—Mr. Andrews, a scarce Dipteron, the Syrphid *S. guttatus*, taken at Bexley in August.—Mr. Step, living examples of the ant-nest Isopod *Platyarthus hoffmannseggi*, found in a nest of *Formica fusca*.—Mr. West (Ashtead), enlarged photographs of the same rare woodlouse.—Mr. Curwen, specimens of *Syntomis phegea* and its var. *pfluemeri*, in which the white spots were reduced in size and number, from Pallanza and Iselle, together with specimens of the rare *Naclia ancilla*.—Mr. Newman, picked series from a large number of bred *Melitea aurinia*, from County Clare and Oban. The variation was extremely small, although the larvæ were samples of many broods.—Mr. Tonge, a series of *Coremia quadrifasciaria*, bred from a female taken at Albury, Surrey, showing but little variation.

October 23rd, 1913.—Mr. A. E. Tonge, F.E.S., President, in the chair.—Prof. E. B. Poulton, F.R.S., gave an account of the Mimicry exhibited by the Nymphalines of North America, illustrating his remarks by specimens and lantern slides.—Mr. W. J. Kaye exhibited a collection of the Sphingidæ found in the Island of Trinidad. There were about forty species in all.—Mr. Sheldon, series of species taken by him near Albarracin, Central Spain, including *Plebeus zephyrus* var. *hesperica*, *Agriades thetis* ab. *rufolunulata*, *A. thersites*, and *Glaucopsyche cyllarus*. Dr. Chapman was of opinion that *A. thersites* only occurred when sainfoin was indigenous.—Mr. L. W. Newman, Lepidoptera from County Clare, County Cork, and Killarney, including very light *Aplecta nebulosa*, very dark *Luperina cespitis*, *Aphantopus hyperanthus*, with greenish shade on the under side, *Egeria scoliceformis*, bred *Dianthæcia capsophila*, *D. luteago* var. *barrettii*, &c. The weather was very bad from April to the end of September.—Mr. A. E. Tonge, a specimen of *Argynnis aglaia*, with a strongly marked blotch formed by the coalescence of several spots on the fore wings.

November 13th, 1913.—Mr. A. E. Tonge, F.E.S., President, in the chair.—Prof. W. Bateson, F.R.S., gave an address on the "Problem of Species which overlap Geographically," illustrating his remarks with numerous lantern slides.—Mr. Curwen exhibited specimens of *Parnassius apollo* from Eclépens and the Laquinthal, mostly very large examples, and including var. *pseudonomion* from Eclépens.—

Mr. Newman, long and variable series of *Zonosoma annulata* and *Z. pendularia*, with many dark aberrations; and also a series of the hybrid between these two species, showing well the characters of both.

November 27th, 1913.—The President in the chair.—The Annual Exhibition of Varieties, &c.—Mr. West (Greenwich), the Hon. Curator, fifteen cabinet drawers of the Society's reference collection, with which had been incorporated a portion of the Dawson collection.—Dr. Chapman, a nearly black *Argynnis aglaia* from Le Lauteret, July 13th, 1913, and specimens of *Agriades thersites*, *Polyommatus icarus*, and var. *icarinus*, with diagrams to show the different alignment of spots.—Mr. Edwards, a box of conspicuously coloured Heterocera from Burmah.—Mr. H. Moore, the rare *Papilio hecateus* from the Solomon Islands.—Mr. Schmassmann, a series of varieties in the male of *Ornithoptera hecuba*, and a pair of the gorgeous *O. alexandre* from New Guinea.—The Rev. G. Wheeler, examples of melanic and xanthic aberrations, including *Argynnis niobe* ab. *pelopia*, *Melitæa phæbe* ab., *M. varia* ab., *M. cinxia* ab., and *Melanargia* ab. of the former, and *A. niobe* v. *eris*, *Callimorpha dominula* v. *persona*, &c., of the latter, and referred to many species in which yellow was produced in aberrational forms.—Mr. R. Adkin, a series of third brood *Celastrina argiolus*, and discussed the species as to its appearance during the present season. He also showed long series of *Agriades corydon*, including ab. *syngrapha*, ab. *semisyngrapha*, and many other fine aberrations and series from many localities.—Mr. Baumann, a series of *Boarmia repandata* from several localities, including var. *sodorensium* and var. *conversaria*, and specimens of the melanic form of *Acidalia virgularia*, which he was placing in the Society's collection.—Mr. Bright, a large number of striking aberrations of British Lepidoptera, including long series of under sides of *Agriades thetis* and *A. corydon*, a white aberration of *Argynnis paphia*, *Colias edusa*, with wings richly shot with purple, a curious *Saturnia pavonia* of female coloration with male antennæ, &c.—Mr. Grosvenor, his fine collection of *Cænonympha tiphon* and its local races.—Mr. Curwen, numerous Lycænidæ taken by him in Italy and Switzerland, and many aberrations of *Melitæa didyma*.—Mr. Newman, a varied series of recently bred *Smerinthus ocellatus*; series of *Amorpha populi* from pale cream to almost black colour, with intermediate and rich pink forms; and a series of hybrid *ocellatus* males and *populi* females, two being of the rare female form.—Mr. A. Gibbs, a section of his collection of South American Nymphalids, including many of the brilliant species in the genus *Perisamnia*.—Mr. W. G. Sheldon, long series of *Melitæa desfontainii*, taken by him at Albarracin this year, and a series of *M. aurinia* v. *iberica*, from near Barcelona, for comparison.—Mr. T. W. Hall, cabinet drawers of *Agriades corydon* and *A. thetis*, showing great aberration with very pronounced blue females, and some females curiously splashed with blue.—Mr. Main, frames containing series of photographs of the life-histories of *Cicindela campestris* (tiger-beetle), *Chrysopa flava* (lace-wing fly), *Phyllotoma aceris* (jumping sawfly), &c.—Mr. Tonge, a bred series of *Psilura monacha*, including the black form ab. *eremita*; a long series of *Tapinostola concolor*, &c.—Mr. W. J. Kaye, a case of twenty-three

pairs of the South American genera *Melinaea* and *Heliconius*, found flying together and assimilating to each other in colour.—Commander Gwatkin-Williams, aberrations of British Lepidoptera from Ireland, including *Epinephele jurtina*, with banded hind wings, females; several *Cidaria*, which possibly may be *C. concinnata*, *Xanthorhoë montanata*, with band obsolete, confluent *Anthrocera trifolii*, *Euchloë cardamines*, females with ochreous hind wings, &c.—Mr. Chas. Oldham, two collections of small chalk stones that he had collected within a small radius of the openings of two wasps' nests, and which the wasps had been unable to carry to a greater distance.—Mr. A. W. Buckstone, for Mr. Archer, a bleached form of *Angerona prunaria*, male, from Oxshott; an almost black *Lithosia helvola* (*deplana*) from Wimbledon; and an *Acidalia* which was supposed to be a very aberrant form of *A. subsericeata*.—Mr. H. Worsley-Wood, numerous forms of *Mellinia ocellaris*, including ab. *lineago*, ab. *intermedia*, with *M. gilvago* for comparison; yellow *Brephos parthenias* from Wimbledon, and lead-coloured males of *Agriades thetis* from Corfe.—Rev. J. Tarbat, black suffused forms of *Brenthis euphrosyne* ab. *nigro-sparsata* of *Abraxas grossulariata*, and a *Cidaria truncata* with a broad-banded fore wing.—Mr. Haynes, a series of hybrid *Selenia tetralunaria* males and *S. bilunaria* females, with a large preponderance of gynandromorphous specimens; melanic and ochreous varieties of *Ennomos quercinaria*, &c.—Mr. H. J. Turner, a series of *Erebia stygne* from the Continent to show the extreme local variation in the Alps and Pyrenees.—Messrs. Sharp & C. W. Colthrup, many *Colias edusa* from the south-eastern district, representative of the species in 1913.—H. J. TURNER, *Hon. Rep. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*October 20th, 1913.*—Meeting held at the Royal Institution, Colquhoun Street, Liverpool.—The President, Mr. F. N. Pierce, F.E.S., in the chair.—Exhibitions were as follows:—Mr. W. Mansbridge brought a long-bred series of *Hadena glauca* from Burnley, some of which showed a strong melanic tendency; also from Burnley the melanic variation of *Ematurga atomaria*, *Hyria muricata*, purple form, and *Cænonympha typhon* var. *rothliebii* from Witherslack; *Nyssia zonaria* from the Crosby Sandhills, and the insects captured on the occasion of the Society's field meeting at Mold on June 7th, 1913, including *Lobophora viretata*, *Cnephasia musculana*, *Capua favillaceana*, *Argyrolepia hartmanniana*, and *Agriopsis aprilina* (larva).—Mr. R. Tait showed a long and variable series of the beautiful melanic form of *Boarmia repandata* from Penmaenmawr, also bred *Agrotis lucerneae* from the same district; varieties of *Abraxas grossulariata*, including ab. *varleyata*, bred from various localities in 1913; *Aplecta nebulosa* var. *robsoni* and *Geometra papilionaria* from Delamere; *Hecatera serena* and *Calligenia miniata* from Sussex. Mr. Tait also gave an account of his collecting holiday in Sussex, from which it appeared that Lepidoptera had been as difficult to obtain in the South of England as in the North during the past summer.—Mr. Johnson exhibited a long and fine series of *C. typhon*, including some very dark forms, from Witherslack; also *Acidalia fumata*, *Nissoniades tages*, and *Lycæna astrarche* from the same place.—Dr. P. F. Tinne, various

species of autumn lepidoptera from the North of Ireland, including a nicely varied series of *Cidaria truncata*, several being the var. *centumnotata*. All the members present reported a very poor season from a collector's point of view.—WM. MANSBRIDGE, *Hon. Sec.*

RECENT LITERATURE.

Common British Moths. By A. M. STEWART. London: Adam & Charles Black. 1913. Pp. viii, 1-88. Sixteen plates.

THIS little book is a worthy companion-volume to the 'British Butterflies' by the same author, already noticed in the 'Entomologist' for 1912, p. 212. The eight coloured plates are really of most excellent workmanship, one is inclined to think some of the best ever produced, certainly in entomological literature. They are splendidly clear, and marvellously accurate in colour. They contain figures of some two hundred species, all those mentioned in the text in fact, and though only three-fourths natural size it should be quite impossible to identify wrongly any of the species figured. The black-and-white plates of preserved larvæ, &c., have been well chosen, the text is obviously the work of a practical entomologist, and the species described form a very excellent representative collection of the commoner British moths, amongst them, one is pleased to note, some of the "Micros" being given a place. Errors of any kind seem exceedingly few, although it is difficult to understand how the specimen of *Boarmia repandata* var. *conversaria*, figured on Plate 15, came to be labelled "*B. gemmaria* var. *perfumaria*," probably by accident. The book is absolutely ideal for the young beginner.

N. D. R.

Transactions of the City of London Entomological and Natural History Society for the year 1911. Pp. 32. Published by the Society, The London Institution, Finsbury Circus, 1912.

WE have received a copy of the above Society's 'Transactions' for 1911. Apart from the notes in the President's address upon the season's collecting and upon the scarcity of some insects formerly so common in their haunts, there is a short but quite interesting paper by Mr. Tautz upon the species of the genus *Cosmia* (*Calymnia*). This includes a record of *C. pyralina* from Middlesex (Pinner), a species which the author states had not been previously recorded, so far as he knew, from that county, but here he is in error, as the species is pretty generally known to inhabit Middlesex, and was recorded from Mill Hill over thirty years ago.

N. D. R.

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A NEW SPECIES OF *METANÆA* FROM FRANCE.

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

IN examining a small lot of Trichoptera taken by Dr. Chapman last summer in the Alps of Dauphiné, forwarded by Mr. Lucas, I found four insects, which at first sight I supposed to be *Metanæa flavipennis*, Pict. On confronting these, however, with McLachlan's figures, I was surprised to find that the details did not agree satisfactorily, and on looking over the material in my collection it was manifest that there were two species, and these rather distinct ones, mixed together, examples from Murgtal (Ris), Silvaplana (Morton), and Carinthia (Klapálek), pertaining to the species described and figured by McLachlan, while others from the Val Bedretto (Ris) were evidently the same as Dr. Chapman's. I asked Dr. Ris to go over his material, and he confirms my view of the matter. The only explanation of the oversight that can be offered is the identical general appearance of the two species, and even with regard to the profile view of the genitalia the similarity is rather remarkable. I propose to describe this hitherto overlooked species as—

Metanæa chapmani, n. sp.

Very similar in appearance to *H. flavipennis*, Pict. Head, thorax, palpi, legs, and under side of body testaceous, hairs golden; abdomen above darker. Basal joint of antennæ and between the posterior ocelli slightly fuscous. Spines of legs black.

Anterior wings narrow and elongate, pale yellowish, shining neuration concolorous, pubescence of membrane dense, golden. Discoidal cell about the same length as its footstalk. Posterior wings whitish, subhyaline with pale veins; first apical cell variable, but narrower at the base than second; second broader, moderately oblique at the base in the direction opposite to the first; third longer than first and second, almost acute at the base; upper branch of cubitus furcating about, or a little beyond the level of the beginning of the discoidal cell.

In the male the apex of the abdomen above is rather deeply concave, the posterior margin covered with scattered black tubercles, the side produced into rather long finger-shaped processes whose tips

are very slightly curved downwards, these processes also tuberculate, more densely so towards the apex which thereby becomes black. Superior appendages pale yellow with rounded outline when seen from the side, concave internally. Intermediate appendages viewed from behind, separate, each arising from a narrow stem and spreading out in broad triangular form with three distal projections, the two side ones small, the other long, horn-like, slightly inturned with a small tooth before the apex. Inferior appendages large; from beneath they are close together at the base, diverging slightly, concave internally, rounded at the apex, which is very slightly inturned and clothed internally with short spines and spinous hairs.

I am unable satisfactorily to describe the female. Differences probably exist in the genitalia as compared with *H. flavipennis*, and these could very likely be defined from Canada-balsam preparations.

Expanse of wings, male, 19–20 mm.; female, 21 mm.



Metanæa chapmani.

1. Apex of abdomen viewed from above. 2. Apex of abdomen viewed from side.

Three males, one female, Lauteret, Alps of Dauphiné (Chapman, July 22nd, August 5th). Also occurs in Val Bedretto (Ris, September 6th, 1896; July 20th, 1906): Splügen (Ris, July 16th, 1897), uncertain whether from the Swiss or the Italian side, probably the latter; Madonna di San Martino (July 29th and August 1st, 1889, Nägeli in Ris coll.).

Differs from *H. flavipennis*, especially in the direction of the blackened processes of the last dorsal segment. These in *H. flavipennis* are turned to the side almost at right angles to the long axis of the abdomen, whereas in *H. chapmani* they are nearly parallel, only very slightly out-turned.

McLachlan gives the following localities for *H. flavipennis*: Dissentis, Grisons (July 25th, Stainton), Bergün (Zeller), Leuk, Valais (October 2nd, Frey Gessner) Hospice St. Bernard; Prätigau and Pontresina according to Meyer-Dür; Meyringen (McLachlan, August 16th), Champéry, Valais (Eaton, August 20th), Samoëns, Savoy (Eaton, September 5th); Carinthia (Sep-

tember, Zeller). Hagen stated that he had it from the Harz, Bavarian Alps, and Styria (?). Ulmer adds Hessen. Supposing it to be the true *flavipennis* of Pictet, it should occur in the Val d'Illiers, Valais. This list may require revision, as some of these localities may refer to *H. chapmani*. I found *H. flavipennis* commonly at Silvaplana (July 18th to 25th, 1904); Ris has taken it in the Murgtal (July 27th, 1888), at Cierfs in the Münstertal (July 14th, 29th, 1909); and Klapálek in Carinthia (July 31st, 1899).

A NEW SPECIES OF *CHIROTTRIPS* (THYSANOPTERA) FROM SOUTH AMERICA.

BY C. B. WILLIAMS, B.A., F.E.S.

At the beginning of this year I received a small collection of miscellaneous insects from Mr. W. O. Backhouse, taken near Buenos Ayres, in the Argentine Republic, South America. Four genera of Thysanoptera were represented—*Chirothrips*, *Frankliniella*, *Physothrips*, and *Thrips*; the *Chirothrips*, which is a distinct species, is described below; notes on the others are reserved for the present, in the hope of getting further material to elucidate some doubtful points.

Gen. *CHIROTTRIPS*.

Haliday, Ent. Mag. 1836, iii. p. 444; emend. Uzel, Monog. d. Thysanopt. 1895, p. 79; emend. Hinds, Proc. U.S. Nat. Mus. 1902, xxvi. p. 133.

Chirothrips frontalis, sp. nov.

Female (macropterous).

Measurements.—Head, length 0.15 mm., width (behind the eyes) 0.122 mm.; prothorax, length 0.22 mm., greatest width 0.26 mm.; pterothorax, length 0.32 mm., width 0.30 mm.; abdomen width 0.35 mm.; wing, length (from basal lobe) 0.80 mm., width (about halfway along) 0.045 mm.

Antennæ:—segment	1	2	3	4	5	6	7	8
length (μ)	14	36	38	34	34	42	12	16
width (μ)	36	40	24	24	21	20	7	5

Total length, about 1.4 mm., antennæ 0.24 mm.

Colour uniform dark grey brown, fore tibiæ and all tarsi a little paler, the third segment of the antennæ distinctly lighter.

Head (Fig. 1.) longer than wide, produced beyond the eyes into a long prominence more than half as long as the remaining portion of the head. The sides of this at first diverge slightly and then converge rapidly to a rounded point; on the converging portion the antennæ are situated. There are no long hairs on the head but several small ones which vary slightly in position and may not be quite symmetrical. In general they conform to the arrangement shown in the

figure. *Eyes* dark and relatively far back. *Ocelli* distinct, the posterior ones behind the level of the back of the eyes. *Crescents* red-brown, distinct (in mounted specimens). *Mouth cone* rounded, reaching about two-fifths across the prosternum. *Maxillary palps* three segmented, the basal segment shortest, the apical longest; four or five sensory hairs at the tip. *Labial palps* two segmented, the basal segment very short and indistinct, not much more than a ridge on the labium. *Antennae* about two-thirds longer than the head; the first segment short and broad, the second much longer and narrower except at the apex where it is produced outwards into a blunt prominence, the third with a distinct pedicel, the fourth and fifth equally long, the sixth the longest, the eighth longer than the seventh. Colour: first and second dark, third clear, fourth to eighth darker but not so dark as the first two. An unforked sense-cone on the third and fourth segments.



Chirothrips frontalis, sp. nov.
Head and prothorax.

Prothorax long, as wide as the head in front but much widened posteriorly, the whole surface of the pronotum finely striated and with a number of minute hairs scattered unsymmetrically over its surface. No long spines at the front angles, two at each hind angle and about six smaller hairs on each side along the hind margin. *Pterothorax* slightly wider than the prothorax in front, gradually narrowing behind. *Legs* normal for the genus, fore femora thickened and produced outwards at the base, tibiae also thickened. All tarsi (except for a small dark spot at the base of the second segment) and fore tibiae lighter than the rest of the legs. *Fore wings* pale brown, clearer at the base. About twenty (eighteen to twenty-one) spines on the costal vein, the distal ones finer and longer than the proximal; five or six spines at the base of the fore vein and two on its apical half; four, five, or six on the hind vein. The veins are usually very indistinct except near the base of the wings; this varies in different specimens. Hind wings clear, vein indistinguishable.

Abdomen normal, hairs on the ninth and tenth segments pale and weak. The ninth segment short, about half as long as the tenth.

Described from eleven macropterous females taken near Buenos Ayres, Argentine, South America, in January, 1913, by W. O. Backhouse, probably from a plant (Compositæ) locally known as "cepecaballo."

Type in the Hope Department, Oxford University Museum.

This species may be easily separated from all others of this genus by the great prolongation of the head beyond the eyes, and also from *hamatus*, *Trybom*, *obesus*, *Hinds*, *crassus*, *Hinds*,

and *mexicana*, Crawford, by having two spines at the hind angle of the prothorax, and from both *manicatus*, Bagnall, and *similis*, Bagnall (if these two are really distinct and not forms of the same variable species), by the more slender antennæ and relatively longer prothorax.

The John Innes Horticultural Institution,
Merton, Surrey: January, 1914.

A NEW SPECIES OF *EURYTOMA* FROM QUEENSLAND, WHICH LIVES IN THE STEMS OF EUCALYPTUS.

BY A. A. GIRAULT.

THE following species seems phytophagous, since I found it inhabiting short grooves or channels under the bark of young Eucalyptus trees, somewhat after the manner of Scolytidæ. Where occurring, the stems of the trees were somewhat swollen. When one thinks of it, this species does not seem to differ greatly in habit from the other members of its tribe, which seem to live on galls rather than upon gall-makers. Has the parasitic habit of the Eurytomini been proved? The genus *Bruchophagus* would incline one to doubt.

Genus *EURYTOMA*, Illiger.

Eurytoma picus, n. sp.

Black, the legs, tegulæ and scape rich reddish brown, the hind coxæ black, the wings hyaline; flagellum brownish yellow, knees and tips of tibiæ yellow. Propodeum with a rather broad median groove. Venation pale; postmarginal and stigmal veins subequal. Scape obclavate; pedicel a little shorter than funicle 1, which is longest of the funicles, much longer than wide, about twice the length of funicle 5, which is somewhat wider than long, funicle 4 a little longer than wide, funicle 2 subequal to the pedicel. Club with three distinct joints, the antennæ 11-jointed. Mandibles tridentate. Hind tibiæ with two spurs. Pronotum with a more or less distinct, obtuse median carina. Punctuation not quite as dense as usual, the cephalic part of scutum densely, transversely lineolated.

Male.—Not known.

Described from two females taken from short grooves under the bark of young eucalypt trees in the forest, October 16th, 1913.

Habitat.—Nelson (Cairns), Queensland.

Type.—One of the above specimens on a tag, the head and a hind leg on a slide. In the Queensland Museum, Brisbane.

Magnification $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

NEW CENTRAL AMERICAN SYNTOMIDÆ.

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

AMONG the Lepidoptera which I have recently received from British Honduras are two Syntomid moths which appear to be new to science. They were both captured at a small seaport called Punta Gorda in the south of the colony, not far from the frontier of Guatemala. I append descriptions.

Phenicoprocta biformata, n. sp.

Head black; frons blue; palpi orange below; antennæ white at tips; tegulæ orange with blue spots at base; patigia and thorax orange; coxæ orange-red; abdomen, first segment blue with paired red stripes, remainder brownish black with dorsal and lateral metallic-green stripes and bluish-green terminal segment; fore wings hyaline, veins broadly black, oval discoidal spot from costa to lower angle of cell, margins broadly black, widening at apex and on outer margin; hind wings hyaline, with dark borders, widening at apex and tornus.

Var. 1. Fore wings scaled, brown-black.

Expanse, 30 mm.

Habitat.—Punta Gorda, British Honduras, July, 1913. Types in British Museum; co-types of var. 1 in Mus. Gibbs.

Napata cortes, n. sp.

Black; tegulæ and patigia with paired blue-white spots; fore coxæ white; tibiæ reddish; first joints of tarsi white; metathorax with blue-green spot; first segment of abdomen black with a few blue scales and blue-green lateral spots; medial segments blue-green dorsally, with darker transverse bands; large white ventral patch on basal segments; remainder of abdomen ventrally and the terminal segments dorsally red; fore wing with bluish spot at base of costa; small hyaline spot extending across cell near base, and a larger one below it, another in cell near upper angle; a transverse series of four spots beyond cell, one above vein 6 and a smaller one below it, a minute spot above vein 4 and a larger one below it extending almost to vein 3; hind wing with hyaline patch at base; spot near end of cell and extending almost across it; below, fore wing with bluish costal streak, hind wing with blue basal streak above hyaline patch, costa narrowly and apex and outer margin broadly blue.

Expanse, 41 mm.

Habitat.—Punta Gorda, British Honduras, June, 1913.

Napata cortes has a general resemblance to *N. broadwayi*, Schaus., a Trinidad species, but it may be readily distinguished by the large hyaline patch at the base of the hind wing and the red terminal segments of the abdomen.

A BUTTERFLY HUNT IN SOME PARTS OF UNEXPLORED FRANCE.

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

(Continued from p. 14.)

(v) *Basses-Alpes.* (a) *Allos.*

As in the case of a previous paper of the series, some qualification of title is necessary. Donzel* discovered *Allos* in 1831. It has received several recent visits from English collectors, myself included, and I have given a short account of a week spent here in August, 1908 ('*Entomologist*, vol. xli. p. 268). However, as I was in this part of the *Basses-Alpes* at an earlier date than on the occasion of my last visit, or that of the late Mr. J. W. Tutt ('*Entomologist's Record*,' vol. xix. pp. 197-199), I trust my experiences may be useful to those who wish to explore the upper valley of the *Verdon* during the summer months. *Allos* remains primitive. The motor services, the endless procession of touring cars have left it unperturbed; and the little *Hôtel du Midi*, where *Mdlle. Pascal* works so hard for the comfort of her pensionnaires, is as archaic and roughly comfortable as ever.

After a rather disappointing entomological week at *Digne*—for the universal drought in the lower lands of *Provence* had burnt up all the green herb—I took train for *Thorame-Haute* by the familiar narrow-gauge line. Here the alpine motors of the *Sud Company* pick up, and they are almost as cheap as the former rusty diligence. Between *St. André* and the starting-point there are doubtless many fine butterfly corners as suggested by glimpses caught from the windows of the never-express train. Such a one there is near the station before *Thorame*, and there I bade farewell to *Papilio alexanor*—so unaccountably and unusually rare in 1913 in its native haunts at *Digne*. The drive is pleasant enough by *Beauvezer* and *Colmars*, with its narrow medieval streets, through which the motor steers, scraping the stucco from the walls of the overhanging houses—a veritable threading of the needle's eye. The climb scarcely begins before *Colmars*, from the gate of which town it is practically all uphill, and as dusty a road as ever provoked the thirst of man and beast. Still, there are several good stretches of collecting ground by the river *en route*, as I found when, on the hottest day of the year, I descended in quest of *Erebia scipio* at points indicated by Mr. Powell ('*Entomologist*,' vol. xli. p. 298).

I left *Digne* at eight o'clock, and reached my destination

* '*Notice Entomologique sur les Environs de Digne et quelques Points des Basses-Alpes*,' par M. Hugues Donzel. Lyon, 1851.

about 1.30, and after a late *déjeuner* at once set off to investigate the first length of the classic "Route du Lac d'Allos," where I hoped to capture in good condition some at least of the butterflies over or on the wane when I was here in 1908. With the exception of July 20th and 22nd, the whole of my collecting at Allos was done between the village and the lake. The mule-path mounts steeply from the one street and then more gently, and sometimes between thick hedges, past meadows already harvested, to the first bridge over the Chadoulin stream. On the southward slopes butterflies were generally in evidence, but more distinguished by quantity than by quality. Here on the lavender tufts—this being about the vertical limit of the plant—the males of *Epinephele lycaon* were freshly emerged. Of the "Blues," *Plebeius argyrognomon* predominated, but the beautiful blue female, var. *calliopis*, Bsdv., of which I had secured a specimen or two at Digne, evidently belongs to the lower levels and the hotter limestone. A few perfect males of *Lycæna arion* haunted the lavender. Here, also, one warm afternoon towards sunset I picked up a curious aberrant form of *Melitæa didyma* settled to roost. On the under side, while all the black spots and lines remain, the usual tawny markings, notably those of the basal and ante-marginal bands of the hind wings, have almost entirely disappeared, giving a peculiar black-and-white chequered appearance to the insect as it sat motionless on the stalk (= *derufata*, n. ab.).

Hereabouts, too, a low hedge fencing a new-mown field was alive with a diminutive race of *Aglaope infausta*, both sexes in fine condition, and with them a few *Adscita pruni* were kicked up from the grass, though neither "Burnets" nor "Foresters" were at all frequent, and at this point the same remark applies to the Hesperiidæ, for which I was chiefly on the alert. But, as everywhere else in the south-east this year, *Satyrus cordula* was abundant; not so *Hipparchia semele*, though possibly it was still somewhat early for the latter.

The only Theclid at all common was *T. spini*, some of the males extraordinarily small, the high Alpes-Maritimes form, as a rule, being of quite the average size. But not one single *T. acaciæ* did I encounter along the line of sloe bushes, where the females were common enough in August, 1908, and where by all rules the males should now have been disporting themselves. *Brenthis amathusia*, also not rare near the bridge in that year, was another absentee. Sailing over the willows I saw not a few superb *Ewanessa antiopa*, with rarer *Limenitis camilla* and *Polygonia c-album*.

A recent writer has remarked on the moisture-loving propensities of the Camberwell Beauty, and I noticed that it would frequently lie with wings flat and fully extended on the stones facing the sun; and also that very occasionally it joined the

Lycænid and Hesperiid "drinking clubs" on the surface damp. They never alighted on the mule-droppings so much affected by mountain Lycænidæ, though *P. c-album* is not above such attractions; and in the spring on the Riviera I have observed that the last-mentioned species is much addicted to the rotten olives left in the orchards from the previous year's harvest. One Sunday afternoon I crossed the bridge here to explore the path through the pine woods, returning along the water channel which diverts a part of the river to supply the farms above Allos. But these woods and slopes yielded nothing beyond swarms of buzzing and biting flies.

The route now ascends sharply on the right bank to the chalets of Champ Richard, and then from a narrow gorge of loose slaty formation debouches on a more open valley, where again the newly constructed path separates from the old, and mounts by zigzags through flowery pastures and occasional larch spinneys. When the sun reaches these upper slopes rather late in the morning there is plenty to occupy attention. *Cænonympha iphis* hardly gives place to *C. arcania* var. *darwiniana*; *Plebeius argus* (*ægon*), much less plentiful than *P. argyrognomon*, gems with wings of lapis-lazuli the red-gold arnica daisies. *Colias phicomone* is everywhere, the females just now in a majority. Males of *Erebia stygne*, *E. goante*, and *E. tyndarus* var. *cassioides* (= *dromus*) cross and re-cross the mule track. The larger Argynnids—*A. aglaia* and *A. niobe* (all var. *eris*)—are already sucking the sweet juices of the purple thistles in company with males of *Chrysophanus hippothœ* var. *eurybia* and *Polyommatus eros*. A little higher still *E. euryale* affects the woods, and the clearings by the roadside are bright with *C. virgaureæ*, *P. pheretes* (males and females), *Parnassius apollo*, and occasional *E. epiphron* var. *cassiope*. About three-quarters of an hour from the last-mentioned bridge a spring empties itself into the torrent; and here over the saxifrage and thick wet moss *P. delius* was flying at a safe distance from the net. Once more the road crosses the stream, and zigzags upward through young forests, the nursery of the Maison Forestière, which now comes into view at a sudden turn. Insects of all orders swarm at this point. The morning is fair and the air delicious with the scent of the many Papilionaceæ, which make a veritable Field of Cloth of Gold, interwoven with the duller purples of the vetches. A mud-bath hereabouts invites a swarm of *P. eros*, *P. hylas*, and *Agriades escheri*; *Lycæna arion* is rare, even more so *P. orbitulus*, which, common in the Swiss Alps, never seems abundant in the Basses-Alpes and Alpes Maritimes. *Hesperia alveus*, *H. fritillum* (= *cirsii*, Rbr.), *H. carthami*, and *H. serratulæ* represent the Black-and-White Skippers; *Thymelicus lineola* and *T. actæon* the Brown. To the "Coppers" may now be added *C. dorilis* var. *subalpina*

of both sexes. High up at the back of the Foresters' House there is a fine piece of rough ground carpeted with soft seeding grasses and alpine flowers. The high fresh wind carries a single *Anthocharis simplonia* male into my net; the infrequent *Pontia callidice* are in rags; but, ascending the last long slope, which ends where the mountains are mirrored in the lake, the *Erebias* once more claim attention.

E. gorge, with occasional ab. *erinnys* and *E. mnestra*, swell the catalogue. Within five minutes of the ridge, on the skrees facing towards Allos, and exactly at the point where the path to the Lacs de l'Encombrette diverges to the right, I discovered on my second expedition the headquarters of *E. alecto* var. *duponcheli*, Obthr., thus obviating the grind up Mont Pélat, where it is reported by Mr. Harold Powell. A more harassing insect to chase and capture I do not know. To begin with, the favoured ground is always a weary scramble, composed of loose stones and treacherous for the feet, where the most illusive and blackest of all the *Erebias* flits restlessly over the rock, or rarely pauses to toy a moment with the scanty yellow *Doronicum* patches (I cannot find much to differentiate var. *duponcheli* from ab. *pluto*). Added to this, the nature of the locality ensures for every perfect imago a half-dozen in tatters, while crumpling and failure of wing-pigment is of frequent occurrence. The females were few in number; in vain I watched for one to alight and oviposit and clear up the still outstanding mystery of the food-plant of the species.

Below the path and on the rock-strewn "pelouse" that falls to the mouth of the subterranean stream draining the still invisible Lac d'Allos, *Melitea varia* is common with *C. phicomone*, as well as the small *Erebias*. Here, also, I took a couple of wasted *H. cacaliæ*, and even more *passés* *H. malvoides*, Elw. and Edw. (= *fritillum*, Rbr.)—the *Dromio* of *H. malvæ*—for the specific confirmation of which I am much indebted to Professor Reverdin, to whom the three or four examples caught at a single sweep of the net were submitted. I do not doubt that earlier in the season this Skipper occurs in most suitable localities throughout the lower Basses-Alpes. Allos, however, may now be added authoritatively to Professor Reverdin's list of French localities published in his masterly treatise on the two species (Bull. Soc. Lépid. Genève, vol. ii. fas. 2, p. 73, 1911). Throughout the valley, from Champ Richard upwards, *H. serratulæ* was frequent; and I have from the same region in my collection a few *Hesperiid*s, which seem to me to be intermediates between *H. bellieri*, Obthr., and the var. *foulquieri*, which M. Oberthür retains provisionally under *alveus*, but will, I think, some day not far off be found nearer associated with *bellieri*.

I was surprised to find so few butterflies on the slopes leading down to the matchless lakelet, where in 1908 insects were

fairly plentiful. Except a few shabby *Cassioides* and the ubiquitous *C. phicomone*, there was nothing to tempt me from the rock behind which, and sheltered from the keen wind, I disposed of my lunch. So I devoted the greater part of the time on each occasion to *Alecto-Duponcheli*.

July 22nd, the hottest day of the month, I spent working down the Verdon river-bed, which, in the customary way of Alpine torrent streams, breaks up into many subsidiary channels, leaving broad stony islets covered with dwarf willow, lavender, *Epilobium angustiflorum*, great clumps of *Astragalus alpinus* (?), and tangled vetches, with occasional tufts of wild thyme. The lavender was especially affected by *A. escheri*, *P. argyrognomon*, and females of *C. alciphron* var. *gordius*, the latter in poor condition, while *Anthrocera fausta* gleaned vermillion-winged in equal abundance with *A. carniolica*. The steep cliffs of the right bank, however, disclosed no *E. scipio*, as I had hoped, after a long search for a ford waded knee-deep through spring-cold water. A rare pool for trout at all events; and trout is the *pièce de résistance* of every meal in these delectable mountains. Returning to the causeway at the end of the long poplar avenue, which extends for a mile or so, the valley once more opens out, and on the left bank, where the old road follows the course of the river, there is a sun-burnt stretch of waste land with sparse berberis bushes, mullein, and again some fine lavender in full bloom. *T. actæon*, *A. thersites* and *Issoria lathonia* were the principal visitors; on the dusty upper road *Satyrus circe* was flying with *S. aleyone*, but very little besides, and it was not until I was well in sight of Colmars itself that I could get a draught of drinking water at a hospitable farmhouse, in the garden of which the ripe red currants hung in luscious clusters.

The neighbouring lucerne fields were gay with *Colias edusa* and *C. hyale*, but so great was the heat of the afternoon that at two o'clock I boarded the P.L.M. motor and was quickly rushed back to Allos. Above the village and right up to the Col there is very little promising ground. The slopes on this side are mostly disafforested and grazed close. I tried not to think that the few *Erebias* I saw from the car, when on my journey of the 24th to Barcelonnette, were *E. scipio*. I am now sure they were not—only *stygne*.

I have been asked where, in my Continental wanderings, I have found butterflies in the greatest profusion. It is not an easy question to answer, for "distance lends enchantment to the view" of most entomologists when the time arrives to survey in retrospect the happy hunting grounds of the past. I am inclined to think that certain stages of the road to the Lac d'Allos I have attempted to describe come nearest to El Dorado. Then follow the Eaux Thermales valley at Digne, in June;

St. Martin-Vésubie, or the Ganter Bridge below Berisal, in mid-July; with a far-away April vision of Hadrian's Villa at Tivoli, with its winged legions "fleeing the time carelessly as in Arcady." In point of numbers only, some secluded spots in the Chiltern Hills have provided almost as cheerful an abundance. Last year (1913) the Basses-Alpes were at least blessed with a summer of sunshine and butterflies in striking contrast to the melancholy conditions and the meagre bags reported from Switzerland and Central Europe generally.

(To be continued.)

SOME NOTES ON THE LEPIDOPTERA OF LA SAINTE BAUME, VAR, S. FRANCE.

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

II. THE MOTHS.

THOUGH Switzerland can never be without interest, after many years' experience of it the collector begins to crave for new ground. If Norway does not appeal to him, he probably decides to explore as far south as the limits of his time and purse permit. This was my case in the summer of 1912—but—Where to go? was the question. I wisely consulted Mr. Rowland-Brown, to every entomologist a veritable "Baedeker" for France; who, after dismissing my suggestion of Thorenc—of which he had received no reports—proposed La Ste. Baume as being a centre well spoken of by French, and little known to English, collectors. Thither I went therefore, and spent such an interesting ten days that I returned again for a slightly longer visit this year. I had sent a selection of my 1912 captures for identification to Mr. Prout, who is always kind enough to help me out of any difficulties with geometers. It was an unexpected pleasure to hear from him that I had fallen upon a very good thing, *viz.*, *Acidalia determinata*. He wrote: "You have some interesting forms, and *A. determinata* was quite a surprise. I had never even seen the species until a few weeks ago, when Püngler very kindly sent a valuable box of Acidalids for my inspection . . . and included a pair of this species, one from Calabria and one from Taurus. Where exactly is Ste. Baume? It will surely be a new locality for this insect. If you ever visit this place again, work for a series." Here was sufficient incentive, and this year my wife and I returned with ardour to the search, and were successful in getting together about thirty specimens. Perhaps it is early days to express an

opinion, but it appears to be *very* local even where it exists.* We found it restricted to quite a small space on the edge of the wood which borders the north-east corner of the plateau before beginning the descent to Nans. But its allies, *A. macilentaria* and *A. litigiosaria*, are fairly commonly distributed over all the neighbourhood, more particularly the former. From neither of these could I pretend to distinguish it in flight; but *A. macilentaria*, which is most like it on the upper side, is readily distinguished when caught by its dark strongly-marked under side. *A. determinata* is not an active insect and is easily overlooked, as it seems rarely to fly unless disturbed; but like other "waves," it is fond of lying spread out on a leaf—not, I think, in the full sun, but rather close to the ground, and where longer branches above afford a slight shade. In our experience, it was always driven out of little stunted oak bushes; whether it had any closer connection with these than the fact they provided a pleasant resting-place I cannot venture to suggest. From the list of captures appended it will be seen that the Acidalids proved a strong and interesting family in this region, while the Larentids were remarkably few and ordinary. The Zygænidæ provided variety, but with the exception of *Z. angelicæ* and *Z. loniceræ* could hardly be considered numerous. That almost most beautiful "burnet" of all, *Z. lavandulæ*, appeared only separately on the road to Nans; but on crossing the Col de Bretagne, I found a large colony feasting on the flowers of "hemp agrimony," or a plant like it, growing in a hollow by the side of the Gémenos road. This, I think, is an unusual occurrence, for at Bondol, where *Z. lavandulæ* was more common, I always took it singly and generally on the wing. *Z. erythus*, on the contrary, has the burnet-habit of congregating, and was seldom seen alone, but had a restricted headquarters of its own; and gave its attentions to a tall wiry scabious with little wizened flowers, which would have been justly despised in any better watered land. Probably the more active habits of *lavandulæ* accounted for a difficulty in getting good specimens. It seems also to be a slightly earlier species. The most remarkable feature in "moth-land," perhaps, was the extraordinary quantity of three small species in the herbage of the plain of Plan d'Aup. I have already remarked in a former paper on the abundance of *Rusticus ægon*. But even more wonderful—especially in 1912—was the enormous number of *Acidalia sericeata* and *A. decorata*, disturbed in walking over the plateau; and with them almost as many *Crambus craterellus*—the only *Crambus* observed, with the exception of two or three *C. cumellus*.

Among the "pugs," Mr. Prout has praise for *Tephroclystia*

* An indirect but suggestive token of the rarity of *A. determinata* in collections may be gathered from the fact that it is not offered for sale in either the Staudinger, Bang-Haas, or Bartel price-lists.

allionia and *T. ultimaria*. The handsome *Ortholitha mæniata* was very common in the woods and at light; and ascending the wooded path to the Col de Bretagne *Minoa murinata*, in spite of its small size, was a prominent feature. The Noctuæ and the *Tephroclystiæ* were all taken at light, the other families nearly all netted in the daytime, the chief exceptions being *Acidalia virgularia* var. *australis*, *A. submutata*, *Ephyra pupillaria*, *Boarmia solieraria* (one male), *Trephonia sepiaria* (two), *Hylophila bicolorana*, *Eromene bella*, which were attracted by light.

Besides Mr. Prout, I am also under obligations to Dr. Chapman for naming certain specimens and to Mr. Bethune-Baker for help with the Zygænidæ. It is impossible to foresee what system of nomenclature this paper may represent after it has passed the Editor's hands; but in making my list I have followed the Staudinger-Rebelschen Catalog. 1901. As Mons. Culot says in his preface to vol. ii. of 'Noctuelles d'Europe': "Le catalogue que j'ai pris pour guide, parce qu'il est le plus répandu." I hesitate to add with him: "Et non parce qu'il représente une classification rationnelle." Such criticism is for the ever-conflicting experts.

We spent two or three days at Bondol on the sea coast, hunting *Zygæna erythus*. While there I took a few rather good moths at light, and as Bondol is not far distant from La Ste. Baume, I have added these captures as a separate note.

HETEROCERA OF STE. BAUME AND NANS.

SPHINGIDÆ.—*Macroglossa stellatarum*, *Deilephila euphorbiæ*, *Hemaris fuciformis*.

LYMANTRIDÆ.—*Orgyia trigotephras* (var. *corsica*?).

LASIOCAMPIDÆ.—*Malacosoma neustria*.

DREPANIDÆ.—*Drepana binaria* (one female).

NOCTUIDÆ.—*Acronycta runicis* (dark), *Dianthæcia compta*, *Caradrina exigua*, *Leucania scirpi*, *Thalpochares polygramma*, *T. purpurina*, *T. scitula*, *Rivula sericealis*, *Prothymnia viridaria*, *Hæmerosia renalis*, *Catocala conversa*, *C. nymphagoga*, *Apopestes dilucida*, *Euclidia glyphica*.

GEOMETRIDÆ.—*Aplasta ononaria*, *Geometra vernaria*, *Nemoria viridata*, *Acidalia ochrata*, *A. macilentaria*, *A. determinata*, *A. rufaria*, *A. litigiosaria*, *A. sericeata*, *A. moniliata*, *A. virgularia* var. *australis*, *A. circuitaria* (two), *A. trigeminata*, *A. dilutaria*, *A. degeneraria*, *A. inornata*, *A. aversata*, *A. rubiginata*, *A. marginepunctata*, *A. submutata*, *A. imitata*, *A. decorata*, *Ephyra pupillaria*, and var. *gyrata*, *E. linearia* (*trilinearis*, Bkh.), *Rhodostrophia vibicaria*, *R. calabraria* and ab. *tabidaria*.

LARENTINÆ.—*Sterrha sacraria*, *Ortholitha mæniata*, *Minoa murinata* (*euphorbiata*), *Larentia fulvata* (one), *L. bilineata* (one), *Tephroclystia* (*Eupithæcia*) *allionia*, *T. breviculata*, *T. ultimaria*, *T. oblongata*, *T. pumilata*, *Rumia luteata* (one).

BOARMIINÆ.—*Boarmia solieraria*, *Trephonia sepiaria*, *Eubolia murinaria*.

CYMBIDÆ.—*Hylophila bicolorana*.

HETEROGYNIDÆ.—*Heterogynis penella*.

LITHOSIINÆ.—*Lithosia lurideola*, *L. complana*, *L. caniola*.

ZYGÆNIDÆ.—*Zygæna scabiosæ* var. *orion*, *Z. sarpedon* and var. *vernetensis*, *Z. achilleæ*, *Z. loniceræ* and var. *ochsenheimeri*, *Z. transalpina*, *Z. angelicæ*, *Z. lavandulæ* and var. *consobrina*, *Z. hilaris* var. *ononidis* (one).

INO (ADSCITA), *I. globulariæ*, *Dyspessa ulula*.

PYRALIDÆ, &c.—*Crambus craterellus*, *C. cumellus*, *Eromene bella*, *Pyraustra sanguinalis*, *P. purpuralis*, *P. funebris* (*octomaculata*), *P. cingulata*, *Titania polinalis*, *Evergestis sophialis*, *Salebria palumbella*.

AT BONDOL.

Zygæna erythus, *Z. filipendulæ*; and at light, *Semiothisa* (*Macaria*) *æstimaria*, *Gnophos mucidaria*, *Eublemma suava*, *E. jucunda*, *Pseudophia illunaris*.

NOTES ON THE DRAGONFLY SEASON OF 1913.

BY F. W. & H. CAMPION.

THE most interesting dragonfly seen by us during the present year was a female of *Somatochlora metallica* taken in Surrey on June 8th (H. J. Watts). The capture was made in the same locality as that which furnished the male obtained by the same entomologist on June 26th, 1910 (Entom. xlv. p. 238). When first taken, Mr. Watts tells us, this female was in somewhat teneral condition, but it was kept alive for a few days and developed into a very fine specimen. When we saw the insect, after it had left the setting-board, the wings, including the pterostigmata, were of a beautiful amber, the colour being richest in the region of the costa. In a fully adult female from Guisachan, taken in August, 1899, by Mr. J. J. F. X. King, with which we compared the Surrey specimen, the pterostigmata are pinkish-red, and the wings are only slightly tinged with brown. Well authenticated records for this species from any part of Great Britain south of the Grampians are still very few, and its occurrence in Sussex in 1908 came to Odonatists as quite a surprise.

During the last week in May Mr. R. South visited the New Forest, and obtained at Brockenhurst (May 30th) *Calopteryx virgo*, *Pyrrhosoma nymphula*, and *Agrion puella*. From the same locality we also received, through the kindness of Mr. South, *Platycnemis pennipes*, *Pyrrhosoma tenellum*, *Orthetrum cærulescens*,

and *Sympetrum striolatum*, all dated July 16th, as well as *Enallagma cyathigerum* and *Erythromma naidas*, likewise taken in July. Furthermore, Mr. South was good enough to give us *Enallagma cyathigerum*, male, caught by himself at the Black Pond, Surrey, on August 13th.

From the Eastbourne district Mr. Harold Bosley kindly sent us *A. puella* (two teneral males, near Pevensey, May 24th), *A. pulchellum* (a teneral pair, near Pevensey, May 24th; two pairs, Eastbourne Marshes, June 14th), and *Ischnura elegans* (two males, Eastbourne Marshes, June 14th).

At Westcliff, Essex, Mr. A. Luvoni recorded *P. nymphula* and *Libellula depressa* on May 25th, *I. elegans* on May 31st, and *A. puella* on June 1st.

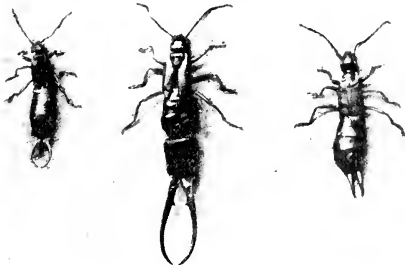
During June we re-visited our old Huntingdonshire localities, and, among other species, again met with *Libellula fulva* (near Huntingdon, June 16th and 18th), *L. quadrimaculata* and *Brachytron hafniense* (near Ramsey, June 17th), *Calopteryx splendens* (near Huntingdon, June 12th), and *Erythromma naidas* (near Huntingdon, June 21st).

Finally, Dr. F. F. Laidlaw has favoured us with a list of the species observed by him in Devonshire during 1913. His report, which is in the following terms, relates to Uffculme, except in the case of those records for which other localities are specially mentioned:—

“The earliest Odonate met with was *Pyrrhosoma nymphula*. I saw a female specimen on May 11th, and the species was flying in some numbers the next day. *Calopteryx virgo* put in an appearance nearly a month later than it did last year. I observed the first specimen, a teneral male, on May 23rd, but the species was very abundant by May 28th. On the last-named date I saw very many specimens, and the insect seemed to me to be much more numerous than it was last year. Exactly the opposite was the case with *C. splendens*, which was first noticed on June 15th, but which was never so abundant as in 1912 or so numerous as its congener. *Libellula depressa* occurred on May 26th at Sheldon. *Brachytron hafniense* was taken at Burlescombe by Mr. H. Pearse on May 27th. I received a female of *B. hafniense* from near Langport, in Somerset, and a female of *Agrion pulchellum*, also from Langport, through the kindness of Miss D. Wright (June 4th). Other records are *Agrion puella* (Willand, June 16th), *Enallagma cyathigerum* (Willand, June 20th), *Cordulegaster annulatus* (September 7th and 19th) and *Sympetrum striolatum*, males, (Burlescombe, September 21st and 28th). On June 27th I saw an *Æschnid* chased in a playful way by a sparrow, which, however, it easily evaded.”

FORFICULA AURICULARIA.

BY H. H. BRINDLEY.

*Forficula auricularia* (slightly magnified).

THE individuals in the photograph reproduced are a female and two males, the latter being as regards length of callipers "high" and "low," following the terminology of Bateson (Proc. Zool. Soc. London, Nov. 15, 1892, p. 585). They were obtained in September, 1913, on the uninhabited islet of Rosevear in the Scillies, situated about two miles east of the Bishop Rock. This islet swarms with earwigs which are mostly large bodied, while the "high" male is much commoner than the "low." Rosevear was inhabited from 1850 to 1858 by the workmen employed to build the present Bishop Lighthouse. Is it possible that the remarkable abundance of earwigs, on an islet whose features are mainly masses of granite and a vegetation of sea-pink and giant mallow, is related to this human settlement of half a century ago? On Round Island, the northernmost islet of the Scilly group, earwigs are also very numerous and seem to feed chiefly on the kitchen refuse thrown "over cliff" by the light keepers, the only human inhabitants.

The specimen illustrated has callipers 12·25 mm. in length, and thus markedly exceeds that taken by Mr. P. M. Bright at Freshwater, Isle of Wight, in 1910, and illustrated in the 'Entomologist,' June, 1911, p. 209. In Mr. Bateson's collection of 1892 in the Farn Islands six specimens had callipers 9·0 mm. long, and in 1907 and 1908 I obtained four from the same locality with callipers 8·75 mm. In a collection made on Round Island in 1911 I found thirty-four males with callipers 10 mm. or more, among which the highest had the value 11·0 mm.

Till I measured the Rosevear specimen the above was the largest "high" male or var. *forcipata* known to me. It is probable that Mr. Bright's Freshwater specimen, on my method of measurement, has callipers slightly more than 10 mm., because they were apparently measured *in situ*. The latter method is quite unsatisfactory when a large series is being measured to ascertain the amount of variation, because the degree to which the bases of the callipers are telescoped into the last abdominal segment differs in a series of individuals. So I always extract the callipers to expose the small process, a kind of condyle, which is situated on the external margin of the calliper and is usually only just hidden by the last abdominal tergum. The callipers are then laid on squared mm. paper and measured in a straight line from the "condyle" to the distal extremity, the curvature being disregarded. This is permissible, because, though "high" males possess straighter callipers than do the "low," as the correlation is constant the curve of variation is not vitiated. Unfortunately the body of the Rosevear "high" male was damaged either at capture or in subsequent transport in spirit, so that it could not be set symmetrically for photographing.

I have not yet measured the other Rosevear males, but there are many which closely approach the example illustrated. Taken altogether they seem to possess in both body and callipers the largest average dimensions of any collection from one locality I have seen.

Zoological Laboratory, Cambridge: December, 1913.

THE NEUROPTERA OF NOTTINGHAMSHIRE.

By J. W. CARR, M.A., F.L.S., F.G.S.

(Professor of Biology, University College, Nottingham.)

THE distribution of these insects in Britain is still so insufficiently worked out that a list of the species recently taken in Nottinghamshire may be of some use. With few exceptions all have been collected during 1912-13 by myself, and every specimen recorded has been identified or confirmed by Mr. Kenneth J. Morton, to whom I am greatly indebted for much generous assistance with this and other groups of Neuropteroid insects.

SIALIDÆ (Alder-flies).

Sialis lutaria, Linn.—By rivers, canals, and ponds everywhere.

S. fuliginosa, Pict.—Eaton, near Retford, May 29th, 1901.

RAPHIDIIDÆ (Snake-flies).

Raphidia notata, Fab.—Epperstone Park, May 12th and June

20th, 1912 (J. W. Saunt); Sherwood Forest, near Edwinstowe, June 12th, 1912.

E. xanthostigma, Schum.—Sherwood Forest, near Edwinstowe, several, June 10th–14th, 1912; also at Langford Moor, near Newark, June, 1904.

HEMEROBIDÆ (Brown Lacewings).

Sisyra fuscata, Fab.—Sherwood Forest, near Ollerton, July, 1912.

Hemerobius elegans, Steph.—Burton Joyce, July 9th, 1904.

H. micans, Oliv.—Thorney, August, 1913 (L. A. Carr); Epperstone Park, September 6th, 1913.

H. nitidulus, Fab.—Epperstone Park, September 6th, 1913.

H. humuli, Linn.—Nether Langwith, August 19th, 1912; West Leake, May 27th, 1913; Epperstone Park, September 6th, 1913.

H. lutescens, Fab.—Common. Nottingham; East and West Leake; Kirkby-in-Ashfield; Epperstone Park; Thorney; Sherwood Forest, &c.; dates varying from May 17th to September 24th.

H. orotypus, Walleng. Aspley Woods, near Nottingham, August 9th, 1912; Sherwood Forest, near Edwinstowe, September 25th, 1913.

H. nervosus, Fab.—Epperstone Park, September 6th, 1913.

H. subnebulosus, Steph.—Everywhere common. Taken continuously from April 24th to September 12th.

H. quadrifasciatus, Reut.—Sherwood Forest, near Edwinstowe, June 10th–14th, 1912 (L. A. Carr).

Micromus paganus, Linn.—Aspley Woods, June 28th and July 26th, 1912; Kirkby-in-Ashfield, June 28th, 1913.

M. angulatus, Steph.—Sherwood Forest, near Edwinstowe, September 25th, 1913.

CHRYSOPIDÆ (Green Lacewings).

Chrysopa flava, Scop.—Holme Pierrepont, June 1st, 1912 (F. M. Robinson); Caythorpe, September, 1912; Kirkby-in-Ashfield, June 28th, 1913.

C. alba, Linn.—Epperstone Park, June 22nd, 1913 (J. W. Saunt).

C. tenella, Schrd.—Bulwell Hall Park, July 8th, 1912.

C. septempunctata, Wesm.—Ollerton, Sherwood Forest, July, 1912; Nottingham, common on hawthorn trees in my garden and elsewhere in the city.

C. prasina, Ramb.—Sherwood Forest, near Edwinstowe, August 1st, 1911.

C. ventralis, Curt.—Nottingham, 1912 (J. W. Saunt).

C. phyllochroma, Wesm.—East Leake, June 13th, 1912.

C. perla, Linn.—Budby-carr, Sherwood Forest, several, July 9th, 1913; Worksop, 1913 (J. E. Hodding); Cotgrave, June 21st, 1913 (Saunt).

CONIOPTERYGIDÆ.

Conwentzia psociformis, Curt.—Nottingham, May 27th, 1913; Warsop, July 14th, 1913.

Semidalis aleyrodiformis, Steph.—Nottingham, 1901; East Leake, July 3rd, 1911; Upton, near Southwell, beaten from ash and oak, June 30th, 1913; Fiskerton, from *Pyrus malus*, July 25th, 1913.

Coniopteryx tineiformis, Steph. — Thorney, August 15th–19th, 1913 (L. A. Carr).

PANORPIDÆ (Scorpion-flies).

Panorpa communis, Linn.—Common throughout the county, June 12th–August 24th, 1913.

P. cognata, Ramb.—Bulwell, July 6th, 1912 (F. M. Robinson); Thorney, August 15th–19th, 1913, two specimens (L. A. Carr); near Newbound Mill, Teversall, August 3rd, 1912.

P. germanica, Linn.—Common everywhere in Notts; taken from May 11th to September 12th.

[In addition to those above mentioned, the following species have been recorded for Nottinghamshire:—

Hemerobius inconspicuus, McLach.—Clumber Park, 1908 (Lady Robinson).

H. stigma, Steph.—Worksop, 1904 (Lady Robinson).

H. atrifrons, McLach. and *H. concinnus*, Steph.—Worksop, 1908 (Lady Robinson).

Chrysopa vulgaris, Schrd.—South Leverton (Rev. A. Thornley); Shireoaks, Worksop (J. T. Houghton).

Nothochrysa capitata, Fab.—Slierwood Forest (H. Donisthorpe).]

A NEW GENUS OF TRYDYMINE MISCOGASTERIDÆ (HYMENOPTERA CHALCIDOIDEA).

BY A. A. GIRAULT.

TRYDYMINI.

EPITEROBIA, n. gen.

Female.—Agreeing with *Terobia*, Foerster, but the scutellum with a distinct cross suture before apex, and the marginal vein is fully twice the length of the stigmal, which is distinctly shorter than the postmarginal. Both mandibles flattened, distinctly 4-dentate. Abdomen conic-ovate, keeled beneath, the second segment longest, occupying about a fifth of the surface, its caudal margin with a slight notch at the meson; abdomen somewhat longer than the rest of the body. Antennæ with the first ring-joint very short, inserted below the middle of the face but somewhat above the ventral ends of the eyes. Lateral margins of propodeum carinated, but true lateral carinæ absent, the median carina distinct, not very long, complete. Spiracle small, round, *central* (i. e. midway between cephalic and caudal margins, far from cephalic margin). Parapsidal furrows deep.

Male.—Not known.

Type.—The following species.

Epiterobia reticulatithorax, n. sp.

Female.—Length, 1.15 mm. Dark coppery green, the wings hyaline, the thorax finely reticulated, the lines not raised, smooth on scutellum caudad of cross-suture; propodeum glabrous. Coxæ con-

colourous, the femora also, the knees, tibiæ and tarsi pale. Mandibles somewhat like an outspread hand with the last finger-joints turned down and the thumb hidden. Antennæ pale yellowish, the pedicel above at base and the club dusky. Club somewhat enlarged; funicle joints subglobular, wider than long, increasing somewhat in size, distad, but always shorter than the pedicel, which is a little longer than wide. Club apparently with a minute apical fourth joint (excluding this, antennæ 13-jointed with two ring joints).

Described from one female captured by sweeping in forest, December 2nd, 1912 (A. P. Dodd).

Habitat.—Nelson (Cairns), Queensland.

Type.—The above specimen on a tag, the head and a hind leg on a slide. In the Queensland Museum, Brisbane.

The species was described with a Bausch and Lomb microscope, $\frac{2}{3}$ -inch objective, 1-inch optic.

NOTES AND OBSERVATIONS.

DO HOUSE-FLIES HYBERNATE?—It is commonly believed that the persistence of *Musca domestica* from one season to another is ensured by the survival of a certain number of fertilized females, which pass through the winter usually in a dormant condition in nooks and crannies in houses, and become the mothers of the earliest broods of the following year. In spite, however, of the large amount of attention bestowed upon the House-fly during the last few years, owing to the recognition of its importance as a disease-carrier, definite proof that the insect hibernates in the perfect state is still wanting; indeed, Dr. Henry Skinner, as the result of an observation made by him last March at Philadelphia, U.S.A., has recently answered the question at the head of this note by stating that: "House-flies pass the winter in the pupal stage and in no other way" ('Entomological News,' vol. xxiv, No. 7, July, 1913, p. 304). This conclusion, it should be noted, is directly at variance with results obtained in this country by both Newstead and Jepson.

Did we possess exact knowledge of what happens to the House-fly in the interval that elapses between the disappearance of the last belated stragglers in November and December, and the sporadic invasion of our dwellings in the following June by the earliest skirmishers of the season, it is obvious that we might be able to deal more effectually with an ever-recurring menace to the public health. This point has not been overlooked in the investigations upon "Flies as Carriers of Infection," which for several years past have been carried on by the Local Government Board, under the direction of Dr. S. Monckton Copeman, F.R.S., but hitherto the results have been purely negative. Hibernating flies belonging to several species have been found in attics and elsewhere, but upon careful examination it was found that these did not include a single House-fly. In this matter the importance of accurate determination of species is obvious, and the object of the present note is to enlist during the

present winter the sympathetic aid of readers of this Journal, in securing and forwarding for identification collections of hibernating flies. Such flies may be looked for in attics and other unoccupied rooms, in chinks and crannies in living rooms, such as the space between a shutter or a loose piece of wall-paper and the wall, and in stables, barns and other outbuildings close to houses. Every consignment of flies so collected, if forwarded (with label stating place and date of capture) either to Dr. S. Monckton Copeman, F.R.S., Local Government Board, Whitehall, S.W., or to the writer, will be gratefully and promptly acknowledged and investigated. The flies should be placed, just as they are, in a small tin box or wide-mouthed bottle, well protected by soft wrapping and despatched by parcel post. Such parcels, if sent to Dr. Copeman at the Local Government Board, and marked "O.H.M.S.," need not be stamped.—ERNEST E. AUSTEN; British Museum (Natural History), Cromwell Road, London, S.W., January 10th, 1914.

NOTES FROM SALCOMBE, AUGUST, 1913.—*Colias edusa* was first seen on the Kingsbridge Road on August 10th after church, and was apparently a freshly emerged male. There was a large clover field a short distance away, but although the field was visited on all suitable occasions for several days, and at intervals until the end of the month, not a single other specimen was seen in that neighbourhood. On August 15th a male appeared on the tennis courts and was promptly acquired with the help of a racquet. The same day my wife discovered the species flying quite freely in a steep stubby field on the Portlemouth side of the harbour. A few specimens were generally to be found there in sunshine for the next ten days, when they became scarcer. It was a great pleasure to find *Vanessa io* commoner than I have seen it for thirty years. It occurred almost everywhere, but swarmed in some of the ravines on the Bolt, where at least half a dozen on one occasion were feeding on an inaccessible clump of valerian, its chief attraction. No doubt these were the imagines from the larvæ noted as common at Salcombe by Mr. R. M. Prideaux on July 1st. *V. io* was in the pink of condition, a large percentage being absolutely perfect and very fine. *Pyrameis cardui* were very common in the clover field and in good condition. *P. atalanta* appeared frequently towards the end of the month. On August 19th a number were flying on the sandhills at Hope, where they were greatly attracted by the *Eryngium*, then in full bloom. *Argynnis paphia* was about over, but a few were seen in the Courtenay Woods and on the Bolt. *Satyrus semele* was common on the barer part of Bolt Head, but was worn, and only four perfect specimens was taken. *Pararge egeria* was numerous in all suitable localities and in all conditions. *Pararge megæra* and *Epinephela tithonus* swarmed on the banks at the sides of the high roads, but both were dilapidated. *Cænonympha pamphilus* and *Chrysophanus phleas* were present in some numbers in the *edusa* field and less commonly elsewhere. *Lycæna astrarche* occurred in one corner of the same field, but was confined to a space of about fifteen yards square, and it was met with nowhere else. *L. icarus* was the only blue seen, and not a single skipper or hairstreak was noted.

Eupithecia larvæ were common on *Galium*, *Artemisia*, and *Senecio*. Dusking was not very successful, and sugaring on the cliffs was unproductive during the greater part of the month. By far the most common insect at sugar in the Courtenay Woods was *Amphipyra pyramidea*, which came freely during the last days of our visit. On one occasion five were successfully boxed from one patch. Four *Lymantria monacha* came to the lantern one night in a pine wood. The flowers of *Senecio* near the sea were not worth working, although in 1912 at Sutton-on-Sea common species swarmed on it.—G. HANSON SALE; Littleover House, Littleover, Derby.

MOTHS CASUALLY PASSING MORE THAN A YEAR IN THE PUPAL STATE.—Mr. Robert Lawson's note upon some examples of *Biston hirtaria*, which spent nearly three years as pupæ with him (Entom. xvi. p. 332), interests me much, as I have long suspected that to something of this kind may perhaps be attributed the extra abundance of certain insects in certain years so often remarked upon. I have had several species of caterpillars from time to time in my rearing cages, that have missed the usual time of emergence, and duly turned to imagines in the following year; but will, meanwhile, only mention one case which is curiously like that referred to by Mr. Lawson. In August and September, 1888, larvæ of *Notodonta ziczac* happened to be unusually numerous round Berwick-on-Tweed, and a number of them were transferred to the breeding cages. Most of these duly emerged in the following year, from May 22nd up to July 14th, but a few pupæ remained alive in the cage till 1891, when one perfect insect emerged from one of them on July 18th, none of the remainder being then alive. But the point I particularly wish to emphasize is that, although upon the poplar trees from which the larvæ had been gathered in 1888, no *ziczac* caterpillars appeared in either 1889 or 1890, in the autumn of 1891 they were again numerous. It might, of course, have been no more than a coincidence, but it strongly suggested some conditions, climatic or otherwise, especially favourable to the species, and common to the years 1888 and 1891; as well as that certain of the wild insects might also have passed the intervening two summers in the pupal state.—GEORGE BOLAM; Alston, Cumberland.

LITHOSTEGE GRISEATA SECOND BROOD.—I had a few larvæ of this species last year which duly pupated, and I was much surprised to find on looking at the cages in September that five moths had emerged (two males and three females). They had evidently paired and laid, as there were some old eggshells about, but the larvæ had of course perished. This may account for the scarcity of the species some seasons, as if there is a second emergence the resulting larvæ would surely perish, as the *Sisymbrium* would be dying and the seeds fallen before the larvæ could feed up.—H. M. EDELSTEN; Forty Hill, Enfield.

"THE VERRALL SUPPER."—No entomological event of the year, as we have before asserted, is of greater social interest or of more value for founding friendships than the "Verrall" supper, which annually perpetuates the memory of those given by the late G. H. Verrall and that of the donor. In 1913 the number of guests was

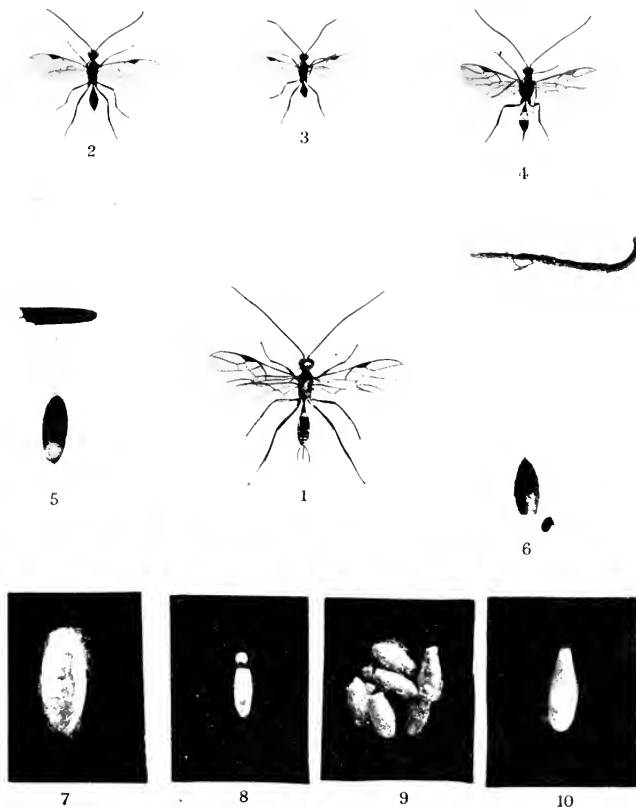
but little under one hundred, but on January 20th of the present year that record was broken, as one hundred and three then sat down to supper. Among those present were Adkin, Andrews, Arrow, Atmore, Black, Bateson, Bethune-Baker, Bouskill, Burr, Bagnell, Bacot, Bethel, Blair, Butler, Buxton, G. C. and H. G. Champion, Chapman, Collin, Cameron, Campion, Cockayne, Crawley, Dixey, Donisthorpe, Druce, Durrant, Stanley and F. W. Edwards, Elliott, Frohawk, Frisby, Fryer, Gahan, Gibbs, Hall, Harmer, Hodge, Image, O. E. and J. O. Janson, Jackson, Jenkinson, Jennings, Jones, Joy, Jordan, Joseph, Lloyd, Lucas, Main, Meade-Waldo, Mitford, Morley, Morice, Nurse, Nicholson, Porritt, Poulton, Prout, W. Rothschild, Rowland-Brown, Riley, W. E. Sharp, Sich, Skinner, Smith, Step, Tomlin, Tonge, Turner, Wainwright, Walker, C. O. Waterhouse, and Wheeler.

A DRAGONFLY AT SEA.—The dragonfly taken at sea mentioned on p. 39 has been kindly identified for me by Mr. W. J. Lucas. It is a fully coloured male of *Sympetrum scoticum*. It was taken between Revel and Helsingfors, the former name being previously misprinted as "Kevel."—JOHN B. HICKS; Stoneleigh, Elmfield Road, Bromley, Kent, Jan. 8th, 1914.

ERRATA.—Page 27, line 13 from bottom, delete "*cronicus*." Page 36, line 10, for "*samoensis*" read "*samoensis*." Page 37, line 19, for "no posterior" read "two posterior"; line 24, for "Thorp" read "Theobald."

SOCIETIES.

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



Photos G. T. Lyle.

1. *Metcorus albiditarsis*, female.
2. *M. niger*, female.
3. *M. niger*, male.
4. *M. fragilis*, female.
5. Cocoon of *M. melanostictus* from which the hyperparasite *Mesochorus crassimanus* emerged.
6. Cocoon of *M. pulchricornis* showing the cap removed by the imago in emerging.
7. Cocoon of *M. albiditarsis*.
8. Cocoon of *M. ictericus*.
9. Cocoons of *M. leviventris*.
10. Cocoon of *M. deceptor*.

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[No. 610

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ. No. I. METEORIDÆ.

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

(PLATE I.)

WRITING in 1898, the late George Carter Bignell, to whom we owe, perhaps, more of our knowledge of the British Braconidæ than to any other, mentions that the number of British students of the Ichneumonidæ during the nineteenth century would not amount to a dozen. As regards the Braconidæ, since Bignell published his South Devon list in 1901,* I am not aware of any literature having appeared on the subject in this country, with the exception of a few scattered notes in various periodicals, and Mr. Claude Morley's papers which were published in the 'Entomologist' for 1906, 1907, and 1908.

There would seem to be several reasons for this neglect of a most interesting group, one being the want of a cheap text-book on the subject to encourage the young student, and another the fact that several authors have described new species from insufficient material, often from a single specimen, so that where species run so closely together and individuals vary so much, a certain amount of confusion has arisen. The Rev. T. A. Marshall, however, did much to dispel this in his excellent monograph, published in the *Trans. Ent. Soc.* 1885-1889, and even more in his three volumes on the Braconidæ comprised in 'Species des Hyménoptères d'Europe et d'Algérie,' 1888-1901.

During the past ten years I have given a good deal of attention to the breeding of hymenopterous parasites, and although the work has been considerable I feel that the results have repaid me, as in no other way could a knowledge of the life-histories of the insects be obtained. I am also much indebted to various gentlemen who have been good enough to present me with specimens which they have bred, often, I fear, much to their disgust, and particularly to Mr. Claude Morley who has

* 'The Ichneumonidæ of S. Devon,' part 2, Braconidæ, *Trans. Devons. for Advan. Sci., Lit. and Art.*

very kindly forwarded to me the whole of his collection of Meteoridæ for inspection.

Ashmead, in his classification of the Ichneumonidæ,* divides his subfamily Meteorinæ into five genera, restoring *Zemiotus* and *Protelus* (Forster) which had been rejected, apparently for very good reasons, by Marshall. For convenience sake, however, I will treat our British representatives as of but one genus, *Meteorus*, Hal.,† as did Morley in his notes.‡

The British species are comparatively few in number, some thirty-five or so having been recorded, including two or three rather doubtful ones. They are distinguished by having three cubital areolets on the fore wings, and, as in the true ichneumons, a petiolated abdomen. While usually parasitic on the larvæ of Lepidoptera, some are known to prey on the larvæ of Coleoptera, and Morley has published a record of *M. versicolor* having been bred from the larva of a Tenthredinid.

From April until late autumn they are to be found on the wing, and although I have no knowledge that they ever hibernate in the perfect state, it is possible that at least *M. filator*, which has often been taken in November, and *M. melanostictus* which I have found so late as December 17th, may do so.

Most of the Meteoridæ are solitary parasites, though a few are social; of the former several weave brown shining cocoons which are suspended by a silken thread from leaves or twigs of the plant on which the host has fed. This swing rope is generally from a half to two inches in length, though I have known it to reach eight inches. Marshall writes of these cocoons §: "The head of the insect is always turned downwards, and, as it spins by the mouth, we have to account for the fact that somehow it is able to reverse its position in the air, since at the moment of its first suspension the head would naturally be uppermost; so far as I know, no observation has yet been made to explain this circumstance." With regard to this, I have several times watched the larva of *M. pulchricornis* emerge from its host, and the proceeding is somewhat as follows:—The head of the parasite larva is, of course, protruded first, and when about half the body is free a pad of silk is spun on the leaf or twig on which the host rests; after this the remainder of the body is withdrawn, and the parasite lowers itself from the pad by a thread of silk, the head being uppermost, as mentioned by Marshall. By a severe muscular effort, which is not always successful at the first attempt, the apical segment is now brought up until it touches the mouth, and apparently the thread is grasped between the apical and the adjoining segments,|| the

* Proc. U. S. Nat. Mus. vol. xxiii. 1900. † Halliday, Ent. Mag. iii. p. 24.

‡ 'Entomologist,' 1908, p. 125.

§ Trans. Ent. Soc. 1887, p. 89.

|| Berthoumieu describes the pedal processes on the apical segments of larvæ of Ichneumonidæ in Ann. Soc. France, 1895.

attachment being at once made secure by the addition of a few twists of silk, after which the head is drawn away leaving the larva suspended by its anal extremity; the formation of the cocoon is then commenced. Some two hours are occupied by the larva in covering itself with the cocoon, but for many hours afterwards it may be seen hard at work spinning within.

In all the cases observed by me the parasite larva emerged from the side of the seventh or eighth segment of the host, I believe, through a spiracle.

As I mentioned before, I know of no instance of a Meteorid hibernating in the perfect state, but with several species the winter is passed within the body of the host, either as an ovum or young larva, and with a few others as a larva within the cocoon. My experience is that pupation does not take place until within a fortnight or so of the emergence of the imago, no matter how long a period may be spent within the cocoon. On emerging, the imago removes a neat cap from one end of its cocoon (fig. 6); with those species which construct fusiform cocoons the cap is always removed from the smaller end.

In the following notes, unless otherwise stated, the records are my own, and the insects mentioned have been captured or bred in the New Forest.

Meteorus albiditarsis (Curtis).* (Fig. 1.)—This, the largest species we have, may easily be distinguished from all other British Meteoridæ by having the radial areolet of the under wing divided by a *distinct* transverse nervure. It seems to be generally distributed and is fairly common in May and June; on those dull cold days which are, as a rule, only too frequent in the late spring, it may often be beaten from thorn bushes.

A solitary parasite of the larvæ of Noctuæ, the parasite larva emerging from the host when the latter is about to pupate in its subterranean earthen cocoon, within which the cocoon of the parasite is constructed. Marshall well describes this cocoon as "felted stramineous with some loose flocculence"; it consists of three layers, outside the "loose flocculence," which easily comes away when the cocoon is handled, then the cocoon proper, which is rather similar in colour and texture to that of the "silk worm" of commerce, and within this a thin transparent, brownish envelope of a material much resembling goldbeater's skin. On October 1st, 1913, I exhibited at a meeting of the Entomological Society of London a skein of silk wound from two of these cocoons (fig. 7).

At least a period of ten months appears to be spent in the larva state, in which condition the winter is passed within the cocoon. I believe that sometimes even a second winter is so

* 'British Entomology,' pl. ccccxv.

passed, for a cocoon which was spun in June, 1912, was found to still contain the larva, living and unchanged, in September, 1913.

The female somewhat resembles *Zele testaceator* (Curtis), with which species it has frequently been confused in collections; in *Zele*, however, the recurrent nervure is very widely rejected, and the abdomen does not possess a true petiole, as in *Meteorus*.

I have bred it from a cocoon dug up at roots of an oak tree, April 14th, 1904, from larva of *Teniocampa miniosa*, May 11th, 1913, and also from larvæ of *T. gracilis*, *T. pulverulenta*, *T. stabilis*, and *Panolis piniperda*.

M. chrysophthalmus (Nees).*—I possess a male, beaten from birch, May 5th, 1912, which I must refer to this species, as the costal cell is slightly longer than the median. Very similar to the next, though the females differ in the length of the terebra.

M. deceptor (Wesm.).†—Generally bred from larvæ of Geometræ, a solitary parasite. The cocoon is white, felted, fusiform and without loose flocculence; it is found within that of its host, which is usually underground, 9½ mm. in length (fig. 10). I have obtained this parasite from larvæ of *Gonodontis bidentata* and *Semiothisa liturata* in May. Single brooded, the winter being passed in the larva state within the cocoon.

In Morley's collection is a pair bred by Clutton at Burnley, from larvæ of a geometer; in this case the male is testaceous and not nigropiceous.

M. ictericus (Nees).—Marshall considered this to be "perhaps the commonest British species." Although fairly plentiful, there are certainly others that are far more so, at any rate, in the New Forest.

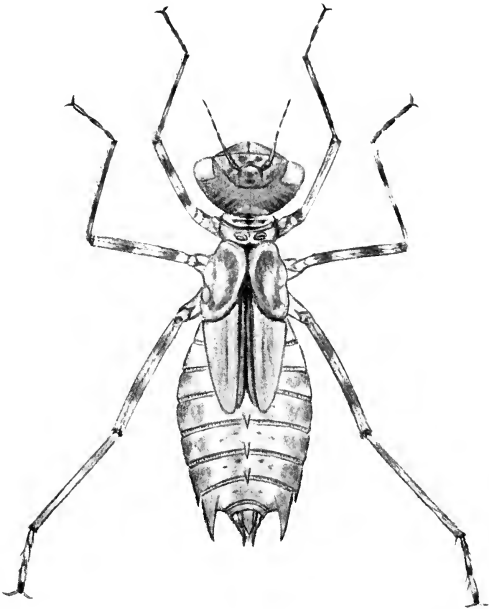
It would seem that Curtis, Halliday, and other writers confused this species with *M. pulchricornis*, and even Marshall cannot have seen the cocoon, for he assumes Curtis's figure to be correct, and describes it as "pensile, yellowish brown, shining, and semi-transparent." Bignell, however, is correct in saying that it is "white and very thin," and so early as 1834 Bouché ‡ described the cocoon as "albus chartaceus" and not pensile. All that I have seen agree with the descriptions of Bignell and Bouché, being cylindrical, not fusiform, and constructed within rolled leaves. The transformations of the insect are visible through the cocoon (fig. 8).

Generally bred from larvæ of Tortrices, a solitary parasite. I have obtained it from a cocoon found on oak, June 6th, 1910 (New Forest), and also from larvæ of either *Sericoris fabricana* or *S. lacunana* taken at Burgess Hill, Sussex, May, 1911. In Morley's collection is a female bred by R. Adkin, October 12th, 1910, from a larva of *Tortrix pronubana*, and two males bred by

* Nees-ab-Esenbech. Hym. Ich. Affinium Mon. vol. i. 1834.

† Wesmael, Nouv. Mém. Ac. Brux. 1835.

‡ Naturgesch. d. Ins.



W. J. Lucas del.

SYMPETRUM STRIOLATUM.

NYMPH (\times about 4).

R. South from larvæ of *Peronea hastiana*, October 13th, 1904, and October 21st, 1904, host from St. Anne's, Lancashire.

M. vexator (Hal.).—Is easily known by the size of the stigma, which is as large or even larger than the first cubital cell, with a considerable pale spot at the inner angle. We are indebted to Morley for redescribing this species,* from specimens bred by Keys at Plymouth out of a fungus, together with the clavicorn beetle *Diphylus lunatus* (Fab.). Halliday described the female from a single insect, while Marshall, who described its supposititious male, had only a dilapidated specimen before him. In Morley's insects the antennæ of the male are 26-jointed, of the female 24, and the recurrent nervure is rejected.

M. atrator (Curtis).—In August, 1913, C. W. Colthrup sent me from Eastbourne two females which he had captured with three specimens of the hyperparasite *Hemiteles areator*. The insects were caught while running about on furniture which was infested with the moth *Tinea biselliella*, and were evidently searching for the larvæ of the lepidopteron. Morley has a female which was also taken indoors. I believe that no specified host has before been cited for this species, and it appears to have been but rarely observed, which seems strange in the case of so beneficial an insect.

(To be continued.)

BRITISH ODONATA IN 1913.

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

(PLATE II.)

ALTHOUGH the spring was an early one, I did not meet with a dragonfly till May 18th, when *Pyrrosoma nymphula* and *Libellula quadrimaculata*, the latter in teneral condition, were taken at the Black Pond, near Oxshott, in Surrey; no other species was seen—not even *Enallagma cyathigerum*. On May 25th the same locality was again visited, when a male and a female of *Cordulia ænea* were taken, and *E. cyathigerum* was on the wing, as well as *P. nymphula* and *L. quadrimaculata*; but, on the whole, dragonflies were not very evident in a locality where they are usually so plentiful by this date.

On June 1st a visit was paid to Frensham Ponds and the swampy ground near them, in the south-west corner of Surrey; but the weather was dull. However, *E. cyathigerum* was found to be numerous. There were also a few *I. elegans*, and a female *Agrion puella* was taken. One or two teneral examples of

* Entom. p. 4, 1912.

Orthetrum cancellatum were met with at the larger pond, and a nymph-skin was secured. *Calopteryx virgo* occurred in a wet field near the smaller pond, most of the females taken being very dark. On June 8th, another dull day, the canal-side at Byfleet was visited. Owing to the weather, no doubt, dragonflies were not numerous, but *A. puella*, *P. nymphula*, and *Erythromma naias* were captured.

During the first half of June Col. J. W. Yerbury captured for me a few dragonflies in the north of Scotland. They were—*Leucorrhinia dubia*, a male, June 3rd, at Nethy Bridge; *P. nymphula*, a female, June 4th, at Aviemore, grasping its prey, a caddis-fly named *Limnophilus centralis*; *E. cyathigerum*, three males and a female, at Aviemore, from June 6th–16th, the male taken on the 16th holding its prey, a small moth named *Crambus pratellus*; *Agrion hastulatum*, nine males and two females, at Aviemore, from June 9th–16th. The last-named species varied much in the development of the lateral marks on the second segment of the abdomen, and from two they were nearly or quite absent. Females of this species seem seldom to be captured. On June 21st Mr. P. Richards found *I. elegans* in swarms at Seabrook, in Kent, and sent me a male for identification. On July 29th Col. Yerbury obtained a male *P. nymphula* at Mynydd Eppint, in Wales, at an altitude of about 1500 ft.; no other dragonfly was seen.

In the New Forest, from June 27th–29th, dragonflies were found to be fairly numerous. *A. puella*, *Platycnemis pennipes*, *P. nymphula*, and *Orthetrum cærulescens* were common, but the last species was in teneral condition. *Calopteryx virgo* was out in fair numbers, and there were a few *I. elegans*, one being obtained of the var. *rufescens*. Of *Pyrrosoma tenellum* one female was taken, but of *Cordulegaster annulatus* I am not certain that I saw a single specimen, although, judging by other records, it should have been on the wing by this date. Neither *Agrion mercuriale* nor *Ischnura pumilio*, nor *Gomphus vulgatissimus* was met with, although a special search was made for the last two. A week later, July 4th–6th, again the same two species were not to be seen; but *A. mercuriale* was taken plentifully behind Holm Hill, one only, however, being a female, which was found to be attacked by red acari. On this occasion *P. tenellum* was met with again.

From July 27th onwards some time was spent in the New Forest, and on July 28th a visit was paid to the pond on Beau-lieu Heath, where *Sympetrum fonscolombii* was taken in 1911. Though I sought for over an hour in the bright, hot sunshine, the only dragonflies found were *Lestes sponsa*, *P. tenellum* (and its var. *melanotum*), *I. elegans*, *E. cyathigerum*, *O. cærulescens*, a *Libellula depressa* and an *Anax imperator* somewhat doubtfully, and *Sympetrum striolatum*. I feel certain that amongst the last

was not a single *S. fonscolombii*, though offspring of the 1911 specimens, if they had bred there, would probably have been due in 1913. Mr. F. H. Haines, of Winfrith, Dorset, was a little more successful with this species. Writing August 3rd, 1913, he told me that on July 24th he saw several specimens on a pond at Morden and took a male and female *in cop.*; as well as a second male. They were in nothing like the abundance of 1912, and their wariness was wonderful. He might have made twenty captures of *S. striolatum* for one of *S. fonscolombii*. On July 25th he tried West Knighton pond and thinks he saw one of the latter species, but could not capture it. A friend of his having reported the species at Creech, south of Wareham, on August 2nd they together visited both Creech and Morden, but found nothing, though *S. striolatum* was abundant at Creech, and they took an *Æschna juncea* and a worn *A. imperator* at Morden. Mr. Haines did not find the pond at Creech such a one as he would associate with *S. fonscolombii*, although his friend knew the dragonfly. It prefers heathland ponds, fed by swamps with much decomposing vegetable matter in them all round, causing the water to be very warm. The Creech pond was deep and cold. He thought perhaps a swarm might have paid a visit and passed on. Some days previously he found the species still well in evidence at Morden and took another male. So this year he has four specimens, three males and one female—three taken on one day, one on another.

On August 1st *C. annulatus* was common at Beaulieu River, and from this time there appeared to be no dearth of them in the Forest, so the adverse season of 1912 had not affected the 1913 imagines. On the same date an *Æschna cyanea*, female, was captured, apparently but recently emerged, as the spots were whitish-blue. On the next day an *Æ. juncea* was captured at Woodfidley. On August 16th in the central part of the Forest dragonflies were numerous, almost all being *S. striolatum*. On August 25th I could not find *A. mercuriale*, and presume it was over. *I. pumilio* I was not able to find at all during the season. Towards the end of August *C. virgo* had disappeared.

Mr. W. H. Harwood tells me that a specimen of *Æschna isosceles* was taken at Wicken Fen on September 28th, which seems to be a very late date for this species.

After a long absence, a visit was paid to the Black Pond on September 28th, when *S. striolatum* and *S. scoticum* were found to be plentiful. There were also a few *Æschnas*, of which males of *Æ. juncea* and *Æ. grandis* were captured; the former settled on the front of my coat and was there netted. Judging by size *Æ. mixta* appeared to be present also.

Mr. K. J. Morton is able to record that a female *Hemianax ephippiger* was found in Ireland (*vide* E. M. M. Jan. 1914) in October, 1913. This is, of course, an accidental occurrence, as

was that of the female of the same species which was taken flying in a street in Devonport on February 24th, 1903.*

On November 16th the Black Pond was again visited to see if *S. striolatum* was still on the wing. The latest date on which I had previously seen it was November 14th in 1897, and as the autumn was mild there was a chance of a later date being recorded. None were seen, however; but it is quite possible that they were not over, for the weather was not altogether favourable.

Some very interesting notes have come to hand concerning this, which is perhaps the commonest of English dragonflies. Miss D. Molesworth, of Brighton (*in litt.*, Oct. 21st, and again Nov. 6th, 1913), told me that she had had under inspection a number of *S. striolatum* from the deposition of the egg till the emergence of the imago, the whole life-cycle occupying less than a year. The female was caught ovipositing on September 18th, 1912, and, after being kept from water, was on September 20th held over it, when she gave more eggs. These hatched between October 21st and 25th. The nymphs did not grow at a uniform rate, and the wing-cases appeared on the largest towards the end of April, 1913. By June, four of the nymphs had reached a length of 16 mm. and then became restless. There were plenty of water-weeds in the aquarium, but they did not attempt to climb, though earlier in the year many "demoiselles" had scaled the water-plantain leaves and successfully emerged. Miss Molesworth then had to leave them for three weeks and on her return all four were dead. Meanwhile, others had reached the same stage; but as each attained a length of 16 mm. it died. In August a bank was made in one corner of the aquarium, reaching above water-level, and strips of wood about two feet long were inserted in it. In September the nymphs began one by one to climb to various heights—some to the top, some less than six inches. The first emerged on September 4th and the last on October 12th, 1913. Before the last had emerged, the boards were removed and a bank was built round the water-plantain stems. The nymph climbed and the imago emerged quite happily. That the earlier ones were ready to emerge was clear, for they partially did so under water. The female, from which the eggs were obtained, was depositing them in water not more than six inches deep, and the nymphs were kept in water of about that depth. In water of greater depth they left the bottom and began to crawl on the weeds. In 1913 another female deposited eggs on August 26th, and the first nymphs emerged on September 14th, less than three weeks later, but *they* were kept in a warm room! The largest nymph was 4 mm. long on October 21st; it was observed demolishing a smaller companion.

* Figured, natural size, in 'Entomologist,' xxxvii. pl. 3.

It should be stated that the aquarium in which the 1912 nymphs were bred was standing on a brick window-sill, where the window was open day and night all through the winter. The weather being mild the water did not freeze, though it did in former years. In fact a nymph of a larger species was on one occasion frozen in the middle of a solid piece of ice and remained so for two days. When the thaw came it revived and seemed none the worse. These nymphs were not forced, therefore, by unusual heat, but probably were by receiving an unnatural amount of food. As soon as they began to eat *Chironomus* larvæ, they were fed almost daily and when nearly full-grown would sometimes eat as many as eight in succession, though each was as long as the nymph itself. Probably in confinement space has something to do with the rate of growth. For a few kept in a very small bottle with abundance of food scarcely grew at all, and when they were moved into a larger aquarium, where food must have been more difficult to procure, because less plentiful, they were found to be scarcely more than half the size of some which had already been there for six weeks. All emerged in the early morning, usually on dull days. One nymph showed a particular aversion to sunshine. Being ready to emerge, it crawled out of the water on a cloudy morning. When on the wood the sun came out rather suddenly, and the nymph immediately scrambled and fell down. As soon as the sun disappeared it climbed up again; but on the sun's reappearance it repeated its previous performance. It did this three times, and the nymph was not contented till the aquarium was shaded, when it emerged none the worse for what had happened.

Miss Molesworth's interesting notes may suitably be supplemented by a description* and figure (Plate II.) of a full-grown nymph of *S. striolatum*, which I have therefore prepared:—

DESCRIPTION.—General colour sepia, from very pale to quite dark. *Length*, including anal appendages, about 18 mm.; greatest *breadth*, about 7 mm. *Head* of moderate size; in outline a flattened pentagon; width about 5.5 mm. *Antennæ* of seven segments, the basal two short and rather swollen, the rest more slender, with a ringed appearance. *Mask* (labium) tapering backwards to the middle hinge where it is narrow; this hinge almost as far back as the insertion of the midlegs; extremity spoon-shaped, covering the face; *palpi* broad, where they approach one another and there serrated; teeth reddish; *movable hooks*, long, sharp, slender; centre of labium produced in an obtuse angle; on this lobe, internally, are two semicircles of long reddish hairs, about fourteen in each, the lateral margin of each palpus fringed with a similar row of hairs, pointing inwards. Several pale marks in front of *vertex*, which also has pale markings. *Eyes*

* A figure of *S. vulgatum* (= *striolatum*) in W. H. Nunny's paper, 'Science Gossip,' July, 1894, does not appear to represent a *Sympetrum* at all, and is certainly not *S. striolatum*.

prominent, somewhat hemispherical, situated at the fore-corners of the head. *Occiput* rather broad, rough, bearing some long hairs. *Top of head* as a whole slightly convex. *Prothorax* collar-like, a dark patch in centre, hind-margin convex. *Mesothoracic spiracles* dark, very conspicuous. *Meso-* and *metanotum* variegated with lighter and darker tints. *Legs* long, slender, joints darker; femora and fore- and mid-tibiæ ringed with darker sepia bands; fore- and mid-tibiæ hairy, hind tibiæ rather spiny; fore-legs about 10 mm. long, mid-legs about 11 mm., hind-legs nearly 16 mm. *Wing-cases* about 5 mm. long. *Abdomen* broad and somewhat flattened; with pale, long, slender, recurved mid-dorsal spines on segments six, seven and eight, and a small one on five hidden by the wing-cases; a pair of lateral spines on eight and nine, those on eight being of moderate length, those on nine conspicuously long, equal in length to the last two segments; two or four dark dots on the dorsal part of several of the hinder segments; also lines of paler or darker suffusions on the dorsal surface, which vary considerably according to the depth of colouring of the specimens; ventral surface of nymph-skin fairly uniform in colouring. *Anal appendages* short, hairy; *upper*, triangular, pointed; *laterals*, shorter and more slender; *lower*, more than half as long again as upper, and flat when looked at from the side. It is somewhat difficult to describe the hairiness of a dried nymph-skin, consequently it has been little referred to.

[*Material*.—(i.) A nymph-skin from which a male imago emerged on July 28th, 1903; (ii.) a skin of a nymph, taken in Richmond Park, Surrey, from which a male was bred on July 10th, 1903; (iii.) other nymph-skins found under such conditions as to admit no doubt of their identity. Nos. i. and ii. were the specimens chiefly employed. The figure is enlarged a little over four times.]

THE EARLIER STAGES OF *COLIAS HECLA*.

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

So far as I am aware, the only lepidopterist who has written anything on the earlier stages of this beautiful Arctic species is Staudinger, and his brief note is in one important respect inaccurate.

Staudinger, who passed the summer of 1860 in the north of Norway, during his sojourn there met with *Colias hecla* abundantly, near Bossekop, in the Alten Fjord. He states: "the headquarters of this species was a flat sandy peninsula in the bed of the River Alten"; in this place "*Phaca lapponica*, De Candolle, the undoubted food-plant, grew very abundantly, and I noticed the females ova-depositing thereon."

The *Phaca lapponica* of De Candolle is, according to the 'Conspectus Floræ Europæ' of Nyman, now known as *Oxytropis lapponica*, a plant which, so far as I know, does not occur at Bossekop; at any rate, I carefully examined the headquarters of

C. hecla described by Staudinger, during my stay there in 1912, and the only leguminous plant I could find in the district was the *Astragalus alpinus* of Linné, which the 'Index Kewensis' states is the *Phaca astragalina* of De Candolle, and which grew freely, locally.

Later on, at Laxelv, in the Porsanger Fjord, as noted in 'Entomologist,' xlv. p. 339, I found *C. hecla* in great numbers, flying over flat rough meadows and fields in which *A. alpinus* grew abundantly; this plant is undoubtedly its food-plant there, and almost certainly, for the above reasons, at Bossekop also.

I do not, of course, know in how many localities in Lapland—a great part of which is entirely unexplored—*C. hecla* is found, and if it is always associated with *A. alpinus*, but it is certainly a very local species, found only in the above-mentioned localities of those I have explored, although it is stated to occur also on the north side of the Tornea Traske in Swedish Lapland. In all of these localities *A. alpinus* is an abundant plant; but it is so local that I do not recollect ever seeing a specimen elsewhere, though I have explored a great many miles of suitable country in Arctic Scandinavia.

The only other leguminous plant I could find in the Porsanger Fjord was what I think was a species of *Vicia*, which in the latter part of July had beautiful trusses of mauve flowers, and which grew about one foot high, and was plentiful along the shores of the Fjord at Kistrand. This plant the larvæ of *C. hecla* refused to feed upon. They also refused white and red clover, which I offered to them on my journey home, and which grew freely at Tromsø and at various places touched at south of that town.

It seems probable that the larvæ of the two exclusively Arctic species of *Colias* occurring in Europe—*C. hecla* and *C. verdandi*—feed *exclusively* in nature on *A. alpinus*. It should, however, be noted that *C. hecla* does not occur on the south side of the Tornea Traske, where *A. alpinus* is an abundant plant, and where *C. verdandi* flies in great numbers.

The ova of *C. hecla* were to be found plentifully at Laxelv at the time of my visit, July 11th to July 16th, 1912, almost every individual food-plant examined having some attached to it; they are deposited singly.

The ova is of the usual *Colias* type, upright, the vertical and horizontal diameters are 1.25 mm. and 0.65 mm. respectively. It has vertical ribs, about twenty-six in number; the distance they are apart is .05 mm.; numerous very shallow transverse ribs connect the vertical ribs. The diameter of the apex of the ova is .15 mm. The micropylar area consists of a number of shallow cells; it is not noticeably depressed. The surface of the ova is shining and opalescent. The larva emerges from the side.

The ova from which the foregoing description was made was deposited by a captive female on a plant of *A. alpinus*, on July 12th; it was then creamy white in colour; on the 13th it had changed to light red, and on the 14th to bright coral-red; on the 20th it was leaden coloured. The larva emerged on the 22nd. It thus appears that the period of the ova stage is ten days.

It will be seen, on reference to my description of the ova of *Colias werdandi* in 'Entomologist' xliv. p. 122, that the ova of these two species are identical in size and in all other respects, except that in *C. werdandi* the colour changes to deep orange instead of to coral-red, which the ova of *C. hecla* does. The period of this stage is in the case of *C. werdandi* two days longer.

Immediately after emergence the larva was 1.50 mm. long. The head was black, the remainder of the segments were dull green, transparent and thickly studded with tubercles, each tubercle having in its centre a spine. The larva at this stage eats holes in the upper cuticle of a leaflet of its food-plant, and rests stretched out at full length on the midrib thereof; it changed into the second stage on July 27th, and was then 2 mm. long and stout in proportion to its length. Colour dull green, very spiny, head greenish brown, spiny and shining, the remainder of the segments had a dark medio-dorsal stripe, lighter subdorsal area bounded below by darker stripes. The spiracular stripes are lighter than the remainder of the surface of the larva.

The change to the third stage took place on August 22nd. The larva was then 4 mm. long; head light amber-coloured; dorsal area dull dark green; subdorsal areas light green of the same tint, bordered on the lower edges with dark stripes of the same tint as the dorsal area. The spiracular stripes were of lighter green, the ventral area was of the same tint as the subdorsal. All the segments were thickly covered with black tubercles, each one of which emitted a black spine. The spiracles were light green with black circumferences. On August 29th the larva was slowly feeding; on September 6th it ceased feeding altogether, and was placed in a cool cellar in a flower-pot which contained dry sand and *Sphagnum*.

My stock of ova when I left Laxelv on July 16th was twenty-two, but by the time I reached England, on August 3rd, they had been reduced to half a dozen more or less unhealthy larvæ. *A. alpinus* is a most difficult plant to transplant or to keep fresh and healthy when it is dug up, and all my plants were yellow and unhealthy on arrival at home. Of these half dozen larvæ only two reached the hibernating stage, and one of these two died soon after being placed in winter quarters, reducing my stock early in October to a single specimen.

This larva remained quiescent and stretched out on the *Sphagnum*.

I had intended, upon the first sign of frost appearing, to

take it out of doors, so that it might get some approach to its natural home conditions in winter, and afterwards to force it, but the winter turned out to be exceptionally mild, and by January 23th, there not having been any frost, I brought the larva up and placed it in a warm room. I did not have a plant of *A. alpinus* in leaf, and so offered the larva young leaves of *Colutea arborescens*, which I had ascertained the previous summer it would eat. On January 22nd it commenced to feed upon these, and fed very slowly for several weeks, so slowly, however, that its daily meal, which was usually taken when the sun was shining, did not exceed a notch in a leaflet the size of an average pin's head. In the beginning of March it sickened and died. During the time it was feeding in the winter the size only increased a very little, not more than a millimeter in length. In all probability, to successfully rear this larva would entail its being kept at a temperature below freezing point for several months.

In its natural habitat the snow would probably be gone by the middle of May. Standinger mentions that at Bossekop the first male was taken on June 18th, 1860, but it certainly was not out there on the day I left, June 22nd, 1912. On my arrival at Laxelv on July 11th, fully one-third of the specimens flying about were more or less worn. The season was rather a late one, and I should say that June 20th, as the first date of emergence on an average season, is probably not far wrong.

Astragalus alpinus in Lapland entirely loses all trace of foliage in the winter, and until the middle of June, or rather later, it does not develop sufficient new leaves to feed the larva upon; this being the case, there seem to be three possible theories of its behaviour after hibernation:—

(1) That it has an alternative food-plant. I do not think this probable for, as before stated, I could not find another leguminous plant in its haunts, and one cannot imagine it feeding upon anything else.

(2) That it feeds upon the roots of *A. alpinus*. This is possible, for this plant has long succulent roots, very much after the style of *Lotus corniculatus*.

(3) That it feeds very slowly through the summer on the leaves of *A. alpinus*, hibernating a second time, either as a full-fed larva or as a pupa. I am inclined to think that this latter theory will prove the correct one. The larva I had in confinement seemed perfectly healthy and satisfied with its daily minute meal for weeks, which is just what one would expect it to do in a state of nature if this theory be correct, for the leaves until the middle of June are very minute and would not suffice to satisfy a more vigorous appetite. But, of course, my larva had not been subjected to its natural low winter temperature for many months, and one does not know what effect the unusual treatment received might have had upon its appetite.

Youlgreave, South Croydon: January 18th, 1914.

DIADIPLOSIS COCCIDIVORA, n. sp.

By E. PORTER FELT.

THE small midges described below were reared in some numbers from a species of *Pseudococcus* by A. Rutherford, Government Entomologist of the Department of Agriculture, Peradeniya, Ceylon, and forwarded for identification under the date of November 27th, 1913. This species appears to be congeneric with *D. cocci*, Felt, a species reared earlier by Mr. William H. Patterson from larvæ preying upon the eggs of black scale, *Saissetia nigra*, in St. Vincent, West Indies. The two species are quite different, and further studies may result in their being referred to different genera.

♂. Length 1 mm. Antennæ probably half longer than the body, presumably thickly haired, fuscous yellowish; fourteen segments, the fifth binodose, the two portions of the stem each with a length approximately a quarter greater than the diameter, the distal enlargement with a length a quarter greater than its diameter, and bearing two moderately stout circumfili. Palpi: the first segment small, globose; the second with a length nearly three times its diameter; the third a little longer, more slender. Mesonotum dark yellowish brown, the submedian lines, scutellum and postscutellum fuscous yellowish. Abdomen fuscous yellowish. Wings hyaline, the third vein uniting with costa at the apex of the wing, the fifth joining the posterior margin at the distal fourth, its branch at the basal third. Halteres and legs a nearly uniform fuscous yellowish, tarsi probably somewhat darker; claws moderately stout, strongly curved, the anterior and mid unidentate, the posterior simple, the pulvilli about half the length of the claws. Genitalia: basal clasp segment moderately short, stout; terminal clasp segment short, stout, with a rather large, strongly curved apical spur; dorsal plate long, deeply and triangularly emarginate, the lobes narrowly rounded and sparsely setose; ventral plate moderately long, tapering to a narrowly rounded setose apex. Harpes foliate, tapering to a narrowly rounded apex, laterally with a thick patch of long, stout setæ; style long, slender, slightly curved.

♀. Length 1.5 mm. Antennæ probably nearly as long as the body, sparsely haired, dark brown; fourteen subsessile segments, the fifth with a stem one-sixth the length of the cylindric basal enlargement, which latter has a length about thrice its diameter. Palpi: the first segment subglobose, the second with a length more than three times its diameter, the third half longer than the second, and more slender. Mesonotum dark yellowish brown. Abdomen yellowish orange. Ovipositor short, the terminal lobes narrowly oval and sparsely setose, otherwise nearly as in the male.

Type Cecid a2486.

State Museum, Albany, N.Y.

DESCRIPTION OF A NEW CICADA FROM WEST AFRICA.

By W. L. DISTANT. 1914a

Musoda gigantea, sp. nov.

♂. Head and pronotum pale testaceous, the latter with the fissures darker, and the lateral and posterior margins ochraceous; eyes greyish-white; mesonotum dark ochraceous with darker mottlings and four obconical spots at anterior margin, the two central spots largest; abdomen castaneous, the posterior segmental margins, a narrow central longitudinal fascia, and the anal area more or less pale ochraceous; body beneath pale ochraceous, the face and legs darker and more pale testaceous; tegmina and wings hyaline, venation, costal membrane to tegmina, and narrow basal suffusion to wings pale testaceous; head with the front conically prominent, anteriorly more darkly transversely striate; vertex narrowly longitudinally incised between the ocelli; face short, broad and convex, a short, broad, central sulcation on its anterior area, its lateral areas strongly transversely striate; rostrum reaching the intermediate coxæ; opercula not passing base of abdomen, obliquely directed inwardly, their apices rounded and widely separated; anterior femora shortly and finely toothed beneath on apical areas; pronotum somewhat broadly, centrally, longitudinally sulcate, the fissures profound; abdomen broad, robust, above strongly, centrally ridged, the lateral areas oblique, basal segment strongly, centrally, conically produced, beneath obliquely depressed towards apex.

Long. excl. tegm. ♂, 29 millim. Exp. tegm. 88 millim.

Hab. West Africa; Cameroons (Conradt). British Museum.
This is the second but larger species of the genus yet described.

A BUTTERFLY HUNT IN SOME PARTS OF UNEXPLORED FRANCE.

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

(Continued from p. 60.)

(vi) *Basses-Alpes.* (b) *Larche.*

To speak of Larche as "unexplored" is less inappropriate, perhaps, than would appear in view of the recorded visits made in past years by French entomologists. Donzel, in the "forties," collected hereabouts; but he seems not to have published the results of his expedition as minutely as he has recorded the lepidopterous fauna of Digne and the lower Basses-Alpes. It is to Antoine Guillemot, to Bellier de la Chavignerie, and to Berce that we owe the first detailed accounts of the numerous Lepidoptera met with at this point of the Italian frontier; and after

the lapse of fifty-eight years it may be agreeable to those interested in the butterflies of a little-known corner of the Alps to retrace the footsteps of these pioneers.

The published account of their experiences given by Guillemot is rare. It is to be found neither in the library of the Natural History Museum, South Kensington, nor of the Entomological Society of London; and it is only within the last month, and after this paper was printed, that I saw a copy included among the *separata* of a foreign bookseller. I am indebted, therefore, to the kindness of M. Charles Oberthür for a loan of the work.*

As far as I can see, Larche has changed little in appearance since Guillemot and Bellier were there in 1855, from July 29th to August 3rd. The hotel accommodation is decidedly worse, for while they speak of comfortable quarters and good plain food, I am afraid I cannot endorse their recommendation of the inn I visited. However, I was lucky enough to find my bedroom occupied when I came up from Barcelonnette on the morning of the 25th, and by the courtesy and kindness of the Commandant of the garrison, whom I chanced to meet in the road, I was enabled to obtain excellent quarters with M. Mathieu, the local butcher—quarters usually filled by officers of the Alpine regiments on the march and on manœuvres. Both Monsieur and Madame were extremely kind and attentive, and I cordially advise any of my readers who may fancy a week or two at Larche to do as I did—put up in their chalet, lay in a good supply of tinned foods, biscuits, &c., for lunch in the open, and which are for sale at the small grocer's shop in the village; and after the *premier déjeuner* of coffee and rolls, return to the auberge only to dine.

In one respect, it is true, Larche has changed. Many of the enterprising inhabitants having amassed fortunes, especially in Mexico, have come back to build large stucco villas and live in their native place, for the summer months at any rate. It is possible, therefore, that with the steady increase of motor traffic into Italy by this route, one of these proud proprietors may devise a scheme for the reception of boarders, though the summer at this altitude—5568 ft.—is short: eight weeks at the most.

I did not know, when I decided to finish my entomological tour at Larche, that M. Oberthür's two collectors from Digne had passed the previous season (1912) there. Nor had I the report of their experiences to guide me, as partly recorded in recent published fascicules of '*Lépidoptérologie Comparée*' (Rennes, 1913, fasc. vii., '*Observations sur les Syrichthus du*

* '*Vingt-Cinq Jours de Chasses aux Lépidoptères à Barcelonnette, et à Larche,*' par A. Guillemot. Clermont. 1856. *Cp.*, also, '*Observations sur les Lépidoptères des Basses-Alpes,*' par Bellier de la Chavignerie, *Ann. Soc. Ent. France*, 1854, p. 29, 1856, p. 5, and 1859, p. 177.

groupe d'Alveus'). Also, I had no intention when I left England of visiting the Basses-Alpes at all, but had planned to turn west from Le Vercors (*vide antea*, p. 8) into Ardèche. I had not provided myself, therefore, with Bellier's notes, which might have assisted me to the right localities, though a chance meeting at Barcelonnette with Mr. E. A. Tucker and Mr. Charles Morris, of Cannes—both ardent lepidopterists—gave me the clue to a locality in which, as I subsequently discovered, these French naturalists made their most important captures.

The journey from Barcelonnette is advertised in summer to be performed by motor omnibus. As a matter of fact, when the motor reached Condamine—the half-way house—the driver was seized with a sudden spasm of economy for petrol; and another and altogether "ancient piece" was trundled out of the coach-house to perform the last long uphill climb. After the dizzy ordeal of the day before on the Col d'Allos the change was delightful; and as we jogged peacefully along the road it was possible to survey the splendid scenery and to note chance insects on the wayside flowers. But for the greater part of the journey, the forest gradually disappearing and the flora of the valley giving place to the veritable mountain kind, there was little on the wing, as the sun was still hidden behind the ever-rising barrier of the hills.

When the room difficulty had been settled, I set off for the Lauzanier valley, the road diverging from that to Italy, and crossing by pastures to the left bank of the Ubayette. The first butterfly to attract attention was a remarkably fine brood of *I. lathonia*, just emerged and in perfect condition, with males of *Epinephele lycaon* flitting *mæra*-like over and about the stone walls of the cornfields. On past the bridge, females of *A. damon* were in some profusion, with *P. argyrognomon*, *C. virgaureæ*—all males—some worn *C. hippothoë*, var. *eurybia* females, and a fair sprinkling of Argynnids—*aglaia*, and *niobe*, var. *eris* (very rarely typical). The season was, however, getting late for the mountain meadows; and I quite agree with Bellier, who recommends a visit to Larche before they are cut, as with the hay goes much of the best collecting. Down by the stream I could see some small Parnassidæ swinging lazily over the *Sedum* beds; and these subsequently proved to be *Parnassius delius*, rather worn. The steep grassy banks on the left-hand side of the mule path were full of butterflies, chiefly of the commoner alpine sorts; conspicuous by their numbers and exquisite condition being *Cænonympha iphis*, while occasional Black-and-White Skippers on the track itself were either *Hesperia carthami*, *H. alveus*, or *Pyrgus sao*. Unfortunately, upon the whole length of the green valley, which ends with a steep climb to the Refuge hut, vast herds of sheep, goats, and horses had been grazing; and it was

here also that for half an hour I sat and watched the strapping Chasseurs Alpins of the French Army defile before me—fresh, merry, and brisk as are all these mountain infantrymen, even with eight hours' march behind them over these stark mountains. The little herbage left by the shepherds' flocks the army mules seemed to have finished up; and for quite an hour's walking I encountered practically nothing of note—a few scattered *Colias phicomone*, a very occasional *Erebia epiphron*, var. *cassiope*, and rarer *Polyommatus pheretes*; even *Plebeius argus*, the ubiquitous, had diminished, and, of course, as soon as I attained a "not bad eminence," in went the sun, down came the mist, and collecting butterflies in the Lauzanier was over for the day, though it was barely one o'clock. So after lunch and a welcome foot-washing in the torrent (strongly recommended for weary and sore feet), I turned back, seeing nothing more on the wing until just past the opposite hamlet of Maison-Méane, where the last rays of a belated sun woke into momentary activity a few fine male *E. goante*.

Next day being gloriously fine, I set out for the Lac de la Madeleine, which lies on the Italian side of the Col de Larche (6545 ft.), a few hundred yards across the frontier, and about an hour and a half's easy walking from Larche itself. Quite the commonest insect about was *Macroglossum stellatarum*, and wherever the sun touched the little patches of sainfoin and lucerne, *Colias edusa* and *C. hyale* were chasing one another, with *P. apollo* and the usual common Pierids. But I did not come across *P. napi*, var. *bryoniae*; and I think that, this being a single-brooded species in the Alps, it was probably over. Pushing on, I did not unfurl until I had reached the "International House," where the red-white-and-blue and the red-white-and-green posts upon the roadside denote the meeting of France and Italy. The Italian Dogana is somewhat further on by the Lake, and the affable Customs officer in command, who regarded my net as an excellent piece of fooling, not being able to direct me to any mountain path which would bring me back into the Lauzanier, I missed no doubt the best collecting ground hereabouts. For example, I failed entirely to hit the right spot for *C. palæno*, which I suspect occurs only on the Italian slopes, for nowhere could I discover the indispensable *Vaccinium*, upon which, in common with *P. optilete*, the larva feeds.

Within a few yards of the Lake itself, however, I did come across a, to me, new and exceptionally interesting form of *Erebia mnestra*, this being the variety named by Bellier *gorgophone*, and described by him as a distinct species (Ann. Soc. France, 1863, pp. 419-420), intermediate between *E. gorge* of the Alps and *E. gorgone* of the Pyrenees, but later determined as a localized form of *mnestra*. This variety is apparently so little

known to British collectors that I think it is worth while to reproduce in brief Bellier's account of it.

"Male, rusty brown; all four wings traversed as to two-thirds of their breadth by a ferruginous band which mingles somewhat with the ground colour, especially on the hind wings.

"Up. s. f. ws.—Band with two black white-pupilled eyes (sometimes absent); h. ws. without ocellation.

"Un. s. f. ws. lighter and more reddish brown, reproducing the pattern of the upper side. H. ws. reddish grey, with a broad median band of dark brown slightly lunulate; a marginal band of the same colour. Fringes unicolorous on both sides.

"Female larger than male, from which it hardly differs on the upper side, except that the brown is more yellowish and the ferruginous band clearer. Un. s. h. ws. much clearer grey, with two bands of reddish brown, on which the nervures show somewhat whitish. Fringes of all the wings plain and unicolorous on both sides.

"Differs from *gorge* by the wings being more rounded, and the fringes simple, not barred. Ground colour of the under side duller in tint; band thicker, less festooned, and showing less distinctly from the ground colour."

In male specimens sent by Dr. Verity, of Florence, to the Natural History Museum from the Italian Maritime Alps, the blackish-brown androconia are very strongly marked. Bellier also notes that it prefers the green pastures like *epiphron* to the *gorge*-haunted rocks; and this is my experience, also, of the species.

I may add that the plate in the 'Annales' by no means does justice to the rich coloration of the var. *gorgophone*, except that of the figure of the under side of the male; and it is to be hoped that in some future number of his beautiful 'Lépidoptérologie Comparée,' M. Charles Oberthür will find a place for male and female figures of this very striking form of *mnestra*—if such it be. Curiously enough, Mr. H. J. Elwes, in his 'Revision of the Genus *Erebia*' (Trans. Ent. Soc. London, 1898, pp. 169-207), makes no mention of it either under *mnestra* or *gorge*. Of the *mnestra* group, in his previous 'Notes on the Genus *Erebia*' (*loc. cit.* 1889, p. 333), he merely remarks that "little need be said, as they are species little subject to variation and of limited distribution." Of the Pyrenean *E. gorgone*, with which Bellier associated it, Dr. Chapman says (*loc. cit.* 1898, p. 222), "if it is a variety of anything, it is a variety of *mnestra*." But he, too, in his exhaustive examination of the male appendages of the genus, does not appear to have had any material to work out the affinities of the Basses-Alpes *gorgophone*.

(To be continued.)

THE GENUS *PÆCILOPSIS* (HARRISON).

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

Part I.—PRELIMINARY REMARKS.

As I have pointed out elsewhere, the "genus" *Biston*, as represented in Staudinger's 'Catalogue,' is a very heterogeneous collection, comprising elements from no fewer than six distinct genera. These are:—

Biston (Leach); type *stratarius*.

Lycia (Hüb.); type *hirtaria*.

Ithysia (Hüb.); type *zonaria*.

Pæcilopsis (Harrison); type *pomonaria*.

Apocheima (H. S.); type *hispidaria*.

Microbiston (Stgr.); type *lanarius* (Ev.) (= *tartaricus* (Stgr.)).

It was originally my intention to take these genera in turn, and to deal with each of the species in all its stages in detail. The imagines of the genus *Ithysia* have already been discussed, and the treatment of the other forms postponed in order to give time for the completion of the life-histories of *Ithysia grecaria*, *I. alpina*, and *I. italica*, but it has been found impossible to rear (even in a hothouse) these exclusively Southern forms. In the meantime, however, I am glad to say that I have been able to secure, and describe at length, the early stages of all of the species in the genus *Pæcilopsis*, and therefore propose to complete my work in that section now. This genus was described in *Lepid. Comp. fasc. vii. p. 344*, and I have but little to add to the description given there, except that one very important observation has been made which justifies further my separation of these species from *Ithysia*. This is the fact that, whilst the chromosome number in *Ithysia* is 112, in *Pæcilopsis* it is 56, and in *Lycia* 28.

It has become imperative that I should take up this genus now, because I have discovered in the course of my studies that the Central European form that passes for *P. lapponaria* is not that insect at all, although, fortunately, our Scotch insect is so. Not only is this true, but, in addition, the two forms fall into two different sections of the genus, which contains four species forming two closely allied groups of two. These groups are:—

The two species *Pæcilopsis lapponaria* and *P. rachelæ*.

The two species *P. pomonaria* and *P. isabelleæ*.

The first group is probably Northern in its origin, for *P. lapponaria* ranges from Lapland to Livonia, and then reappears in Scotland; whilst *P. rachelæ* is widely distributed in America, from Montana and Manitoba along the Mackenzie Valley to Alaska. The other group is of Central European origin, *pomonaria* having its headquarters in North Central Germany, but extending, although sparsely, to Eastern France, Scandinavia,

and Austria. The other species is of more limited distribution, for it is confined to the Silesian Mountains and to the Alps of Switzerland, Bavaria and the Tyrol.

It will be seen that I have been compelled to erect a new species for the so-called *lapponaria* from the Alps and Silesia. I have tried hard to avoid this necessary split, and to persuade myself that the form is but a mountain form of *pomonaria*, but it will not do; there are differences of specific value at every stage of its existence—differences greater in many instances than those occurring in the case of two obviously distinct species like *L. hirtaria* and *P. pomonaria* at corresponding points. In fact, had one been so inclined, it would have been perfectly feasible to break this genus on larval differences, such as has been done in other groups, and then find this separation justified by imaginal characters. In such a case *lapponaria* would fall into one subgenus whilst *isabellæ* would fall into the other!

After these preliminary remarks, I had intended to take the species in detail, but I think it better to give a brief description of the Central European form *isabellæ*, and then contrast it, in all the salient points, with its nearest ally *pomonaria*, on the one hand, and on the other with *lapponaria*, with which it has been so long lumped. There would be no gain in comparing it with *rachelæ*, for that insect, although perfectly distinct, is sufficiently close to *lapponaria* to obviate any such comparison.

Pæcilopsis isabellæ, sp. n. (= *lapponaria*, auct. part.).

Male.—Tone of whole insect much blacker than its congeners. Fore wings subhyaline, with the ground area before the second line feebly provided with silvery white scales. First, second and median lines present, undecided, but fairly broad; median and second lines tending to fuse toward the lower margin; second line followed by feeble white line. A zigzag subterminal line intersects the more or less dark terminal band. Veins, especially those of the cell, black; costal groove black, mixed with orange-yellow scales. Fore wings fairly long, *rounded* at the tip. Hind wings hyaline, except for a few white scales at the base. Fringes narrow, black. Antennæ black, not pectinated to the apex. Head reddish, collar white, thorax and abdomen black, with fairly broad red median stripe; patagia outlined in white. Genitalia, tip of valve rounded.

Female.—Wings rudimentary, but longer than those of the other three species, provided with longish, stiff grey hairs. Body black, sprinkled everywhere, like the wings, with orange-red scales, only concentrated to form a median line on the thorax; a few scattered white scales may be present also; the whole provided with long rather coarse hair. Antennæ thick, heavily grey scaled, feebly pectinated when freshly emerged.

Types, one male and one female from Innsbruck, Tyrol.

A table giving the points of difference between this species and *P. pomonaria* and *P. lapponaria* is appended.

	<i>Pomonaria.</i>	<i>Isabelle.</i>	<i>Lapponaria.</i>	
OVUM	Small translucent	Fairly large; glaucous green, more opaque	As in <i>pomonaria</i>	
LARVA.	Young larva..	Black, with white spots and bars	Greenish; no spots, &c.	As in <i>pomonaria</i> , but with more white spots on spiracular stripe
	Second instar	Usual form of genus	Green; striped to mimic larch needles	As in <i>pomonaria</i>
	Full-grown ..	Short, stout; pattern decided; texture coarse; colour yellowish	Pattern nearly the same as in <i>pomonaria</i> . Ground purplish.	Longer; skin texture fine; stripes degraded as in <i>zonaria</i>
	Food.....	Oak — most forest trees	Larch—refuses other foods	Birch, <i>Erica</i> , <i>Myrica gale</i> , many trees and shrubs
PUPA	Red brown, rather polished	Yellower brown	As in <i>pomonaria</i> —shorter	
MALE IMAGO.	Antennæ	Tip clear	Tip clear	Pectinations indicated at tip
	Collar	Broad white	Narrow white	Black
	Thorax	Pattern as in description of <i>isabelle</i> , but coarser, and colours less decided; whole much paler	Pattern as described. Red median stripe and white outlines of patagia very clear	Much broader. No pattern, medio dorsal red stripe clear; fur paler laterally
	Fore wings ..	Long—tip rounded	As in <i>pomonaria</i>	Shorter and broader; tip angular
	Fringes	White; black spots at ends of veins; fairly broad	Narrow; black	Broad; silky dark fuscous, like <i>zonaria</i>
	Valves of genitalia	Tip rounded, as in <i>hirtaria</i>	As in <i>pomonaria</i> , but narrower	Tip with definite angle as in <i>zonaria</i>
FEMALE IMAGO.	Antennæ	Rather thin; black	Thick; pale	Thin; black
	Thorax and abdomen ..	Colour black, irregularly speckled with rusty scales. Hairs short pale	Scales redder, similarly scattered. Few pale scales. Hairs much longer and paler	Red scales definitely massed in a broad median stripe down both thorax & abdomen; hairs pale short
	Wings	Rudimentary, very short, with rusty scales and few pale hairs	Much longer; scales redder, but some almost white scales present. Hairs much longer	Variable in size, but never so long as in <i>isabelle</i> . Hairs darker and shorter
	Whole outline of insect	Long	As in <i>pomonaria</i>	Shorter and rounder

THE PSOCIDÆ OF NOTTINGHAMSHIRE.

BY J. W. CARR, M.A., F.L.S., F.G.S.

WHILE collecting Hemiptera during the last two summers a good many Psocids were obtained, and as no members of this family have hitherto been recorded for Nottinghamshire, a list of the species captured may be of some use as a contribution to our knowledge of the distribution in Britain of these delicate and interesting little insects. I am indebted to Mr. Kenneth J. Morton for his kindness in examining and identifying all my captures.

Amphigerontia variegata, Latr.—Common on trunk of sycamore tree in my garden at Sherwood, Nottingham; Thorney; both in August, 1913.

A. fasciata, Fab.—Near Edwinstowe, Sherwood Forest, June 12th, 1912.

A. bifasciata, Latr.—On hawthorn hedge, and commonly on trunk of sycamore in garden, Sherwood, Nottingham, July 17th to August 10th, 1913; swept from *Calluna* near Edwinstowe, Sherwood Forest, September 25th, 1913.

Psocus nebulosus, Steph., and *P. longicornis*, Fab.—Thorney, August 15th–19th, 1913 (L. A. Carr).

Stenopsocus immaculatus, Steph.—Aspley Woods, near Nottingham; The Dumbles, Kirkby-in-Ashfield; Upton, near Southwell, on hawthorn; Normanton-on-the-Wolds and Plumtree, on *Salix*; Thorney; taken from June 28th to September 3rd, 1913. Taken also by F. M. Robinson in Bulcote Wood, October 16th, 1913.

Graphopsocus cruciatus, L.—Common. Aspley and Beauvale Woods, July, 1912; Fiskerton; Kingston Park; West Leake Hills; North Collingham; Widmerpool; Sherwood Forest, near Edwinstowe:—all in 1913 between July 25th and September 25th. Also taken by F. M. Robinson in Lambley Dumbles and at Papplewick, October 3rd–9th, 1913.

Mesopsocus unipunctatus, Müll.—Aspley Woods, near Nottingham; Sherwood Forest, near Edwinstowe: both June, 1912. Radcliffe-on-Trent; The Dumbles, Kirkby-in-Ashfield; Upton, near Southwell; Sherwood, Nottingham, June 21st to August 13th, 1913.

Philotarsus flaviceps, Steph.—West Leake Hills, August 21st, 1913.

Elipsocus westwoodi, McLach.—On trunk of sycamore tree in my garden, Sherwood, Nottingham; Arnold, near Nottingham; Upton, near Southwell; Widmerpool, on *Corylus*; Sherwood Forest, near Edwinstowe. Taken from July 12th to September 25th, 1913.

E. abietis, Kolbe.—Edwinstowe, Sherwood Forest, June, 1912; Fiskerton, on oak; Arnold, on oak; Epperstone Park, on *Pteris* and on *Castanea*; Kingston Park, on *Salix*; North Collingham, on *Salix*; Thorney. All July to September, 1913.

E. cyanops, Rost.—Arnold, near Nottingham, July 24th, 1913; North Collingham, on hawthorn, August 25th, 1913.

Pterodela pedicularia, L.—Nottingham, common on windows and tables in my study, August 15th to 30th, 1913; also noticed, less commonly, throughout September.

Ectopsocus briggsi, McLach.—Widmerpool, on oak, August 18th, 1913.

Cæcilius flavidus, Steph.—West Leake Hills, abundant on oak, ash, and beech, August 10th, 1912, August 15th–21st, 1913; East Leake, August 11th, 1912; Edwinstowe, Sherwood Forest, August 30th, 1912; Thorney, August, 1913; Widmerpool, on oak, birch, and *Salix*, August 18th, 1913; North Collingham, on ash, August 25th, 1913.

C. burmeisteri, Brauer.—Thorney, August 15th–19th, 1913 (L. A. Carr).

Hyperetes guestfalicus, Kolbe.—Among papers in room at University College, Nottingham, December 13th, 1912.

Troctes divinatorius, Müll.—Also among papers in same room as last species, February 10th, 1913.

SYMPETRUM MERIDIONALE, SELYS, AND OTHER ODONATA.

BY C. W. BRACKEN, B.A., F.E.S.

A FEW cases of insects formerly belonging to the veteran entomologist, Mr. G. C. Bignell, of Saltash, near Plymouth, came into my possession after his death. Among them was a store-box of Neuroptera (*sensu lato*), collected by the Rev. T. A. Marshall, of Botus-Fleming, Cornwall, who died in 1903. On going through this recently I found a *Sympetrum* labelled *vulgatum*, Swanage, no date. As there were no *striolatum* in the box, I concluded that Marshall either intended it for the latter species, using the older name, or that he had really taken *vulgatum*, a rare occurrence. I sent the insect to Mr. W. J. Lucas, who is of opinion that it is neither *vulgatum* nor *striolatum* but *meridionale*. If so, the specimen is of considerable interest, since Mr. Lucas, in his 'British Dragonflies,' says: "The claim of this insect to a position on the British list rests on two females of old date." Most of Marshall's specimens were Corsican, but there were several others from Swanage, including some fine *Orthetrum cancellatum*. It may be worth mentioning that one of the Corsican *O. cærulescens* has the left anterior wing much abbreviated. The right wing is 28 mm. long, the left only 20 mm., the pterostigma being about the same distance from the body on each side.

Plymouth.

CONTINENTAL INSECTS OF VARIOUS ORDERS
TAKEN BY DR. T. A. CHAPMAN IN 1913.

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



Pupa-skin of *Ascalaphus coccajus*. Magnification a little over $2\frac{1}{2}$ nat. size.

One antenna could not be withdrawn, and it is shown broken, or bitten off. The pupal-jaws are well seen; and it must be borne in mind that they were worked by the imaginal jaws that were not then withdrawn from them. The pupal-skin is very ethereal, as can easily be seen. The head has become detached from the body.

AFTER each of two entomological excursions to the Continent in 1913, Dr. Chapman was kind enough to give me a small collection of insects, which he was able to take, belonging to the less-known Natural Orders. In April, May, and June, he visited the Rhone valley in Switzerland and the district of the Italian Lakes, and this first collection contained insects from Sierre (1760 ft.) in the Rhone valley, from Locarno (680 ft.) on Lago Maggiore in Switzerland, and from Pallanza (680 ft.), also on Lago Maggiore, but in Italy.

In July and August the scene of operations was transferred to France, and the second collection contained insects from Lautaret (6790 ft.) and Bourg d'Oisans (2360 ft.) in Dauphiné. The former is a well-known botanical and entomological locality, and the latter is in the valley of the Rimauche, on the way up to Lautaret.

My thanks are due to Mr. K. J. Morton for naming a number of the specimens.

FIRST COLLECTION.

Plecoptera.

Nemoura marginata. Locarno, April.

N. cinerea. Locarno, April.

- **N. lateralis*. Locarno, April.
N. variegata. Pallanza, May 19th–26th.

Odonata (= Paraneuroptera).

Libellula quadrimaculata. Two males and three females in more or less teneral condition; Locarno, April. One male possessed strongly developed nodal spots and longitudinal saffron suffusion, but was otherwise normal; the others were of the var. *præumbila*, some being of a more pronounced type than the others.

- **Orthetrum brunneum*. One male; Sierre, May 27th–June 2nd.
Cordulia ænea. One female; Sierre, May 27th–June 2nd.
Æschna isosceles. One male; Sierre, May 27th–June 2nd.
Pyrrhosoma nymphula. One female; Sierre, May 27th–June 2nd.
Ischnura elegans. One male; Locarno, April; one male; Sierre, May 27th–June 2nd.
Enallagma cyathigerum. Two males; Sierre, May 27th–June 2nd.

Neuroptera.

- **Ascalaphus coccajus*. Four males; Sierre, May 27th–June 2nd. One of these was accompanied by the very delicate pupa-skin. In emerging it appears that one antenna stuck fast in its case (figure). It is well-developed but is broken off, the knob and part of the shank remaining in the case. Dr. Chapman thinks this is not an isolated occurrence, and that the insect, when confronted with the difficulty, itself bites off the antenna.
Sialis lutaria. Three; Locarno, April.
Raphidia notata. One female; Sierre, May 27th–June 2nd.
Chrysopa perla. One; Locarno, April.

Trichoptera.

- **Plitocolepus granulatus*. Two; Locarno, April.
 **Philopotamus ludificatus*. One; Locarno, April; one; Pallanza, May 19th–26th.

SECOND COLLECTION.

Orthoptera.

Omocestus rufipes. One; Bourg d'Oisans, August 6th–21st.

Plecoptera.

Nemoura inconspicua. Two females; Lautaret, July 22nd–August 5th.
N. variegata. One male; Lautaret, July 22nd–August 5th.

Odonata (= Paraneuroptera).

Æschna juncea. One female; Lautaret, July 22nd–August 5th.
Sympetrum vulgatum. Four males and three females; Bourg d'Oisans, August 6th–21st. Most of these were teneral in condition to a greater or less degree, and pale in colour.

Neuroptera.

Hemerobius quadrifasciatus. One; Lautaret, July 22nd–August 5th.

Chrysopa vulgaris. Two; Lautaret, July 22nd–August 5th.

Panorpa germanica. One female; Bourg d'Oisans, August 6th–21st.

Trichoptera.

Stenophylax latipennis. One; Bourg d'Oisans, August 6th–21st.

**S. ucnorum*. One male and two females; Lautaret, July 22nd–August 5th.

**Metanæa chapmani*. Three males and one female; Lautaret, July 22nd–August 5th. This is a new species, and has been described by Mr. K. J. Morton (*antea*, p. 49), where details of structure are figured.

Apatania fimbriata. One male; Lautaret, July 22nd–August 5th.

**Sericostoma pedemontanum*. One female; Lautaret, July 22nd–August 5th.

Beræa pullata. One male; Lautaret, July 22nd–August 5th.

**Rhyacophila albardana*. One male and one female; Lautaret, July 22nd–August 5th.

The species marked with an asterisk (*) do not belong to the British fauna.

Kingston-on-Thames: February, 1914.

NOTES ON THE METAMORPHOSIS OF *PHASGONURA VIRIDISSIMA*, L. [ORTHOPTERA.]

By ANDREW B. LUVONI.

ON June 22nd of last year a female nymph of this species was obtained while sweeping some long grass in a field at Westeliff, Essex. Judging by its development after subsequent moults, it would appear to have been at about the second or third moult when captured, the ovipositor being about 3 mm. long, and the wings barely noticeable. It was placed in a cage together with an assortment of plants likely to be found in its natural haunts; such as various species of grass, dandelion, knapweed, bindweed, and one or two kinds of buttercup. The following day it was found to have been feeding freely on the common creeping buttercup (*Ranunculus repens*), an operation it apparently performed at night or in the early morning, as I never succeeded in observing it in the act. On visiting the locality later, from which this specimen was obtained, I found the above-mentioned plant growing in profusion, and, therefore, it seems highly probable that this is its food-plant in a state of nature. On June 25th it moulted, the ovipositor then measuring

6 mm., and the wings 3 mm. The next moult occurred on July 10th, the dimensions increasing to—ovipositor 15 mm., wings 9 mm., and total length 34 mm. The antennæ, which were damaged and of unequal length before, became normal after the second moult. It greatly appreciated being placed in the sun, leaning over on one side and extending the long jumping legs to expose as much of its body as possible. These sun-baths appeared necessary after each moult to enable it to acquire firmness and proper coloration, an operation extending over a period of about two days. For three days before a moult the nymph ceased to feed, and became sluggish and whitish in colour, somewhat after the style of a snake before sloughing its skin.

The empty nymph skin was always eaten immediately after being cast, this employing the insect about an hour and a half, the skin of the large hind legs being eaten last. The final moult took place on July 31st at about 6.30 a.m. The imago, after eating the empty skin, clung for some time to the grass stems to allow the wings to unfold and attain their proper development. This specimen when taken in the hand would bite fiercely with the mandibles, occasionally retaining its hold until set at liberty.

ADDITIONS TO THE LIST OF KENT APHIDIDÆ.

BY FRED. V. THEOBALD, M.A., F.E.S., Hon. F.R.H.S., &c.

DURING the past two years I have found or identified from material previously collected the following Aphides, so far not recorded from Kent, and some of which are new to the British fauna. Several new species of *Macrosiphum* have been described since the previous list, and these are also included here.

The year 1913 was noticeable for three things: first, the comparative paucity of the species of Aphides to be found, secondly, the presence of numbers of sexuparæ in the autumn months, and thirdly, the vast numbers of three or four species. Most abundant and harmful of all has been *Aphis sorbi*, which did untold damage to the apple crop; next in importance has been *A. abietina*, Walker, which has been most harmful to the Sitka and Norway spruces in Ireland and parts of the South of England, in many cases causing complete defoliation. This is one of the species which breeds entirely viviparously, no sexuparæ having been found, whilst parthenogenetic females occur right through the winter. So far no sexuparæ have been found of *A. gossypii*, Glover, the so-called Cotton Aphis, which is recorded here for the first time in Britain. Only once have I

found oviparous females, also of the Woolly Aphis (*Eriosoma lanigera*, Hausmann), and as far as recent experiments go that I have carried out, there does not appear to be any migration between the elm and the apple in this country, as has been shown to occur in America by Miss Edith Patch. Moreover, I have had one badly attacked apple tree netted for some three years, and no alatae whatever have appeared. Reproduction without sexuparæ in some species may evidently occur for a long time. The list given here does not include any fresh localities for the Aphides of Kent so far recorded (*vide* 'Entomologist,' January, 1911, pp. 16-21, and November, 1911, and January, 1912), only new species found in the county.

Genus MACROSIPHUM, Passerini.

Macrosiphum taraxaci, Kaltentbach.—On dandelion (*Leontodon taraxacum*). Wye, June 17th, 1911, and July 20th, 1912; Blean Wood, July 7th, 1912.

M. duffieldii, Theobald.—On tulips, March 27th, 1913. Maidstone, many alatae and apterae of this beautifully marked species brought me by Mr. Adrian Duffield, and others sent by Mr. Bunyard.

M. primulae, Theobald.—On cultivated primulas and on the wild primrose in gardens. Maidstone, March 27th, 1913; Stouting, near Hythe, April 28th, 1913 (A. Duffield); Wye, June 26th, 1913.

M. betae, Theobald.—On mangolds, beetroots, sugar beet, and several wild *Chenopodiaceae*. Herne Bay, July 4th, 1911; Wye, July 2nd-14th, 1911; Faversham, July 4th, 1911; Dover, July 4th, 1911; Bromley, July 2nd, 1911, and Thanet generally; Tonbridge, July 26th, 1913.

M. arundinis, Theobald.—On *Arundo phragmitis*. Wye, August, 1912; Romney Marsh, July 17th, 1913, in small colonies.

M. graminis, Theobald.—On meadow foxtail and Timothy grasses; Wye, August 23th, 1911, evidently very uncommon.

M. rubiellum, Theobald.—On bramble (*Rubus fruticosus*) and raspberry (*R. idaeus*), May to June. Wye, Ashford, Paddock Wood, Tonbridge, Maidstone, Ramsgate, abundant.

M. malvae, Mosley.—On *Malva sylvestris* and *Malva*, sp.? Wye, June 7th, 1913, two alate females.

M. trifolii, Theobald.—On *Trifolium procumbens*. Wye, August, 1912, in small numbers.

M. loti, Theobald.—On *Lotus corniculatus*. Wye, July and August, 1912 and 1913. Alatae and apterae in the last year.

M. stellarica, Theobald.—On *Stellaria*, spp. Wye, May, 1912. I found this species in vast numbers in alate form at Bramley, in Surrey, in May, 1913. This was erroneously placed under Schrank's name (Entom. December, 1911).

M. cratægarium, Walker.—On hawthorn. Wye, June 7th, 1911, and July 1st, 1911.

M. sileneum, Theobald.—On *Silene inflata*. Wye, July 10th, 1911, and August 14th, 1912. A few isolated specimens.

M. aquilegiæ, Theobald.—On cultivated columbines. Stouting, near Hythe, April 28th, 1913. Collected by Mr. Adrian Duffield; Wye, March 24th, 1912, and June 17th, 1912.

M. veronicæ, Theobald.—On *Veronica beccabunga*. Wye, May 22nd, 1912.

M. longipennis, Buckton.—On water grass. Romney Marsh, June, 1910.

M. diplantereæ, Koch.—On *Malva*, sp.? Wye, June 9th, 1911.

Genus APHIS, Linnæus.

Aphis galii, Koch.—On bedstraw (*Galium*, sp.?). Wye, June 7th, 1913; Crundale, June 14th, 1913; Folkestone, June 27th, 1913, alatae and apterae in dense clusters.

A. beccabungæ, Koch.—On *Veronica beccabunga*. Wye, June 19th, 1911. A few apterae and one alate female scattered about on the flower stalks and leaves.

A. polygoni, V. d. Goot.—On *Polygonum*, sp.? Wye, July 20th, 1911. A single alate female, with a few lice.

A. petasitidis, Buckton.—On *Tussilago petasites*. Herne Bay, July 14th, 1911. I took two alate females of this species, but have failed to find it since then.

A. nasturtii, Kaltenbach.—On watercress. Wye, July 20th, 1911; August 7th, 1912, and July 7th, 1913, on the flower heads; numerous apterae in 1913, but only two alatae.

A. padi, Reaumur.—On bird cherry, Bearstead, October 18th, 1913. Large numbers of sexuparae sent me by Mr. E. E. Green. The oviparous females were depositing their ova on the leaves, and continued to do so until the end of the month; the ova remain firmly attached to the leaves which fall. Males also present.

A. ranunculi, Kaltenbach.—On dandelion roots, with ants in attendance. Wye, October 22nd, 1911.

A. gossypii, Glover.—On cucumbers under glass, and on marrows in the open. Wye, June 7th, 1913, and July 8th, 1913. I have also received this aphid from other localities in England. It is commonly known as the Cotton and Melon Aphid, and does much harm to that crop in America, Africa, &c. It is now well known in Russia, and is probably one of the world-wide species.

Genus MYZUS, Passerini.

Myzus rosarum, Kaltenbach.—On roses. Wye, May 10th, 1912.

M. pyri, Koch.—On pears. Wye, September 7th, 1913. I

found the oviparous females laying their ova firmly fixed to the leaves in my garden, but could not find a male.

M. whitei, Theobald.—On currants, Beltring, Paddock Wood, July 13th, 1912. Alatæ only.

Genus RHOPALOSIPHUM, Koch.

Rhopalosiphum staphyleæ, Koch.—On *Malva* sp.? Wye, June 7th, 1913. One alate female.

R. loniceræ, Siebold.—On *Lapsana communis*. Wye, July 4th, 1913.

Genus SIPHOCORYNE, Passerini.

Siphocoryne pastinacæ, Koch.—On various Umbelliferæ, with *S. capreæ*. Wye, July 4th, 1911; Faversham, August 2nd, 1912.

S. fœniculi.—On fennel. Abundant at Sevenoaks in June, 1912 and 1913; smothering the plants.

Genus PHORODON, Passerini.

Phorodon inulæ, Passerini.—On *Inula dysenterica*. Wye, October 18th, 1913. The oviparous females laying their ova firmly fixed on the leaves, and a few on *Potentilla acerina*.

Genus HYALOPTERUS, Koch.

Hyalopterus melanocephalus, Buckton.—On *Silene inflata*. Whitstable, July 23rd, 1913.

Genus LACHNUS, Illiger.

Lachnus (Eulachnus) agilis, Kaltenbach.—On *Pinus sylvestris*. Wye, May 20th, 1913.

L. (Lachniella) juniperi signata, Del Guercio.—On junipers. Wye Downs, June, 1913. Collected by Mr. Duffield; many alatae.

Genus CHAITOPHORUS, Koch.

Chaitophorus coriaceus, Koch.—On sycamore. Wye, May 14th, 1913.

C. populus, Linnæus.—On poplars. Wye, July 21st, 1913.

Genus VACUNA, Heyden.

Vacuna betulæ, Kaltenbach.—On birch. The Warren, Ashford, June 12th, 1913; and Wye, June 22nd, 1913. Buckton's *Thelaxes betulina* from Guestling is only this species.

Genus BRYSOCRYPTA, Haliday.

Brysocrypta bumeliæ, Schrank.—On ash. Wye, July 3rd, 1912; a few apteræ on leaf petioles.

Genus TRAMA, Heyden.

Trama radialis, Kaltenbach.—On roots of artichokes with ants. Wye, December 14th, 1913. Masses of apteræ and nymphæ, one, a late female, hatched on February 7th, 1914.

In addition to these species new to Kent, I may mention that *Rhopalosiphum nymphææ*, Linnæus, occurred in quantity on *Alisma* at Wye in July, 1911, and July, 1913, and also at Norwich in 1912; and *Melanoxantherium salicis*, Linnæus, in 1913 near the ponds on Romney Marsh. I have also found the large *Lachnus piceæ*, Walker, on one spruce in large numbers at Tunbridge Wells, and these suddenly disappeared when alatae, as in previous years when I have found this species.

NOTES AND OBSERVATIONS.

PRIONUS CORIARIUS IN EPPING FOREST.—The past season seems to have been very favourable for this beetle, as I captured three fine specimens during the last week in July. Two of these were males, and they were found resting upon the boles of a very large oak tree; at the base of the trunk were a few holes, three of these being in the earth, out of which the insects must have emerged, as it is well known that the larvæ feed within the underground roots. The female, which is very large, was taken at some ear lamps, and is the second one I have taken this way. Although this insect is so large, it is fairly inconspicuous during the day when at rest upon trees, as it seems to have a good protective resemblance. My personal experience of the insect seems to point to its increase of late years in the Forest, as I have taken seven during the last three years—four males and three females.—H. E. HUNT; 255, Chingford Road, Walthamstow, Essex.

DELAYED EMERGENCE OF SATURNIA PAVONIA (CARPINI).—From a few ova, received from a friend at the New Forest, I reared a few larvæ of this species, sixteen in all, during the summer of 1912; all of these spun up as usual, but only four imagines emerged last April—three males and one female. The rest of the pupæ are laying over and are quite healthy, and I hope to get the moths out during the coming season.—H. E. HUNT; 255, Chingford Road, Walthamstow, Essex, January 30th, 1914.

NOTES ON "COURTSHIP" OF GOMPHOCERUS MACULATUS (ORTHOPTERA) AT CRAIGTON, LINLITHGOWSHIRE.—On August 8th, 1913, many *G. maculatus* were stridulating. Hearing one individual emitting an occasional single note in addition to the ordinary "song," I approached cautiously, and witnessed the following little incident. A male and female *G. maculatus* were settled side by side in close proximity, the female almost motionless, and the male

stridulating at intervals, for the most part in a very low tone, only just audible at the distance of a few inches. Every now and then he made a single abrupt movement of the thighs, thus causing the short, single note which had first attracted my attention; this sound was usually made by only one leg. For some minutes the two maintained their relative positions, only altered slightly by small movements of the male. Occasionally the latter extended his low call into the full normal song. Apparently attracted by the last a second male soon came hurrying up, pausing once or twice to call by the way. On his approach the first male moved aside somewhat, later commencing to feed. Number two settled face to face with the female, and uttered the soft call as the other had done. The female now began to show symptoms of boredom, and, cutting off a long stem of grass with her mandibles, proceeded leisurely to munch it up. When finished, she walked slowly off, and was not followed by either male, although number two raised his voice to a louder pitch as the female increased her distance, as if in the vain hope of arresting her attention. A few yards further on the female was accosted by a third and more excitable male, and a repetition of the previous scene took place. For nearly three-quarters of an hour the male did his utmost to please his prospective partner, singing his soft song almost incessantly, and frequently swaying his body from side to side in a most curious manner. The relative positions of the two varied, the male being sometimes face to face with the other, but as frequently by her side. He was always cautious not to approach too closely, as, when he seemed too pressing in his attentions, the female moved abruptly off, although otherwise quiescent. At considerable intervals of time the male broke into the loud song, always prefixing it by the short single note. The incident was at length terminated by the female suddenly leaping off to some distance, leaving the disconsolate male alone. Truly courtship in *G. maculatus* requires patience!—S. E. BROCK; Kirkliston, Linlithgowshire, January, 1914.

PYRAMEIS ATALANTA IN FEBRUARY.—When walking along the edge of Ironhill enclosure this morning I was rather surprised to see a butterfly which, flying past me, settled on the sandy bank of the enclosure. A nearer approach proved it to be *Pyrameis atalanta*. I watched the insect for some little time at a distance of a couple of yards or so, and left it still basking in the bright sunshine.—G. LYLE; Brockenhurst, February 1st, 1914.

GLOUCESTERSHIRE LIST OF LEPIDOPTERA.—On looking through Hudd's 'List of Lepidoptera of the Bristol District,' I find no mention of *Epunda litulenta* in Gloucestershire. I captured three at sugar here in Pucklechurch in September, 1908. I do not know if this is a new record, as Hudd's list is a little out of date.—B. A. CONEY; Pucklechurch, Gloucestershire, February 12th, 1914.

ABRAXAS GROSSULARIATA IN DECEMBER.—On December 14th, 1913, I took a freshly emerged *Abraxas grossulariata* at rest on

a wall in Eastbourne. It was not near a greenhouse.—S. A. CHARLES; 170, Mayfield Place, Eastbourne.

ABRAXAS GROSSULARIATA IN DECEMBER.—I have to record the capture of a specimen of *Abraxas grossulariata*, as it was flying through the arches of Ravenscourt Park Station on December 4th, 1913, about 4 p.m. It was a good specimen, not crippled in any way, and rather a large one. It was flying perhaps a trifle weakly, but strongly enough to fly out of reach the moment I let it go. I regret now that I did not keep the specimen.—C. W. WHALL; 19, Shaftesbury Road, Ravenscourt Park, W.

[A second brood of this species was recorded in 1903 (Entom. xxxvi. pp. 289, 318).—ED.]

LEPIDOPTERA OF THE ISLE OF SKYE.—As I propose to visit the Isle of Skye next July, I should be glad to know what one might expect to meet with in the way of moths and butterflies during the month in that locality.—(Major) R. B. ROBERTSON; Hillingbury Cottage, Chandler's Ford, Hants.

RETARDED EMERGENCE OF PARAGE EGERIA.—At the end of last June I took a female *P. egeria* and she laid a few eggs, which hatched in due course and fed up with the exception of four or five, which seemed as if they were going to die. I, however, placed them in another pot with grass, and they fed slowly, pupating at the end of October and in November, one at a time. I now have four pupæ, two look as if they were on the point of emergence, nearly black, and two still quite green; this being about three months in pupa state. It looks as if they were waiting for the spring before emerging. Has it ever been noted that this insect in a wild state passes the winter in the pupal state? Imagines from the larvæ which fed up began emerging on September 11th.—(Major) R. B. ROBERTSON; Chandler's Ford, Hants, February 6th, 1914.

ORRHODIA ERYTHROCEPHALA ab. GLABRA AT EASTBOURNE.—On November 30th *O. erythrocephala* ab. *glabra* came to sugar in a wood in this neighbourhood. This, I believe, is the first recorded capture in Sussex since the early seventies. Although a steady rain was falling, quite a number of insects visited my patches. I sugared on several evenings during the first fortnight of December, but with no further success.—EDWIN P. SHARP.

HEMIMENE (DICHORORAMPHA) TANACETI (HERBOSANA) NOT IN GLOUCESTERSHIRE.—Referring to my note (Entom. xlv. p. 101) I find that the specimens therein recorded must be referred to the second brood of *Hemimene (Dichrorampha) acuminatana*, and that we cannot yet claim *herbosana* as a Gloucestershire insect.—C. GRANVILLE CLUTTERBUCK, F.E.S.; 23, Heathville Road, Gloucester, January 16th, 1914.

PLEBEIUS (LYCENA) MEDON (ASTRANCHE) IN DOVEDALE.—With further reference to the occurrence of this insect in Dovedale noted

by Dr. St. John (Entom. xlv. p. 314) last year, and by Mr. G. T. Bethune-Baker (p. 39 in your last issue) in July, 1908, we used to take it there frequently thirty years ago, and I have heard of it several times since. The Derbyshire limestone seems to produce some pretty female examples of *Lycæna icarus*, for I found a very fine race on difficult ground in the Via Gellia on June 5th, 1911, and the only female captured was very beautiful. *Ino (Adscita) geryon* was taken at the same time.—G. HANSON SALE; Littleover House, Littleover, Derby.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, December 3rd, 1913.*—Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., President, in the chair.—Mr. Walter Ormiston, of Kalupahani, Haldumille, Ceylon, was elected a Fellow of the Society.—Dr. G. B. Longstaff presented to the Society, on behalf of a number of subscribers, a copy of Hübner's 'Exotische Schmetterlinge,' original edition.—Mr. G. T. Porritt exhibited two curious specimens of *Abraxas grossulariata*.—Miss Diana R. Wilson, who was present as a visitor, butterflies caught in Brazil this year, during the last week of January and the first week of February.—Prof. Poulton, eight examples of *Episcaphula interrupta*, Lac., found in one clay cell, and eleven examples found in another, by Mr. C. O. Farquharson, B.Sc., at Moor Plantation, near Ibadan, S. Nigeria. He also read notes received from Mr. Lamborn, on the Driver Ants (*Dorylus*) of Southern Nigeria, and exhibited the material referred to.—Dr. K. Jordan, a series of species of the two groups of Papilios called by Haase *Cosmodesmus* and *Pharmacophagus* respectively.—Mr. Champion, a specimen of *Thorictus parciseta*, Wasm., attached to the scape of the left antenna of a worker of an ant, *Myrmecocystus viaticus*, F.—Mr. W. C. Crawley, (1) Three dealated females of *L. niger*, L., taken Isle of Wight, July, 1911; these, after rearing workers, fought until only one survived. (2) A female of *Aphænogaster subterranea*, Latr., taken August, 1912, at Yvorne with Prof. Forel, after marriage-flight, brought up two workers by September, 1913. (3) Six females of *L. flavus*, Fabr., taken after marriage-flight at Seaton, July 14th, 1912. They built a cell together and brought up workers, by June 23rd, 1913.—Mr. O. E. Janson, specimens of *Laglasia caloptera*, Bigot, one of the curious forms of Diptera with stalked eyes, from Dutch New Guinea.—Capt. E. B. Purefoy, two more specimens of *Gonepteryx cleopatra* with gynandromorphous colouring.—Mr. E. B. Ashby, a number of Nearctic butterflies.—Mr. W. J. Kaye, a very large series of specimens of *Heliconius anderida*, ranging into a number of forms which tended to become fairly definite subspecies in different geographical regions.—Dr. H. Eltringham gave a preliminary account of the scent apparatus in *Amauris egialea*, comparing the same with that of *A. niavius*, illustrated by drawings, and microphotographs of sections of the brush.—The following paper was read: "New Species of South

American Butterflies," by W. F. H. Rosenberg, F.E.S., and G. Talbot, F.E.S. Mr. Talbot made exhibits in connection with this paper.

Wednesday, January 21st, 1914.—Annual Meeting.—Mr. G. T. Bethune-Baker, F.Z.S., F.L.S., President, in the chair.—No other names having been received in addition to those proposed by the Council as Officers and Council for the ensuing year, the latter were declared by the President to be elected.—Mr. R. W. Lloyd, one of the Auditors, read the Auditors' Report, which was adopted on the motion of Mr. H. E. Page, seconded by Mr. J. Platt Barrett.—The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. R. S. Standen, seconded by Mr. R. W. Lloyd.—The President then delivered an address, after which Prof. Poulton moved a vote of thanks to him, coupled with the request that he would allow the Address to be printed as a part of the Society's Proceedings; this was seconded by Mr. W. J. Lucas and carried by acclamation.—The President returned thanks and Mr. O. E. Janson then proposed a vote of thanks to the other officers for their services during the past year; this was seconded by Mr. T. F. P. Hoar and carried; the Treasurer and the two Secretaries returning thanks in a few words.—GEORGE WHEELER, M.A., *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—December 12th, 1913.—Mr. A. E. Tonge, President, in the chair.—Mr. Tatchell, of Bournemouth, was elected a member.—Mr. W. J. Kaye read a paper, "The Ithomiinæ," and illustrated it with a fine selection of examples of the different groups of the subfamily.—Mr. Hall reported a case of the occurrence of the "furniture mite," and asked how the pest could be effectively dealt with.—Mr. Step, a box of Diptera, chiefly Syrphidæ, taken at flowers of Michaelmas Daisy in October and December.—Mr. R. Adkin, a series of *Nemeophila plantaginis* bred from ova laid by a Grasmere female in July, 1912. One larva fed up and pupated in September, and the imago came out on Oct. 27th. The rest hibernated several together in the *débris* of the cage, and emerged in due course the following June.—He also showed four *Mellinia ocellaris*, presented to the Society by Mr. H. Worsley-Wood.—Mr. Curwen, a series of *Erebia ceto* near the form *ab. obscura* from the Simplon Pass.—Mr. Carr, a collection of Lepidoptera from Staffordshire and N. Wales, including very strongly marked forms of *Acidalia marginepunctata*, and some nicely banded examples of *Melanippe tristata*.—Mr. Adkin read a Report of the Annual Conference of Delegates of Societies affiliated to the British Association.

January 8th, 1914.—Mr. W. J. Kaye, F.E.S., Vice-President, in the chair.—Messrs. D. A. Gotch, of Northampton; A. Leeds, of Knebworth; W. H. Jackson, of Wimbledon; and T. H. Archer, of Southfields, were elected members.—Mr. Hugh Main gave an interesting account of his holiday in Switzerland in 1913, entitled "The Brunig Road," and illustrated his address with a large number of lantern

slides, made mainly from his own photographs.—Mr. Step, a photograph by Mr. West (Ashtead), of the "furniture mite" *Glyciphagus cursor*.

January 22nd, 1914.—Annual Meeting.—Mr. A. E. Tonge, F.E.S., President, in the chair.—The Balance Sheet and Report of the Council were received and adopted, and the Officers and Council for the coming year were declared elected.—The President read his Annual Address, and after giving an account of the present status of the Society, dealt at considerable length with some phases of his special study of the ova of Lepidoptera, particularly wild-laid ova.—The usual votes of thanks were accorded, and the new President, Mr. B. H. Smith, took the chair.—Mr. Newman exhibited a small specimen of *Leucania pallens*, taken at sugar at Newark, with three well-developed antennæ, of which one was much thicker than usual, and towards the tip was bifid.—HY. J. TURNER, *Hon. Rep. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Annual Meeting of the Society held at the Royal Institution, Colquhoun Street, Liverpool, December 15th, 1913, the President, Mr. F. N. Pierce, in the chair.—Mr. John M. Wilding, 52a, Orrell Lane, Liverpool, was elected a member of the Society.—The following members were elected Officers and Council for next year, *viz.*:—President, R. Wilding; Vice-Presidents, F. N. Pierce, F.E.S., R. Newstead, F.R.S., M.Sc., J. R. le B. Tomlin, M.A., F.E.S., H. R. Sweeting, M.A.; Hon. Treasurer, J. Cotton; Librarian, F. N. Pierce; Hon. Secretary, Wm. Mansbridge, F.E.S.; Council, L. West, H. S. Leigh, F.E.S., A. E. Gibbs, F.L.S., F.E.S.; A. W. Boyd, M.A., F.E.S., C. E. Stott, P. F. Tinne, M.A., S. P. Doudney, Wm. Webster, R. S. Bagnall, F.L.S., F.E.S.—Mr. F. N. Pierce delivered the Presidential Address, taking for his subject "The Hairs and Scales of Lepidoptera." The President described in detail his original observations upon this branch of insect morphology, and illustrated the same by many drawings and microscopic preparations. In the course of his remarks he described a difference he had found between certain scales in *Tephrosia crepuscularia* and *biundularia* for exhibition, and stated that this was the only difference of a structural character he had been able to discover in these two species.—Mr. R. Wilding brought a specimen of *Eubolia bipunctaria* for exhibition, and stated that it was taken by himself so long ago as July, 1880, but he had never before recorded it. Captured at West Kirby, this is the second record of this unlikely moth for our two counties.—Dr. J. Cotton showed a number of colour photographs of Lepidoptera by the Paget process, and pointed out the advantages of these plates over the older processes.—WM. MANSBRIDGE, *Hon. Sec.*

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—Meetings held in the Manchester Museum.—October 1st, 1913.—The following exhibits were made:—Mr. R. Tait, Junr.: a long series of *Abraxas grossulariata* varieties bred during 1913, including var. *varleyata*; a fine series of the melanic variety of *Boarmia repandata* from Penmaenmawr, bred in 1913; a series of *Geometra papilionaria* bred from

Delamere larvæ; *Agrotis lucerneæ*, bred from Penmaenmawr; *Cucullia chamomillæ*, bred from Devonshire larvæ, and *Aplecta nebulosa* var. *robsoni* bred from Delamere larvæ, 1913.—Mr. W. P. Stocks: a large number of species, including *Lycæna argus* (= *ægon*), *Drepana falcataria*, *Anarta myrtilli*, and *Aspilates strigillaria* from Delamere; *Lobophora viretata*, *Ligdia adustata*, *Diaphora mendica*, *Asthena candidata*, *Leucania lithargyria*, *Tephrosia bistortata*, *Euclidia mi*, *Mamestra dentina*, *Eupithecia sobrinata*, *Numeria pulveraria*, &c., from Silverdale; *Semiothisa liturata*, *Acronycta menyanthidis*, &c., from Witherslack.—Mr. W. Buckley: a series of *Agrotis ashworthii* from N. Wales, including one that resembled *A. lucerneæ* superficially, and an asymmetrical example; a series of *Dianthæcia conspersa* from N. Wales. These had been two years in pupa and included two dark forms.—Mr. L. Nathan: *Lasiocampa quercus* from Ainsdale larvæ; *Phragmatobia fuliginosa* bred from the Isle of Man, &c.—Mr. V. Coryton: A large number of species taken and bred in Cheshire in 1913, including *Acronycta leporina*, *Tethea subtusa*, *Eupithecia fraxinata*, *E. absinthiata*, *Chesias spartiata*, &c., and a number of Micro-Lepidoptera.—Mr. J. H. Watson: a new *Philosamia* hybrid—*P. pryeri*, male, × *P. cynthia advena*, female, this being the reverse cross to the one named *pryadvena* in the Trans. Manch. Ent. Soc. 1912. Also *Parnassius apollo apollo* ex Gothland Is. and *P. apollo scandinavica* for comparison; also *P. apollo alpheraki* f. *magnifica* of Xsienschopolski.—Mr. J. E. Cope showed the following Coleoptera: Boll weevil from the Mississippi delta, 1913; *Anobium domesticum* from Ashton-under-Lyne, Lanes, July, 1913; *Atomaria atricapilla* from Ashton Moss, August, 1913; *Psammæchus* sp.—a foreign species caught on bananas; *Prionus* sp. from Toronto, Canada, August, 1912.

November 5th, 1913.—The following exhibits were made:—Mr. W. Mansbridge: a series of *Nyssia zonaria*, showing variation, from Crosby, Lancashire; bred series of *Ematurga atomaria*, showing black forms, both male and female, *Mamestra glauca* and *Coremia ferrugata* from Burnley; *Cænonympha typhon* and *Lycæna astrarche* (approaching var. *artaxerxes*) from Witherslack; *Parasemia plantaginis* from the South of England; *Boarmia repandata* from Delamere, the Liverpool district and Portsmouth.—Mr. B. H. Crabtree: a series from Hertfordshire of *Lycæna corydon*, female, var. *semi-syngrapha*, some females having very light under sides, and others having the pair of wings on one side smaller than those on the other side; a short series of under side varieties of *Lycæna bellargus* from Folkestone; very light yellow forms of *Ematurga atomaria* from Wansford; two under side varieties of *Lycæna astrarche* var. *artaxerxes*, with very few markings, from Aberdeen; a short series of very yellow forms of *Spilosoma menthastri* from Aberdeen, showing radiated markings; three varieties of *Melitæa aurinia* from Oban and County Clare.—Mr. C. F. Johnson: a long series of *Cænonympha typhon*, *Lycæna astrarche*, and *Acidalia fumata* from Witherslack; a long and varied series of *Aporophyla australis*, *Agrotis obelisca* and *Anhocelis lunosa*, and specimens of *Leucania vitellina* and *Triphæna subsequa*, all taken at Freshwater from September 7th to 16th, 1913.

—Mr. R. M. Pearce: *Lasiocampa quercus*, reared from ova to imagines on ivy in thirteen months, with ova, pupæ, and larvæ; bred *Lymantria dispar* with larvæ and pupæ; fourteen species of butterflies from Anglesea.—Mr. A. E. Wright: from Witherslack a number of species, including *Cyaniris argiolus*, *Lampropteryx suffumata*, *Triphosa dubitata*, *Eupithecia abbreviata*, *Eustroma silaceata*, *Tephrosia punctularia*, *Asthena candidata*, *Gnophos obscurata* (bred); from St. Anne's-on-Sea: a specimen of *Percnoptilota fluviata*, series of *Leucania littoralis*, *L. pallens* (red form), and *Miana literosa*, &c.; from Burnley: *Oporabia filigrammaria* and *Celena haworthii*.—Mr. R. Tait, Junr.; long series of *Agrotis agathina* bred from Delamere and N. Wales larvæ; *Noctua castanea* var. *neglecta* bred from Delamere larvæ; *Boarmia repandata* bred from Durham larvæ.—Mr. V. Coryton: *Chesias spartiata*, *Dilobia cæruleocephala* and *Oporabia dilutata* from Delamere; a dark var. of *Plusia gamma* from North Cheshire.—Mr. J. H. Watson: a new sub-species of *Antherea frithi* from the Andaman Islands, named *insularis* by him; he also showed three new *Philosamia* hybrids: *Philosamia* hybr. *andrei* = *P. cynthia canningi*, male, × *P. cynthia advena*, female; *Philosamia* hybr. *lastoursi* = *P. cynthia advena*, male, × *P. cynthia canningi*, female; *Philosamia* hybr. *oberthürri* = *P. pryeri*, male, × *P. cynthia advena*, female; together with their parents.

December 3rd, 1913.—Mr. B. H. Crabtree exhibited and gave notes on *Abraxas grossulariata* var. *varleyata*. A *varleyata* female paired with a type male produced fifty-six types; from these he bred a second brood in September, October, and November, including a good number of var. *varleyata*, both male and female. Some of these were splendid forms, showing some little variation *inter se*.—Mr. Buckley read some further notes on *Acidalia contiguaria*. It appears that a dark female paired with a light male is sterile in the second generation.—Mr. W. Mansbridge showed series of *Thera variata* and *T. obeliscata*.—Mr. W. B. Lees, an example of *Heliothis peltigera*, taken in Platt Fields Park, Manchester, on June 1st, 1913, and a red *Leucania pallens*, from Northenden.—Mr. R. Tait, Jr., autumn Lepidoptera from Monkswood.—Mr. A. W. Boyd, a short series of *Tanioscampa gracilis* and a pair of *Geometra papilionaria*, from Rostherne, Cheshire; also a few *Aspillates strigillaria* and *Aplecta nebulosa* (both type and var. *robsoni*), and an example of *Acronycta menyanthidis*, from Delamere.—Mr. J. H. Watson, a series of *Sagana zapotosa*, a Saturnid from Colombia, S. America, with cocoon and pupa; also the following forms of *Parnassius delius*:—ab. *herrichi*, *leonardi*, subsp. *styriaca*, from the Styrian Alps in Austria, and its ab. *confluens* (Hoff.).

January 7th, 1914.—Mr. J. H. Watson gave the Annual Presidential Address—"The History of our Entomological Science." He described the lives and works of many of the earliest zoologists and entomologists, and in many cases exhibited their original books. He surveyed entomological science from its origin to the present day.—Mr. J. E. R. Allen exhibited series of *Dianthæcia casia*, *D. cucubali*, and *D. capsophila*, from Donegal larvæ, and also *Abrostola tripartita* with var. *urticæ*, from Lancashire and Cheshire.

February 4th, 1914.—Mr. B. H. Crabtree showed three ichneumons bred from the larvæ of *Agrotis ashworthii*.—Mr. W. Mansbridge, a series of *Peronea hastiana*, selected from a large number bred from Ainsdale, on the Lancashire coast; these included vars. *divisana*, *mayrana*, *coronana*, *albistriana*, and unnamed melanic varieties.—Mr. H. Horsfall, two living larvæ taken in the open on February 1st: *Phragmatobia fuliginosa* and a small noctuid larva.—Mr. J. E. Cope, photographs of two Delamere localities and a few of the Coleoptera taken there: *Amara communis*, *Calathus melanocephalus*, *Byrrhus pilula*, *Chrysomela staphylea*, *Corymbites æneus*, *Barynotus schönherri*, *Apion violaceum*, and *A. ulicis*, *Phyllobius calcaratus* and *P. oblongus* from one locality; from birches in the other: *Athous hæmorrhoidalis*, *Dolopius marginatus*, *Clytus arietus*, *Deporans betulæ*, *Otiorrhynchus picipes*, *Strophosomus coryli* and *Phyllobius argentatus*.—The rest of the evening was occupied by a microscope exhibition. Several members brought microscopes and slides, and Mr. Buckley opened with a discussion on the methods of wet and dry mounting.—Mr. J. B. Garnett showed some remarkable Hymenoptera and Diptera.—A. W. Boyd, M.A., *Hon. Sec.*

RECENT LITERATURE.

Annals of Tropical Medicine and Parasitology. Series T.M., vol. vii., Nos. 3B and 4, November 7th, 1913, and December 30th, 1913. Liverpool.

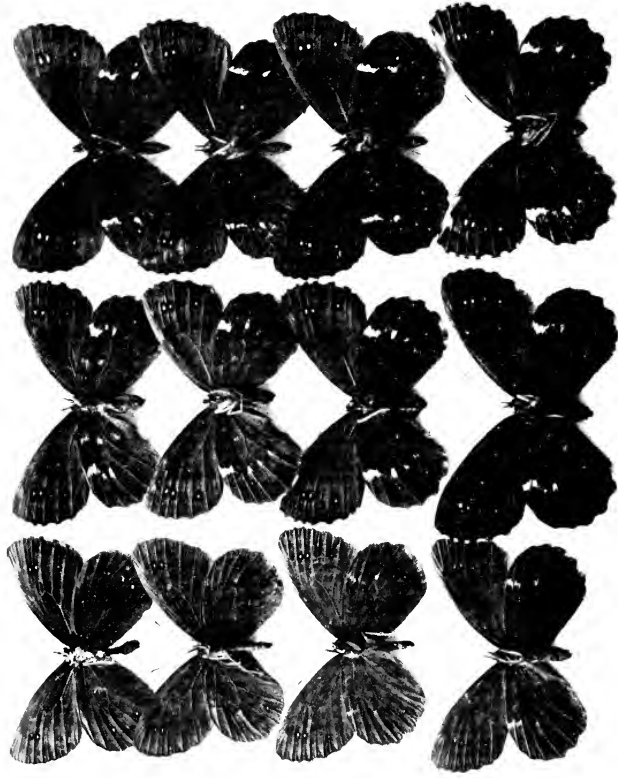
No. 3B contains nothing specially relating to Entomology. In No. 4, however, will be found:—(i) A paper on "Isle of Wight Disease," in connection with insects other than Hive-bees, by H. B. Fantham and Annie Porter; (ii) "Certain Mosquitos of the genera *Banksinella*, *Theobald*, and *Tæniorhynchus*, Arribalzaga," by H. F. Carter (well illustrated); (iii) "New Culicidæ from the Sudan," by F. V. Theobald; and (iv) "Parasite of *Stratiomyia chameleon* and *S. potamida* (Diptera), with remarks on the biology of the hosts," by H. B. Fantham and Annie Porter.

W. J. L.

The Forty-third Annual Report of the Entomological Society of Ontario for 1912. Toronto. 1913.

THOUGH containing no paper of striking importance, the 144 pages of this Report (with a number of illustrations) are replete with useful and interesting information touching various sides of entomology.

W. J. L.



EREBIA LIGEA, VAR. *ADYTE*, HB. TRANSITION TO TYPICAL *LIGEA*, L.
Left row: var. *adyte* (Lapland). Last of row parent of middle row. Middle row: Examples bred in Hamburg from Lapland parent. Last of row equal in size to average Harz *ligea*. Right row: *ligea* from Harz. Last of row bred in Hamburg.

THE ENTOMOLOGIST

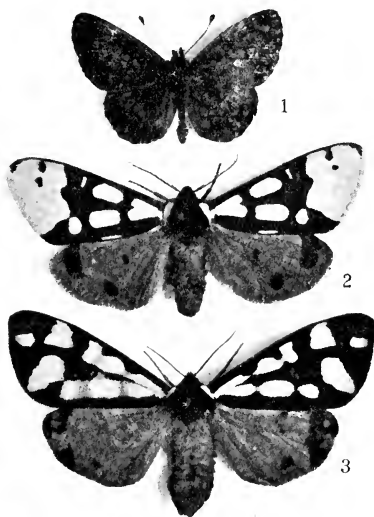
VOL. XLVII.]

APRIL, 1914.

[No. 611

ABERRATIONS OF *ARGYNNIS SELENE* AND *ARCTIA VILLICA*.

BY GERVASE F. MATHEW, Paymaster-in-Chief R.N., F.L.S., F.E.S.



THE above figures have been photographed from varieties captured or bred in this neighbourhood. No. 1 is a peculiar variety of *A. selene*, which was taken on June 10th, 1910. Its chief feature is the remarkable shape of its wings, which are much shorter, broader, and more rounded than in typical examples, and which caused it to fly in a very striking manner;

so much so that when first seen I thought it was some queer Geometer, and was surprised, after I had netted it, to find out what it was. Unfortunately, the photograph is rather blurred, and does not show the markings very clearly. The submarginal rows of black spots on both wings are much larger than usual, and those of the hind wings reach the apex of the marginal black chevrons. The disc is paler and not so heavily marked as in ordinary specimens. The markings on the under side are almost similar.

No. 2 is a beautiful variety of *A. villica*. The first example of this striking form was taken here more than twenty years ago. It was discovered by Colonel A. J. H. Ward, D.L., V.D., sitting on a bush in his garden; and he was so struck by its beauty that he sent and asked me to come and look at it, as he thought it might be of use to me. Of course I was delighted when I saw it, and boxed it at once! Since then I have bred a few, and nearly always of the same type; as it seems to be peculiar to this neighbourhood, I think it deserves a varietal name, and I have therefore called it *wardi* in honour of its finder. There is no need to give a description as the figure is so clear. It seems to be a very uncommon variety, for I have not bred many out of the hundreds of larvæ I have reared year after year. In addition to this form, I have bred one or two nice specimens having the basal spots of upper wings united.

No. 3 is an extremely beautiful and asymmetrical variety, and was the only variety bred out of some two hundred larvæ I reared last season.

Lee House, Dovercourt, February 7th, 1914.

NEW AND LITTLE KNOWN BEES.

By T. D. A. COCKERELL.

Anthophorula bruneri (Crawford).

Dallas, Texas, on *Helianthus*, September 22nd, 1905, four males (F. C. Bishopp).

Anthophorula morgani, sp. nov.

♀. Length 6 mm. or slightly over; black, closely related to *A. bruneri*, but differing thus: smaller (size of male *bruneri*); wings greyish, nervures and stigma dull dusky reddish (stigma in *bruneri* is clear amber); hair on inner side of hind basitarsus dark fuscous; abdominal hair-bands whiter. The dusky stigma, dark tegulæ and well punctured mesothorax readily separate it from *A. texana* (Friese). The well punctured mesothorax separates it at once from *A. coquilletti* (Ashm.). From *A. compactula* (Ckll.) it is known by the less brightly coloured flagellum, the black or piceous tegulæ, and the broad,

shining, hardly punctured hind margin of first abdominal segment. There are three submarginal cells.

Hab. Falfurrias, Texas, on *Helianthus*, May 18th, 1907 (A. C. Morgan).

Exomalopsis frederici, sp. nov.

♂. Length about $8\frac{1}{2}$ mm., expanse 16; black, mandibles dark red except at base, tibiæ at apex, and the tarsi ferruginous; hair of head and thorax long and abundant, shining white on face, cheeks and under side of thorax, fulvous on head and thorax above, very bright on anterior half of mesothorax; flagellum obscure brown beneath; vertex shining; ocelli large, in a scarcely curved line; mesothorax closely and distinctly punctured, except on disc posteriorly, where it is shining and sparsely punctured; base of metathorax with strong punctures and small shining spaces; tegulæ bright reddish-amber; wings clear, dusky at apex, stigma and nervures clear amber-colour; stigma large; b. n. going far basad of t. m.; second s. m. broad, receiving first r. n. far beyond middle; legs with pale hair, fulvous on inner side of tarsi, middle and hind tibiæ with dark fuscous hair on outer side; hind tibiæ thick, but legs otherwise ordinary; abdomen shining, very finely punctured; hind margins of second and following segments with entire pale fulvous hair-bands, that on second narrow and submarginal; segments before the bands with fine short hair, only clearly seen in side view, that on second ochreous, on the others black; apex of abdomen broadly rounded, ferruginous.

Hab. Mexico (F. Smith coll., 79, 22). British Museum. In Friese's table of *Exomalopsis* this runs to *E. planiceps*, Sm., which differs conspicuously in the colour of the pubescence.

The insect looks rather like a small *Diadasia*. The hind spur is strongly curved at end.

Cælioxyx ardescens, Cockerell.

Guayaquil, Ecuador, one male, one female (v. Buchwald; Alfken coll. 6). These are quite identical with the Brazilian *C. ardescens*. The female, not before known, is about 13 mm. long, and resembles the male except in the usual sexual characters. The last dorsal segment of abdomen is keeled, and ends obtusely; the last ventral is rather broad, and is narrowed, but not distinctly notched, before the end. The insect reminds one of *C. otomita*, Cress., from which it differs especially as follows:—Ridge between antennæ high, extending down to clypeus, which is obtusely elevated in the middle (the lower edge of clypeus is shallowly emarginate); middle of mesothorax with sparser and smaller punctures; middle of apical margin of clypeus much less angulate; last dorsal segment much broader apically; last ventral broader, and rather abruptly narrowed before the end. In Schrottky's table of Brazilian species this female runs to *C. pygidialis*, Schrottky, but differs from it by the absence of a median tooth on scutellum and a ventral keel on abdomen.

Cælioxys sanguinosus, Cockerell.

Guacimo, Costa Rica, June 21st, 1903, one female (J. C. Crawford). U.S. National Museum. The last ventral segment has a well-defined tooth-like apex, whereas the type has only a nodule, but the specimens are evidently conspecific.

Cælioxys azteca, Cresson.

San José, Costa Rica, May 31st, 1903, "on orquetilla," one female (J. C. Crawford). U.S. National Museum.

Cælioxys texana sonorensis, subsp. nov.

♂. Length about $8\frac{1}{2}$ mm.; face densely covered with white hair; first two joints of antennæ dark red, the others black; hair on eyes shorter than in male *texana* from Wisconsin; region surrounding middle ocellus strongly elevated; mandibles with a red subapical spot; cheeks thinly covered with white hair, more densely below (*texana* from Wisconsin has a large bare space, wholly wanting in *sonorensis*); mesothorax closely and very coarsely punctured; two conspicuous spots of creamy hair on anterior margin, and a thin hairy triangle between; scutellum densely punctured, the hind margin with pale hair, and not tuberculate or angular; tegulæ clear bright ferruginous; first r. n. joining second s. m. at extreme base; legs bright clear ferruginous, the tarsi strongly dusky; spurs clear red; abdomen clouded with red at sides and beneath; apical segment deeply excavated, with three teeth on each side, but one of them more or less bifid, no median tooth; fourth ventral segment with two red teeth on apical margin, not extending beyond the fringe of white hair.

Hab. San José de Guaymas, Mexico, April 10th (L. O. Howard). This insect has caused me some perplexity, because, except for the smaller size, it agrees fairly well with Cresson's brief account of male *texana*. It is certainly quite distinct from the Wisconsin insect which Dr. Graenicher has sent me as *texana*; but Dr. Graenicher's female, which certainly seems to belong with the male, appears to be veritable *texana* as described by Cresson. Dr. Howard's bee has the appearance of a desert insect, and should be distinct from the Texan species, which may well range into Wisconsin. Very possibly the new form represents a distinct species, *C. sonorensis*, but until it is compared with the type of *texana* it may be given only subspecific rank.

In my table of male *Cælioxys* in Canadian 'Entomologist,' *C. sonorensis* runs to *C. quercina*, Ckll., differing by the absence of a median process at end of abdomen, the rounded (instead of squarely truncate) hind margin of scutellum, the red colour at sides of abdomen beneath, and the smaller size. It is allied, however.

Cælioxys otomita bicarinata, subsp. nov.

♀. Exactly like *C. otomita*, Cresson, except that the clypeus has on its lower two-fifths a pair of parallel longitudinal ridges, with a depression between.

Hab. Guayaquil, Ecuador (v. Buchwald; Alfken coll. 7). *C. leporina*, Sky., has a deeply sulcate clypeus, but is very different from *bicarinata*. Our insect is in many respects similar to *C. tumorifera*, Ckll., based on a male from Peru. There are, however, many differences; thus in *tumorifera* the occipital margin is a long way from the ocelli, in *bicarinata* it is close to them.

Cœlioxys triodonta, sp. nov.

♂. Length about 10 mm.; black, with the tegulæ, legs, under side of abdomen (except bases of segments) and extreme sides of abdomen more or less, all dark ferruginous; antennæ black, the last two joints ferruginous basally; mandibles dark red; face narrow, densely covered with pale golden hair; hair on eyes short; cheeks with a smooth bevelled space below; hair of thorax yellowish, no distinct spots on mesothorax anteriorly; mesothorax with very large punctures, well separated on disc posteriorly; scutellum short, strongly punctured, but smooth on each side of the delicate median keel, which leads to a prominent marginal tooth; axillar spines long, and nearly straight seen from above; wings dilute fuscous; anterior coxæ with large red spines; spurs red; abdomen shining, the hair-bands as usual, but weak; fifth segment with a red spine on each side; sixth with six large spines, and a very short and small, but distinct, median one; fourth ventral segment with two short dark spines close together; fifth with a deep oval depression.

Hab. Guayaquil, Ecuador (v. Buchwald; Alfken coll. 8). Very similar to *C. leucochrysea*, Ckll., also from Guayaquil, but *leucochrysea* has the face broader below, hair on eyes shorter and white (yellow in *triodonta*), last two antennal joints wholly black, median tooth of scutellum much less prominent, and axillar teeth shorter and more curved, no median apical tooth on abdomen, lower apical spines longer and more parallel. By the structure of the scutellum, *C. triodonta* is related to *C. beroni*, Sky., but the latter is much larger, and has no median apical tooth on abdomen.

Cœlioxys costaricensis, sp. nov.

♀. Length about 10½ mm.; black, with the mandibles, apex of labrum, tegulæ, mesothorax (except a large posterior triangular area), outer face of axillæ, tubercles, mesopleura, under side of abdomen and marks on lateral margins (large areas on first segment), all red; hair of eyes very short; mandibles strongly tridentate; labrum nearly twice as long as wide, with a deep basal pit; clypeus convex, densely rugosopunctate; no prominent keel between antennæ; antennæ wholly black; the large punctures of mesothorax well separated on disc posteriorly; scutellum strongly punctured, with a smooth median keel, the hind margin conspicuously angulate, the end of the keel projecting as a small tooth; axillar teeth only moderately long, distinctly curved; wings dilute fuscous, the apical margin darker; anterior coxæ with short spines, densely covered with white hair beneath; anterior margin of mesothorax with a narrow band of yellowish hair, but no patches; hind tarsi with

orange hair on inner side; spurs red; middle of abdomen with the punctures sparse and small, on the fifth segment minute but close, in abrupt contrast; hind margins of segments, and edge of basin of first, with conspicuous but very narrow white hair-bands, but no other hair-bands or markings; sixth dorsal segment delicately keeled, gradually narrowed apically, and turned up at extreme tip; last ventral rather narrow, with a very apical part, not extending far beyond dorsal; sides of last ventral with long but not dense hairs; ventral segments with strong white marginal hair-bands; last ventral black or nearly, contrasting with the bright red segment before it.

Hab. Guapiles, Costa Rica, June 18th, 1903 (J. C. Crawford). U.S. National Museum. This species may be compared with some of those described by Cresson from Mexico, from which it is readily separable as follows:—

Last dorsal segment abruptly contracted on each side, the apical part much narrower than the basal ...	<i>chichimeca</i> , Cress.
Last dorsal gradually tapering to apex.....	1.
1. Last dorsal turned upward at tip; last ventral straight	<i>costaricensis</i> , Ckll.
Last dorsal not turned upward at tip; last ventral strongly curved downward	<i>totonaca</i> , Cress.

C. costaricensis is in many ways similar to the South American *C. quærens*, Holmbg., to which it runs in Holmberg's table.

Cælioxyx luzonicus, sp. nov.

♂. Length about 7 mm.; black, head and thorax above very densely punctured; head broader than thorax; mandibles entirely black; hair on eyes short; face and front with pale golden hair, and scape beneath with long hair of the same colour; antennæ entirely black; mesothorax with even posterior middle excessively densely punctured; cheeks covered with white hair, no hairless area below; occiput with white hair; mesothorax with very thin golden-brown hair, only distinct anteriorly; pleura, tubercles and sides of meta-thorax densely covered with pure white hair; scutellum dull, very densely rugosopunctate, short, the margin simple, except when looked at from in front, when two very small obscure nodules appear; axillar teeth short; tegulæ black; wings dilute fuscous throughout; b. n. meeting t. m., first r. n. joining second s. m. very near base; legs entirely black, with white hair; hair on inner side of hind tarsi orange-fulvous; spurs fuscous; abdomen shining, strongly but not densely punctured, the hair-bands pure white; marginal hair-bands confined to sides, where they form broad patches, on first segment sending a very large lobe basad, and a thin line mesad to near the middle; subbasal bands developed as small stripes on sides of third segment, but nearly meeting in middle on fourth and fifth; sixth segment very short and broad, with very small lateral basal teeth (minute ones also on fifth), and six (three pairs) at apex, four above, and two (longer) below; ventral segments with broad white hair-bands, the first with a median patch of hair extending from base to hind margin, but the margin otherwise bare.

Hab. Los Banos, Luzon, Philippine Islands (Baker, 1800). Closely related to *C. capitatus*, Sm., from India, and *C. sumatrana*, Enderl., from Sumatra. It is known from *capitatus* by the absence of spots on the mesothorax anteriorly and the interrupted abdominal bands; from *sumatrana* by the clear white hair of sides of thorax, and other details of coloration. The male of *C. philippensis*, Bingham, is much larger, and has the sixth segment of abdomen elongated, with the upper apical teeth (two pairs) very short. It is related to the Indian *C. basalis*, Sm.

Ceratina tropica, Crawford.

Los Banos, Philippine Islands (Baker, 1787).

Allodape cupulifera, Vachal.

Los Banos, Philippine Islands (Baker, 1788). The female is only 5 mm. long, with the base of the mandibles dark, and no lateral face-marks. It can be distinguished from *A. marginata*, Sm., by its smaller size.

Megachile aurantipennis, Cockerell.

Cacao, Trece Aguas, Alta Vera Par, Guatemala, March 24th, two males (Schwarz & Barber). U.S. National Museum.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ. No. I. METEORIDÆ.

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

(Concluded from p. 77.)

Meteorus pulchricornis (Wesm.).—Probably the commonest species we have; it is easily recognized by the pale anterior margin of the otherwise fuscous stigma, and by the invariably black first abdominal segment. The metathorax is also generally black, though I possess a specimen in which it is entirely testaceous. A most variable species in size and colour; quite half my females may be referred to Marshall's var. α ; and although I have seen no males of this form, I have several approaching vars. β & γ . My largest specimen, a female, bred from a larva of *Agrotis (Lycophotia) strigula*, measures 11 mm. in expanse, while the smallest, also a female, bred from a larva of *Cerostoma radiatella*, expands only 6 mm. Marshall describes the second cubital areolet as "slightly narrowed towards the radius," but in several of my specimens it is considerably so. The larva is pale green, with the parts of the mouth black and the spiracles on segments one and two also outlined in black.

A solitary parasite of larvæ of Lepidoptera. There are

certainly three and probably four broods in the year, the first appearing in April and early May, the second in June and July, the third in August, and the fourth during September and October; the individuals of this fourth brood no doubt deposit their ova in larvæ which hibernate, such as that of *A. (L.) strigula*, which I have known to produce the parasite larva so early in the year as the second week in March.

The cocoon is brown, shining, and pensive (fig. 5).

Bred on very many occasions from March 31st to May 15th, from larvæ of *Agrotis (Lycophotia) strigula*, and from June 12th to July 4th from larvæ of *Cheimatobia brumata*; also from larvæ of *Thecla quercus*, June 30th, 1909; *Thecla betulæ*, June 17th, 1912; *Pœcilocampa populi*, June 24th, 1910; *Cilex glaucata*, July 20th, 1911; *Nola cuculatella*, June 29th, 1911 and July 5th, 1911; *Eupithecia abbreviata*, July 5th, 1911; *E. nanata*, August 15th, 1913; *Hybernia leucophæaria*, July 3rd, 1913; *Phibalocera quercana*, July 26th, 1911, and *Cerostoma radiatella*, July 9th, 1913.

On July 27th, 1911, I bred a female specimen of the Ichneumonid *Panargyrops æreus*, and on July 7th, 1909 and July 4th, 1911, examples of *Mesochorus crassimanus* (Holmg.) from cocoons of this species, the host in these cases being *Cheimatobia brumata*. I have also obtained *Mesochorus tetricus* as a hyperparasite (April 13th, 1911), the host being *A. (L.) strigula* and a Chalcid (*Perilampus*), rather commonly from cocoons of the second brood; the last-named remains within the cocoon through the winter as a fully-formed imago, and emerges in the following spring. All these hyperparasites gnaw irregular jagged holes when leaving the cocoons (fig. 5).

M. niger (Lyle). (Figs. 2 & 3).—This species was brought forward by me as new in the 'Entomologist' * for August, 1913, and further notes appeared in the number for the following month. It is a common solitary parasite of the larva of *Hygrochroa (Pericallia) syringaria*. I have recently discovered in my collection a female which was bred from a larva of *Ennomos quercinaria*, June 17th, 1911. This insect is lighter than any of those bred from *H. (P.) syringaria*, the disc of the thorax and stigma being fuscous, the second abdominal segment piceous, and the antennæ basally fulvous; in all other respects it agrees with the description.

In both sexes the antennæ are 25-27-jointed.

M. melanostictus (Capron).—In Trans. Entom. Soc. 1887, p. 115, Marshall describes this as a new species from five males, and mentions that the description of the other sex which he gives was communicated to him by Capron.

Although my specimens agree with these descriptions in most particulars, they differ in that the wings are distinctly

smoky, especially in the female, with a light mark under the stigma, the antennæ are 29- to 31-jointed in both sexes, and the recurrent nervure is interstitial in the female as well as in the male. In spite of these discrepancies, I believe I am right in referring my insect to this species. Three of Marshall's types are now in the National Collection, and I much regret that I am unable at the present to visit the museum and inspect them; Morley, however, has very kindly supplied me with their particulars.

A solitary parasite of the larvæ of Lepidoptera; fairly common in April and May, and again in the autumn in the neighbourhood of fir-trees. I have beaten it from Douglas fir as late in the year as December 17th, so that possibly it may sometimes pass the winter as an imago. That this is not always so I have proved by "forcing" larvæ of the host, which, taken in November when quite small, produced the parasite in the following January.

Morley was the first to record a host for the species, for in his notes* he mentions that a correspondent sent him a cocoon, the maker of which had emerged from a pupa of *Thera variata*. In this I think Mr. Morley's correspondent must be in error, for, as regards the very considerable number of specimens bred by me, in every case the parasite has emerged from the larva of its host and spun the usual pendulous cocoon, which seems to be almost identical with that of *M. scutellator*, though perhaps rather lighter in colour (fig. 5).

I have obtained this species many times between April 4th and May 30th, from larvæ of the first brood of *Thera variata*, and from September 2nd to 29th from larvæ of the second brood of the same insect. Most of my specimens have, I believe, been bred from larvæ of the true *T. variata* (Schiff.), though I am certain that some are from *T. obeliscata* (Hüb.).† One cocoon of this species produced the hyperparasite *Mesochorus crassimanus*, September 13th, 1913.

M. scutellator (Nees).—A well-marked species, though variable in colour, &c. The scutellum would seem to be always rufotestaceous, and the metathorax carinated. All my specimens have the hind tibiæ ringed with fuscous near the base. Marshall mentions that the second cubital cell is scarcely narrowed towards the radius; although this is usually so, I possess specimens in which it is distinctly narrowed, and others in which it is actually wider at the radius.

Fairly common; a solitary parasite of the larvæ of Lepidoptera. The cocoon is similar to that of *M. pulchricornis*, but larger. From twenty-four to twenty-seven days elapse between

* 'Entomologist,' vol. xli. p. 149.

† See Prout in 'Entomologist,' vol. xlv. p. 241.

the emergence of the parasite larva from its host and the appearance of the imago, at any rate in the spring brood.

Bred by me from larvæ of *Triphæna (Agrotis) fimbria*, April 29th, 1909, April 23rd, 1912, and other dates; *Agrotis (Lycophotia) strigula*, April 13th, 1911; *Noctua (Segetia) xanthographa*, April 20th, 1911, April 11th, 1911, and other dates; *Triphæna (Agrotis) pronuba*, April 7th, 1911, April 13th, 1912; and from a cocoon beaten from oak, June 16th, 1911.

More than one writer has mentioned that a permanently testaceous variety exists of some species of *Meteorus*, and after examining several specimens, and comparing them with the original description, I have come to the conclusion that *M. unicolor* (Wesm.) is merely a testaceous variety of *M. scutellator*.*

M. versicolor (Wesm.).—Considerable confusion seems to have arisen concerning this species. Wesmael mentions having bred it gregariously at Charleroy, from a larva of *Bombyx cassinea* (Fab.), the cocoons being brown, and connected by a few threads of silk; he also states that the terebra is equal in length to the abdomen. In the specimens since recorded, the length of the terebra is given as only half the abdomen, so that even allowing for the fact that Wesmael sometimes rather exaggerated the length of this organ, one can hardly suppose that he would double it. Again, all recent specimens are mentioned as being solitary parasites making pendulous cocoons.

It would therefore seem possible that we are wrong in referring the insects mentioned below to *M. versicolor*, as I am convinced we should be wrong in so referring the light forms mentioned by Marshall (var. *bimaculatus*).

On May 7th, 1912, I bred an example of Marshall's var. β from a cocoon which fell into my tray while beating young birch-trees for larvæ of *Geometra papilionaria*. Bignell records the breeding of a similar specimen from a larva of *G. papilionaria*, June 7th, 1883.

The cocoon is pendulous, shining, and much darker than that of any other *Meteorus* with which I am acquainted.

M. bimaculatus (Wesm.).—Although Marshall considered this to be merely a variety of *M. versicolor*, I feel sure, after referring to the original descriptions and examining a large number of specimens, that it is a distinct species. *M. bimaculatus* has the wings somewhat infumated, especially in the male, and the base of the petiole and first abdominal segment are never white, though the former is pale. In Wesmael's description of the female, the two dark spots on the first abdominal segment are mentioned as being triangular and elongate; it would perhaps

* Since writing the above I have been much interested to find that Thomson advanced this view; see 'Opuscula Entomologica,' ii. p. 112.

be more correct to say that the segment is centrally narrowly testaceous.

As the male does not appear to have been noticed before, I subjoin the following description from ten specimens in my collection:—

Mesothorax testaceous, or fuscous, with the disc testaceous, scutellum testaceous, metathorax black (fuscous in pale specimens), rugose; abdomen piceous with the second segment and base of the third testaceous, the second often fuscous at the sides, petiole basally pale, first segment striated, tracheal grooves obsolete, tubercles apparent; legs testaceous, all the tarsi fuscous, posterior coxæ and femora at apex fuscous, posterior tibæ fuscous, basally pale, all the claws dark; head scarcely as wide as the thorax, occiput fuscous (in pale specimens testaceous), orbits, clypeus, and cheeks testaceous, face fuscous, palpi pale, antennæ setaceous, slightly longer than the body, fuscous, 30–33-jointed, usually 32; wings infumated, stigma and nervures fuscous, recurrent nervure interstitial or subinterstitial, second cubital areolet slightly narrowed towards the radius; length $4\frac{1}{2}$ mm. to 6 mm., expands 8 mm. to 10 mm.

In the female the antennæ are about equal in length to the body, 30–33 jointed.

Var. female. First abdominal segment dark fulvous without noticeable dark triangular patches at the sides = *M. decoloratus* (Ruthe).

A solitary parasite of larvæ of Lepidoptera; it varies greatly in size. I have a female, bred from a larva of *Brachionycha (Asteroscopus) sphinx*, June 28th, 1911, which expands no less than $11\frac{1}{2}$ mm.

The cocoon is pendulous, shining, and of a rather rich brown colour, though not nearly so dark as that of *M. versicolor*. Two specimens which I must refer to this species, bred from larvæ of *Nola cuculatella*, made cocoons of a paler colour, similar to those of *M. pulchricornis*. From six to fourteen days in the cocoon. Among other dates I have bred it from larvæ of *Macrothylacia rubi*, August 1st, 1911; *Nola cuculatella*, June 21st, 1911; *Anarta myrtilli*, August 5th, 1911; *Ematurga atomaria*, July 30th, 1911; *Cheimatobia brumata*, June 19th to 27th, 1911, and *Agrotis agathina* (Sand banks, Poole), June 23rd to 30th, 1913.

From a single cocoon of this species I bred on August 17th, 1911, some thirty or forty small hyperparasites. Dr. R. C. L. Perkins, to whom I submitted them, has been most kind in working them out, and says (*in litt.* January 15th, 1914): "The very minute species is certainly *Closterocerus* (Westwood), but the wings are not marked in black as in all described species known to me. It is quite likely that species with similar wings have been wrongly described in *Entedon* or *Eulophus*, as the marked wings have been considered a generic character. The antenna is that of a true *Closterocerus*."

M. filator (Hal.).—Appears to be common, though I have only once taken it in the New Forest, on November 15th, 1910, when a female was beaten from holly. Generally found in the autumn, and is said to be a parasite of larvæ which feed in the fungus *Polyphorus versicolor*.

M. fragilis (Wesm.). Fig. 4.—A delicate species with long, slender antennæ and legs; the second abdominal segment is flavo-testaceous, with two black spots on the disc; these spots seem to be quite constant, and are a great help in identifying the species.

A solitary parasite of small larvæ of Lepidoptera. The cocoon is pensile, somewhat similar to that of *M. pulchricornis*, though rather more elongate and brighter brown in colour, 5–6 mm. in length. From the time the parasite larva leaves the host to the emergence of the imago from the cocoon, a period of from eight to thirteen days elapses. Bred frequently from small larvæ of *Hylophila bicolorana*, September 8th to 12th, and also once from the same host on May 9th, so that probably both spring and autumn broods prey on this larva. Also bred from larvæ of *Nola cuculatella*, June 17th, 1912, and June 19th, 1912.

M. luridus (Wesm.).—This is a gregarious parasite of the larvæ of Lepidoptera. The parasites leave the host and form their cocoons within the underground chamber constructed by the host for the purpose of pupation, though sometimes in captivity the cocoons are to be found scattered on the surface of the earth, or in bunches connected by a few threads. This may, of course, happen in a state of nature, but I do not think it usual. The cocoons are heaped together and are fusiform, brown, with a lighter spot at the smaller end, not shining, and covered with a thin web of filaments, as mentioned by Marshall, 4½ mm. to 5½ mm. in length. Fourteen days or so generally elapse between the emergence of the parasite larvæ from the host and the appearance of the imagines.

When courting, the male of this species follows the female with rapidly vibrating wings, repeatedly tapping the apices of her wings, which she keeps folded, with his mandibles.

I have obtained many broods, the largest consisting of thirty-two individuals, the smallest of four, and also once bred it as a solitary parasite. Females appear to predominate, for instance:—Twenty-six females, six males; fourteen females, four males; twenty-three, all females; seven, all females. I have, however, one brood of ten, all males.

Commonly parasitic on the larvæ of *Aplecta* (*Mamestra*) *nebulosa*, often quite thirty per cent. of these larvæ succumbing, yet larvæ of other Noctuæ, similar in size, collected at the same time, often from the same bushes, have not been affected. From this host I bred it on May 24th, 1908, broods of thirty-two and twenty-four; May 25th, 1908 (nineteen), June 2nd, 1908

(twenty-one), and many other times. Clutten has also bred it from the same host taken at Burnley. Bred from larvæ of *Tæniocampa stabilis*, July 7th, 1911 (eight), July 23th, 1911 (eight), July 26th, 1911 (seven), and many other dates, from larva of *Graptolitha (Xylina) ornithopus*, July 24th, 1911 (four). On May 6th, 1909, I bred a single male from a small larva of *Triphæna fimbria*; in this case the cocoon was suspended by a thread an inch or so long from the roof of a breeding cage; the larva had not reversed its position, as is usual with those Meteoridæ which construct pendulous cocoons, so that the imago emerged from the uppermost end of the cocoon. I think that the unusual position of this cocoon was probably merely an accident, through the host being on the roof of the cage when the parasite larva emerged, and not at all likely to be of common occurrence. Like Marshall I have never met with any of the dark vars. described by Ruthe, and am inclined to believe that they may be referred to *M. leviventris*. The two species are certainly very close, though in *M. leviventris* the first abscissa of the radius is as long as the second, while in *M. luridus* it is considerably shorter. All my specimens of *M. luridus* are uniformly pale.

M. leviventris (Wesm.).—Very similar to *M. luridus* but differing in colour, being much darker. A gregarious parasite of the larvæ of Lepidoptera, said to be common.

The cocoons are fusiform, brown, rather woolly with a lighter spot at the smaller extremity, $4\frac{1}{2}$ –5 mm. in length (fig. 9). I can detect little or no difference between them and those made by *M. luridus*, though possibly they may be rather darker and slightly smaller. Morley described the cocoon as “cylindrical, dirty white, much more woolly at the anal half and only $3\frac{1}{2}$ mm. in length.” I have seen the cocoon from which he took this description, and although it is certainly of this species, it is dilapidated, undersized, much rubbed, and accordingly misleading. The larva is elongate, attenuate at both extremities, cream coloured, with the parts of the mouth outlined in brown, also a brown ring on either side of the first segment above; as might be supposed, it is very similar to the larva of *M. luridus*. The larvæ leave their host when the latter has prepared to pupate, so that the cocoons are to be found underground.

Bred from larvæ of *Triphæna pronuba*, November 3rd, 1913 (twenty-one), November 4th, 1913 (seventeen; ten males and seven females), and November 9th, 1913 (sixteen; seven males and six females, three failed to emerge).

I am not aware that a host for this species has been hitherto recorded.

A BUTTERFLY HUNT IN SOME PARTS OF UNEXPLORED FRANCE.

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

(Concluded from p. 91.)

UNQUESTIONABLY the best collecting ground near Larche is to be sought in the mountains east of and above the Col; and it was here that I took the majority of the butterflies brought home, and included in the following list:—

HESPERIIDÆ.—*Carcharodus altheæ*; not uncommon; lateral valleys of the Col de Larche; quite fresh.

Hesperia carthami.—A few taken; rather small.

H. alveus.—Flying with others of the group in the higher valleys; small as compared with examples from the Pyrenees. Var. *ryffelensis* Obthr.; not uncommon, and in fine condition, Val. d'Ornaye, but never below 7000 ft. Distinguished by the smallness of the white spots on the fore wing.

H. bellieri, Obthr.—The largest of the Hesperiidæ met with.* Flies at the same altitudes as *H. alveus* and its var.

With regard to this difficult group of *Hesperia*, which, thanks to students of structure and bionomy on both sides of the Channel, is now less of a tangle even as regards the nomenclature, Guillemot contents himself (*loc. cit.* p. 33) with the remark: "Nous avons pris une certaine quantité d'autres *syrichthus*, qui viendraient sans doute se ranger dans les nombreuses espèces créées il y a peu d'années aux dépens de *fritillum*; mais je ne m'aventurerai pas à donner ici une liste de noms."

In fact, he only mentions *H. serratulæ*, common in most of the localities visited; a fine bright form, "parce qu'elle est très distincte à l'état parfait, et qu'il est impossible de la confondre"—though, I fancy, some of us find the lowland form of this species none too easy to deal with.

H. carlinæ.—Fairly common at high altitudes; just emerging. But I have not detected *H. fritillum*; Hb. (= *cirsii*, Rmbr.), among my Larche Skippers.

H. cacalia.—Bellier speaks of this as much rarer, and only occurring in the mountains about Barcelonnette. I did not come across it myself, but I saw a recently captured specimen or two from the Val de Lauzanier in Mr. Morris's boxes.

Pyrgus sao.—Generally distributed, and with the deep crimson-lake colouring of the under side usual to high Pyrenean forms.

Thymelicus lineola.—Common in the pastures and on rough herbage by the roadsides.

* In the 'Entomologist' (vol. xlv. p. 11) I stated my belief that this butterfly would also turn out to be a separate species. I have not had long to wait for a confirmation of its specific identity by M. Oberthür and Dr. Reverdin. The Hesperiid flying at much the same level near the Lac d'Allos I should suggest as intermediate between var. *foulquieri* and the type, as I conceive it, *bellieri*.

LYCÆNIDÆ.—*Chrysophanus virgaureæ*.—Males only out.

C. hippothoë, var. *eurybia*.—Males over; isolated females in all states, from freshly emerged to mere "rags of quality," chiefly the latter.

C. dorilis, var. *subalpina*.—Rare.

C. phlæas.—Very rare; probably between the two generations (?) at this altitude.

(*Lycana alcon*.—Mr. Morris and Mr. Tucker had fine series of this butterfly from the neighbourhood of Barcelonnette. Not met with by me.)

Cupido minimus.—Nearly over.

Nomiades semiargus.—Very occasionally.

Agriades damon.—The commonest "Blue" round Larche, and in pastures by the river on the Lauzanier route; females predominant, with several ab. *maculata*, Reverdin.

A. corydon.—Scarce; males only here and there.

A. hylas, *A. escheri*.—Not common.

Polyommatus icarus, *P. eros*.—Generally common from the village to the Col, and on both sides of the Ubayette. Females by no means scarce. A large form compared with the Swiss.

P. medon.—Quite common.

P. orbitulus.—Seemed to be very rare; one or two only at the highest levels explored (8000–8500 ft.).

P. pheretes.—Locally common. The females taken by me in the Ornaye valley, and the mountains generally to the south-east of Larche, are so distinctive in appearance, when placed side by side with examples from other alpine localities, as almost to constitute a variety. The ground colour of all the wings on the upper side is black; not dark or cinnamon brown, as in those of my collection from Switzerland, the Brenner, Stelvio, &c. But the most marked feature is the discoidal spot on the fore wings, usually obsolescent or insignificant in size and black in colour. Here it is large, and of the same lovely azure hue as of the wings of the male; while the basal area of all four wings on the upper side is also heavily scaled with blue of the same depth and brilliancy; this latter character absent in many, but not all of the Swiss and Eastern Alps forms of my acquaintance. I propose, then, for this Larche form, if not already named, the name *azurica*, new ab., female. The female Lycænids, as in the case of *damon* cited above, show a regional tendency to develop blue spots on the upper side of the wings.

(*P. optilete*, taken by Guillemot on the slopes which reach down to the Lac de la Madeleine, and one of the rarest of the group in the French Alps, I did not encounter.)

Plebeius argyrognomon.—Not common. Females of the brown type.

P. argus.—Common, but both sexes getting rather *passés*.

I observed no Theclids at Larche, and I see that Guillemot failed to do so.

PAPILIONIDÆ.—*Papilio machaon*.—A single fresh male in the Val d'Ornaye at about 8000 ft.

Parnassius apollo.—Not at the higher levels. Fairly common below Larche.

P. delius.—From the upper Ubayette valley to about 8500 ft., in the Val d'Ornaye. Fairly common; males only observed or captured.

Pieris brassicæ, *P. rapæ*.—Both rare.

Colias phicomone.—The commonest *Colias*.—*C. edusa*, *C. hyale*.

NYMPHALIDÆ.—*Argynnis aglaia*.—Common.

A. niobe.—Less so. I do not remember seeing *A. adippe*, nor does Guillemot record it.

Issoria lathonia.—Common, especially just outside the village towards the Col.

Brenthis pales.—At sufficient altitudes; but the commoner was undoubtedly *B. arsilache*, of which I took a lovely blanché female aberration in the Val d'Ornaye, a few minutes' walk from the main road. In this example the rufous ground of the upper side of the fore wings has entirely disappeared, and the ground colour is creamy white (= *primula*, new ab.). The same peculiarity is observable on the hind wings, but the failure of colour less pronounced. At a distance the butterfly rather suggested a female *C. phicomone*, but the different flight, sluggish and hesitating, fortunately caused me to make a closer inspection. A tendency to albinism was decidedly noticeable in the Larche females of *arsilache*. Of *pales*, Guillemot speaks of the var. *napæa*—the familiar violet-shot female form—at Godessart; and I took two of this variety in the Val d'Ornaye, among others typical.

(*Melitæa cynthia*.—Reported from the Pain de Sucre, and one at Malmorte by Guillemot, not observed at Larche; nor *M. aurinia* var. *merope*, which may have been over.)

M. varia.—Occasionally.

Pyrameis cardui.—Rare.

Aglais urticæ.—Just emerging, and brightly coloured.

Pararge mæra.—On the wane.

Epinephele jurtina.—Not common.

E. lycaon.—Less rare, and in good order.

Cænonympha iphis.—Common in all the meadows—Val d'Ornaye, Val de Lauzanier, &c.

C. pamphilus.—Some of the females very large, the size of average *C. tiphon*.

C. darwiniana.—Rare.

Erebia epiphron.—Many of the males and females examined were much nearer to the type than to var. *cassiope*; but none of the females show white-pupilled ocellation. Not common.

E. mnestra.—Well distributed; var. *gorgophone*, Col de Larche.

E. alecto, var. *duponcheli*, Obthr. (= *pluto* Esp. ?).—Not uncommon at about 8000 ft. No typical *alecto*, or var. *glacialis* observed.

E. celo.—One female in the grass where the stream crosses the path up the Val d'Ornaye.

E. stygne.—Over.

E. scipio.—One male only taken, on the 26th, flying with numerous other *Erebias* in the Val d'Ornaye below the "*alecto*" line. Although I worked this place three or four times subsequently, I did not meet with another, and I expect the species was only just coming out. It is stated by Guillemot to occur on the rocky slopes below the last pastures of Ozglosse, and on the left bank of the Ubayette above the junction of that river with the Ubaye.

E. euryale.—Here and there flitting over alder bushes, just above the village.

E. goante.—Common in the same localities, but going much further up, and even flying over the skrees.

E. gorge, with *E. alecto*, var. *duponcheli*, and occasionally of the ab. *erynnys*.

E. tyndarus.—Not so common as usual; all of the var. *cassioides*.

E. lappona.—Common, but wasted, even high up.

January, 1914.

DORSET HYMENOPTERA.

By F. H. HAINES, D.P.H., M.R.C.S., L.R.C.P.

THE following are some of the less generally recorded Aculeates, noted by me, in this neighbourhood of heath, wood, and down:—

Formica sanguinea, Latr., Parley heath; *Ponera contracta*, Latr., two workers, May 23rd, 1913, West Lulworth cliffs; *Myrmica sulcinodis*, Nyl., one female, September 9th, 1913, Ringstead. *Mutilla europæa*, L., not infrequent on the heaths. In 1911 I took a fine female as early as May 27th at Morden, and in 1908 I took a female at Moreton on May 29th. My latest date is October 7th, 1912—a rather large male, on West Knighton heath. At Arne, on August 25th, 1913, I found a nest of *Bombus jonellus*, Kirb., in a disquieted state, attributed by me to a high tide having reached it. Noting that only workers were to be seen, I carried a portion—only $4\frac{3}{4}$ in. in circumference—home. From both larger and smaller cocoons *M. europæa* emerged through round, jagged holes: thirteen females between August 29th and September 5th, four males between August 29th and September 10th, but no *B. jonellus*. I still have the fragment under observation. *Methoca ichneumonides*, Latr., one female, September 11th, 1910, on Godlingston heath; *Pompilus unicolor*, Spin., one female, September 3rd, 1910, Arne; *Salix affinis*, V. de Lind., two females, July 27th, 1912, on West Knighton heath, and one female, August 3rd, 1912, on Studland heath; *Ceropales maculatus*, F., common in August, on *Angelica*; *Stigmus solskyi*, Mor.; *Passalecus corniger*, Shuck.; *Mimesa equestris*, F., commoner than *M. bicolor*, Jur., July, on *Heracleum*; *Gorytes campestris*, L.; *G. quadri-fasciatus*, F.; *G. laticinctus*, Lep., one female, Moreton, July 12th, 1910, one female June 22nd, 1912, and one female and three males in July, 1912, on *Cenanthe* and *Heracleum*; *Nysson inter-ruptus*, F., end of May and June, on *Anthriscus* and *Chærophyllum*; *Mellinus subulosus*, F., *Cerceris 5-fasciata*, L. I have two specimens of an *Oxybelus*, quite similar to the common *O. uniglumis*, L., but with pale mandibles; I think only a variety of it. *Crabro tibialis*, F.; *C. capitosus*, Shuck.; *C. sig-*

natus, Panz., one specimen; *C. vagus*, L., a block of rotten wood, containing pupæ of this very common insect, seen on November 14th, 1911, produced imagines towards the end of the following June. The cells appeared, from the *débris*, to have been stored with *Lucilius cæsar*, L., and two other species of *Muscidæ*, but I cannot retrieve my note on the point. *C. lituratus*, Panz., on *Heracleum*, common in one spot, in a wood; *C. interruptus*, De Geer, one female, July 31st, 1913, Upper Bockhampton; *Odynerus levipes*, Shuck., one male, June 11th, 1913, Coombe wood; *O. herrichii*, Saussure (*basalis*, Sm.), one female, July 24th, 1912. On July 12th, 1913, I found a large colony on a limited stretch of sandy hollow on a heath, visiting *Erica*, and took both sexes. One female taken was, apparently, just entering her burrow with a small green lepidopterous larva (unfortunately lost before full examination) in her mandibles. I had not time to dig out the cells. The hole was on a flat bare spot. No other burrows were seen in proximity, despite gregarious habits common to other species of *Odynerus*. On July 21st there were but one or two examples about. I took one female *O. pictus*, Curt.; *O. sinuatus*, F.; *Eumenes coarctata*, L., common on the heaths; *Colletes succinctus*, L. I have a specimen with only two submarginal cells in its wings, otherwise normal. *Prosopis confusa*, Nyl.; *Sphecodes reticulosus*, Thoms., one female, July 12th, 1910, Moreton; one female, June 2nd, 1913, East Stoke; *S. variegatus*, v. Hag.; *Halictus prasinus*, Sm.; *Andrena pilipes*, F.; *A. bimaculata*, Kirb., one female, August 1st, 1912; *A. rosæ*, Panz. (v. *spinigera*, Sm.); *A. apicata*, Sm., one female, April 17th, 1911, in a wood; *A. præcox*, Scop.; *A. fuscipes*, Kirb., common on the heaths; *A. hattorfiana*, Fab.; *A. cetti*, Schr., common on *Scabiosa* in July, August, and September; *A. chrysoceles*, Kirb.; *A. analis*, Panz.; seems rather peculiarly liable to abnormal venation. In a short series a male (on one side) and two females (on both sides) show but two submarginal cells. *A. argentata*, Sm., Studland heath; *A. dorsata*, Kirb.; *A. similis*, Sm.; *Macropis labiata*, F., not uncommon on *Lysimachia* in July and August; *Cilissa hæmorrhoidalis*, F.; *C. leporina*, Panz.; *Panurgus calcaratus*, Scop., common; *P. ursinus*, Gmel., very common; *Nomada roberjeotiana*, Panz.; *N. bifida*, Thoms., very common; *N. borealis*, Zett., not uncommon; *Epeolus rufipes*, Thoms.; *Cælioxys quadridentata*, L.; *C. acuminata*, Nyl.; *Megachile circumcincta*, Lep.; *M. liquiseca*, Kirb.; *M. versicolor*, Sm., four females, earliest June 16th, 1912, latest August 25th, 1913; *Osmia pilicornis*, Sm.; *O. aurentata*, Panz., common on *Ajuga* in May; *O. bicolor*, Schk.; *O. leucomelana*, Kirb., one male; *O. spinulosa*, Kirb.; *Melecta luctuosa*, Scop.; *Podalirius retusus*, L.; *P. furcatus*, Panz., common, fond of *Stachys sylvatica*.

Brookside, Winfrith, Dorset: February 24th, 1914.

NOTES AND OBSERVATIONS.

QUERY RESPECTING PLUSIA CHRYSON (ORICHALCEA).—Does "*orichalcea*" ever pupate in the autumn? Last October I beat two large and unmistakably Plusiid larvæ on *E. cannabinum* in the locality where I expected to find *orichalcea*, and to my surprise both went down in late October. I cannot believe that they are *P. gamma* or *P. chrysitis*.—CHARLES MELLOWS; The College, Bishop's Stortford.

DERMATOBIA IN GUATEMALA. — In February, 1912, at Quirigua, Guatemala, my wife heard an Indian screaming with pain, and found that there was a dipterous larva under the skin of his arm. The larva was extracted, and I find that it agrees exactly with descriptions and figures of *Dermatobia*, especially fig. 11, *a*, in 'Insect Life,' September, 1888, p. 80. Authors have referred to two species of *Dermatobia*, but Blanchard (Ann. Soc. Ent. France, lxx., 1896) goes into the matter at great length, and shows that the records all apparently refer to a single species, *D. cyaniventris* (Macq.).—T. D. A. COCKERELL.

STOMOXYS AT A HIGH ALTITUDE. — On August 28th, 1913, I collected *Stomoxys calcitrans* (L.) in a cabin at timber-line, 11,200–11,300 ft., on the Long's Peak trail, Colorado. At same time and place I also obtained *Phormia terræ-novæ* (Mcq.), *Musca domestica*, L., and *Allograpta obliqua*, Say.—T. D. A. COCKERELL.

RETARDED EMERGENCE OF PARARGE EGERIA.—With reference to Major Robertson's interesting notes in the March number of the 'Entomologist,' I have been looking up my diary, and find that, whilst pupæ digging under an elm on October 9th, 1909, I found a charming green pupa suspended to a grass stem. Feeling satisfied that it was rather unusual to find such a pupa during the winter months, I watched it very carefully through the following months, and was very surprised to see a fine male specimen of *P. egeria* had emerged on May 1st, 1910.—W. W. MACMILLAN; Woodville, Castle Cary, Somerset, March 9th, 1914.

TROPICAL GRASSHOPPERS (PHANEROPTERIDÆ) IN ENGLAND. — A pair of grasshoppers taken alive in a hothouse near Felixstowe were sent me in December by a correspondent. Some orchids from India had recently been placed there. The insects belong to the Phaneropteridæ, but are not of the genus *Phaneroptera*. They lack the spine on the anterior coxæ, and are larger than either *falcata* or *quadripunctata*. The male has a beautiful reddish-brown border to the elytra, wing-tips, and centre of pronotum. The female is much larger and of a brilliant green, including the wing-tips. I have requested my correspondent to watch for nymphs later in case the pair bred.—C. W. BRACKEN; 5, Carfax Terrace, Plymouth.

A VARIETY OF PYRALIS COSTALIS.—In July, 1906, I took, at sugar, a very remarkable variety of this pretty little species. The bright rosy grey of the wings is replaced by deep maroon, or plum colour, there are no signs of any transverse lines across the fore wings, and

the large yellow spots upon the costa are represented by a minute dull yellow spot near the apex; the fringes are dull orange, tinged with pink, instead of the clear yellow of typical specimens. I propose *unipunctalis* as a varietal name for this striking form. It is a very common species here, and I have often seen it swarming at sugar on old pollard willow trees.—GERVASE F. MATHEW; Lee House, Dovercourt, Essex, February 24th, 1914.

SOME VARIETIES OF *GONODONTIS BIDENTATA*.—In the early summer of 1911 Commander Gwatkin-Williams, R.N., sent me some ova of *bidentata* from County Cork, and I placed them in a large sleeve over the branch of an ash tree in my garden. In due course the larvæ hatched, fed up, and pupated. The following spring a number of moths emerged; these were a very varied lot, hardly one of them being typical, and there were some very beautiful forms among them, the following being the most conspicuous:—(1) A pale straw colour, something the shade of *Crocalis elinguaris*, with very faint transverse lines, the discoidal spots very small, and all the wings sparsely dusted with very minute brownish atoms. A very beautiful variety. (2) Somewhat similar to the above but slightly darker—biscuit colour would perhaps best describe it; the transverse lines and discoidal spots more distinct, and the irrorations more pronounced. (3) This is much the same colour, but of a slightly richer tone, and with the transverse lines and discal spots very distinct. (4) Pale ochreous, transverse lines and discal spots rather faint; irrorations very distinct, and grouped in patches towards the outer margin of fore wings. (5) Golden-brown, transverse lines rather distinct, and in one or two specimens outwardly edged with white; irrorations obsolete. (6) Warm brown, transverse lines somewhat faint, the outer one dotted with white spots; irrorations indistinct.—GERVASE F. MATHEW; March 9th, 1914.

BUTTERFLY COLLECTING IN SICILY AND CALABRIA IN 1912 AND 1913.—It is a truism that the weather often makes or mars the success of an excursion in search of butterflies, and my recollections of a visit to Sicily in 1912, where I spent the month of April, chiefly comprise high winds, dust, and torrents of rain. Contrary to my usual experience I left England bathed in sunshine, and on the railway banks between Modane and Turin I saw several specimens of *Euchloë euphenoides* flying about gently (March 29th), and during a compulsory stop of six hours at Rome I watched females of *Pieris rapæ* depositing their eggs on the herbage in the grounds of the Villa Borghese (March 30th), but south of Naples clouds hid the sun, and in Sicily (March 31st) rain and wind held sway. My record of the weather for the month of April is nine wet days, nine showery or dull days, six bright sunny days, and six days with occasional sunshine. To be detained indoors by rain or wind was very provoking, at a time too when the newspapers brought news of sunshine in England. On April 5th I took train *via* Catania to Randazzo at the back of Mount Etna for the week-end, but my visit was a failure, as clouds hid the summit of the volcano. On former visits I have found a great scarcity of larvæ, the plants showing no signs of having been eaten, but this season the patches of nettles

were black with larvæ of *Vanessa urticae*, perhaps the effects of a migration, and nests of larvæ of the Sicilian Lackey Moth. *Clisiocampa franconica* were very numerous, there were thousands of larvæ almost ready to scatter. (Is this a biennial? it was common in 1910 at Messina.) On April 9th the sun succeeded in making its appearance in the forenoon, and at once butterflies appeared in every direction, all in lovely condition. They included *Thais polyxena*, *Euchloë damone*, and of course *cardamines* and blues and whites. Unfortunately the sunshine lasted little over an hour, and was followed by clouds and a gale of wind, which quickly transformed the roads into a cloud of dust and ashes. Next day the gale continued, so I started back to Messina by the Circum-Etna Railway. Eight miles from Randazzo, near the village of Sollichiana, the eruption of Mount Etna in 1911 had destroyed the railway track for about half a mile, and passengers had to detrain at Sollichiana, and walk over the lava stream of still heated ashes, and on to the next station—Castiglione—a distance of two and a half miles. With true Sicilian dilatoriness, no provision had then been made to fit in trains, and ours being an hour late, we found that the forenoon train had departed, and we had six hours to wait for the next train. (Later this was remedied.) Fortunately the wind was at our backs, and the road all down hill, so I decided to walk to the nearest station on the main line—Fiumefreddo, Sicilia—some ten or a dozen miles, and was fortunate just to catch a train. What with the reddish dust of the roads and the black ashes of the lava stream, I had the appearance of a Red Indian, and I felt no desire to visit the Sahara.

Showery weather and the scirocco kept me indoors at Messina until April 14th, when a sunny morning tempted me up the nearest torrent-bed to the Cataract (Cattarati), a fine sight after the rain. I followed the gorge to the top of the hill (3000 ft.) and returned through the pine wood (the Bosco) and down the adjoining torrent-bed (Cammari). Butterflies were scarce after the rain, but those taken were in excellent condition, and included *Euchloë ausonia* and *cardamines*. The lovely views from the hill and in the rocky gorges made ample amends for the fatigue of the journey.

My favourite short walk near Messina is to Gravitelli, where there is a rocky gorge that rivals the dripping well at Knaresborough, and the Emperor butterfly *Charaxes jasius* is sometimes common on the slopes in June. On April 16th and 19th I searched the *Arbutus* bushes close to a solitary pine tree that dominates the gorge, and obtained four larvæ; apparently the larva spins a white silken web on the upper side of a leaf, either for hibernation or at its last moult. Larvæ of *Lasiocampa (Bombyx) quercus* like to sun themselves on the same plant, and in the gorge *Vanessa egea* flies rapidly; I caught one good specimen, and *Leucophasia sinapis* was very plentiful.

With improved weather, I ventured to repeat my week-end visit to Randazzo, stopping during Sunday at Taormina, the most lovely health resort of Sicily. Once more luck was against me, and the grand view of Mount Etna from the Greek theatre at Taormina was denied us, and in its place was nothing but mist. I stopped three

days at Randazzo, and on April 23rd I had one hour's sunshine and secured three male and three female *damone*. Rain followed and I left on the 25th, with Mount Etna still hidden by clouds.

Still another week-end without any luck. The feast of St. Joseph provided an opportunity to cross the Straits and visit Scylla in Calabria with my son. The early morning was promising, and at 6 a.m. we were climbing the steep hill (2000 ft.) leading from Scylla to a plateau above, where *Melanargia arge* has its haunts. Before we reached the top, a quite unexpected cloud covered the hill and rain fell in bucketfuls. Fortunately we had umbrellas, but our boots were soaked through and we had much difficulty in negotiating various seams of clay, sometimes of a brilliant red, that we came across. Eventually we obtained shelter under a shed and waited. Later in the day we made a steep descent over slippery limestone rock to the nearest village of San Roberto, where the people were keeping the festa in orthodox fashion, with a band to play dance music, to which the young men danced, generally two at a time, followed by the young women by themselves and then the little girls. The "festa offerings" to be obtained were of the cheapest and commonest kind, but it was interesting to see how the natives enjoy themselves at such a trifling cost.

My ill-luck in April stuck to me until the 30th, when I walked up to Gravitelli, and heavy rain sent me back home at once.—J. PLATT BARRETT; Westcroft, South Road, Forest Hill, S.E.

(To be continued.)

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 12th*, 1914.—Mr. B. H. Smith, B.A., President, in the chair.—Mr. B. Williams, of East Finchley, and Professor Meldola, F.R.S., were elected members.—Mr. H. Rowland-Brown discussed the matter of Nature Reserves, and appealed for further financial aid and suggestions for the care of these areas.—Rev. G. Wheeler read a paper on "The Genus *Melitæa*," and exhibited many European species.—Mr. A. E. Gibbs exhibited his collection of the American species of the genus *Melitæa* with species of the allied genus *Phyciodes*.—Mr. Curwen, specimens of most European species of *Melitæa*.—Mr. J. Platt Barrett, series of Sicilian *M. athalia* and *M. didyma*.—Mr. Edward, species of *Phyciodes* and *Coatlantona*, from South and Central America.

February 26th.—The President in the chair.—There was a special exhibition of lantern-slides by members.—Mr. Tonge, various details of lepidopterous life-histories.—Mr. C. W. Williams, organisms obtained by using the Berlese apparatus, and details of *Coniopteryx* and *Aleyroides*, &c.—Mr. West, various species of *Collembola*, &c.—Mr. Colthrup, illustrating the resting position of lepidopterous imagines.—Mr. Frohawk, a series of *Anosia plexippus* bred from ova laid by a female sent alive to this country.—Mr. Main, for Mr. Sharp, of Eastbourne, a bred gynandromorph of *Eriogaster lanestris*, left

side male, right side female.—Mr. W. J. Kaye, the Syntomid *Diptilon halterate*, which is readily taken for a species of Diptera.—HY. J. TURNER, *Hon. Rep. Secretary*.

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—*March 4th, 1914.*—Mr. H. Horsfall read a paper by himself and Mr. W. F. Windle on the Macro-Lepidoptera of the Oldham district. He first of all referred to the geography of the district, which contains moorland, rocky hillsides, a manufacturing district, and an agricultural plain. Then he referred to the insects in detail, the records to which he had access comprising the last fifty years. It seems that there is some evidence to show that *Plusia bractea* was once not uncommon, though the actual records are few. A few insects were exhibited, including:—*Xylophasia monoglypha* (dark forms), *X. rurea* and var. *combusta*, *Hybernia defoliaria*, *H. marginaria*, *Phigalia pedaria* and var. *monacharia*, *Agrotis lucerneae*, &c. The tendency towards melanism is most noticeable in many species.—Mr. J. E. Cope made some introductory remarks on the Coleoptera, and explained his remarks on their structure by means of some beautiful dissections.—A. W. BOYD, M.A., *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquhoun Street, Liverpool, *January 19th, 1914.*—Mr. R. Wilding, President, in the chair.—A discussion upon "Varieties and Species recently added to the Local List of Lepidoptera" was opened by Mr. W. Mansbridge. Novelties were confined almost entirely to the Micro-Lepidoptera and to variation. Twenty-six species new to Lancashire and Cheshire since the last published list were enumerated, one of them *Scoparia vafra*, Mey., being new to science. The increasing tendency to melanism and spread of melanic forms was commented upon, instances being *Boarmia reparanda* becoming more frequent at Delamere in its black form (var. *nigra*); *Fidonia atomaria*, from near Burnley and Chat Moss; *Tortrix costana*, from Liverpool and Burnley; he also mentioned that the black forms of *Aplecta nebulosa* did not appear to be increasing in relative numbers at Delamere; on the contrary, in 1913 the percentage was smaller than usual from wild larvæ.—Mr. S. P. Doudney exhibited a specimen of *Charocampa celerio* captured at Prescott, and Mr. W. Mansbridge brought a specimen of *Catocala fraxini* having very dark, almost black, fore wings, bred from a Sussex female.

February 16th.—Mr. R. Wilding, President, in the chair.—This meeting was a joint one with the Manchester Entomological Society, who were invited to tea by the Council. A large number of exhibitions were made, including the following, *viz.*:—A small collection of insects from the Amazons, by Mr. C. H. Walker.—Prof. Newstead and Mr. Watson, of Manchester, made remarks upon this exhibit, describing the habits and life-history of the more noteworthy species. Mr. V. Coryton, of Manchester, exhibited a fine melanic specimen of *Plusia gamma*, as well as a bronzy form and the typical insect for comparison; also *Trochilium crabroniformis*, *Nola cuculatella*, *Eupithecia fraxinata*, and a short series of *Peronea variegana*, all from the Brooklands district of Cheshire.—Mr. R. Tait, Jr., full-fed larvæ of *Epunda lichenea*, found in the open in North Wales, on January

10th, many then found had already pupated; he also made some remarks upon the early date.—Mr. B. H. Crabtree showed varieties of *Abraaxas grossulariata* as follows, viz.:—*lacticolor-radiata*, *lacticolor-cuneata*, *iochalcea*, *flavopalliata*, and *flavopalliata-cuneata*.—Mr. W. Mansbridge, a long series of *Fidonia atomaria* from the Burnley district, bred by forcing in a warm room in January, including many dark forms; also a series of *Odontopera bidentata* var. *nigra*, which emerged in January in a cold room.—Dr. P. F. Tinne, a series of *Cidaria reticulata* from Windermere.—Mr. R. Wilding, *Satyrus semele*, English and Irish forms; *Pieris napi* from Ireland, Kent, and the coast sand-hills; also *Melitæa artemis* from Ireland.—Mr. F. N. Pierce had on view the drawings for his forthcoming work "The Genitalia of the British Geometræ," as well as preparations under the microscope.—WM. MANSBRIDGE, *Hon. Sec.*

DERBYSHIRE ENTOMOLOGICAL SOCIETY.—The inaugural meeting of the above Society was held on March 7th, 1914, at Derwent House, Duffield Road, Derby, by the kindness of Dr. St. John. The Rev. R. C. Bindley (Vicar of Mickleover) was elected President for the ensuing year, and Dr. St. John, Treasurer. The Secretary is Mr. G. Hanson Sale, Littleover House, Littleover, Derby, who will be glad to forward particulars to naturalists interested. The object of the Society is the study of general entomology, with special reference to species occurring in Derbyshire. The following exhibits were made:—Mr. Geo. Pullen, a collection of Hymenoptera.—Dr. St. John, living larvæ of *Monacha* and *Plumigera*.—Mr. H. C. Hayward, a number of melanic forms of local species.—Mr. J. Douglas, a large number of varieties of *Amathes (Orthosia) lychnidis*.

RECENT LITERATURE.

Memoirs of the Queensland Museum. Vol. i (Nov. 27, 1912) and vol. ii (Dec. 10, 1913). Brisbane.

AMONG papers of interest to entomologists in these volumes is the series on Australian Hymenoptera Chalcidoidæ, by A. A. Girault, parts i, ii, and iii of which are published in volume i (pp. 66-189); parts iv-vi, and Supplements to parts i-iii appear in volume ii (pp. 101-334). A number of new genera are characterised, and very many species are described as new to science. The families treated are—Trichogrammatidæ, Mymaridæ, Elasmidæ, Eulophidæ, Perilampidæ, and Pteromalidæ.

In another paper Alan P. Dodd describes some new genera and species of South Queensland Proctotrypoidæ (vol. ii, pp. 335-339).

There is also a short article entitled "Some Field Notes on Queensland Insects," by Henry Hacker (pp. 96-100).

OBITUARY.—We have to announce, with great regret, that Mr. G. B. CORBIN, of Ringwood, died on March 12th last. A further notice will appear in May.

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A MONOGRAPH OF THE GENUS *JOPPIDIUM*, WALSH.
Family ICHNEUMONIDÆ: Subfamily CRYPTINÆ: Tribe CRYPTIDES.

By CLAUDE MORLEY, F.Z.S.

“THE species of this genus are slender in form, especially that of the male, the legs slender, the posterior pair unusually long; the antennæ of the female often thickened before the apex, somewhat as in *Joppa*; the wings ample, and in the Mexican species, so far as known, entirely blackish; the abdomen more slender than in *Cryptus*, the first segment being long and linear,” says Cresson, who places them between *Cryptus* and *Phygadeuon* in 1873. As a matter of fact, it is extremely similar to *Acroricnus* in its produced mouth, and I fail to discover any pertinent structural distinction; if it be thought expedient to preserve Walsh’s genus, its invariably infumate wings and western range will serve as sufficient characters. The American species are easily distinguished, and quite distinct *inter se*. But little synonymy has hitherto arisen.

A detailed and fairly good description of the genus is given, with an excellent figure of the front wing of *Ichneumon* sp. for comparison, by Walsh in his erection (Trans. Acad. Sc. St. Louis, iii. 1873, p. 69); but the author obviously had no idea of its systematic position, for he compares it with such diverse things as *Baryceros*, *Joppa*, *Helwigia* and *Euceros*, with none of which it is at all closely connected.

From the somewhat irregular method of sexual erection of his genus *Joppoceras* by Ashmead (Proc. Nat. Mus. U.S. 1900, pp. 39-40), one is led to suppose it founded upon a new and hitherto unpublished species, named in MS. *dubiosum* by Cresson, differing from the type of *Joppidium*—there misprinted *raficeps*, Walsh—solely in having the metathorax both strongly striate and bicarinate in place of unitranscarinate, as in the latter; for in both the metathoracic spiracles are elongate with wings black or infusate, and areolet both large and parallel-sided. As a matter of fact, I believe he simply wished to split off the second of the following species into a new genus, certainly upon insufficient characters.

TABLE OF SPECIES.

- (14). 1. Wings unicolorous infumate, at most with cæruleous reflection.
- (9). 2. Upper basal nervure strongly antefurcal.
- (6). 3. Thorax and abdomen entirely black.
- (5). 4. Antennæ orange with their apices alone infusate 1. *rubriceps*, Cress.
- (4). 5. Antennæ black with no more than a pale central band 2. *dubiosum*, Cress.
- (3). 6. Mesothorax entirely red.
- (8). 7. Metathorax black and very strongly sculptured 3. *ardens*, Cress.
- (7). 8. Metathorax also red and discally glabrous 4. *cæruleipenne*, Cam.
- (2). 9. Upper basal nervure not postfurcal.
- (13). 10. Frontal orbits not white; upper basal nervure continuous.
- (12). 11. Thorax discally black; wings unicolorous 5. *apicale*, Cress.
- (11). 12. Thorax entirely ferrugineous; wings unicolorous 6. *fuscipenne*, Brullé.
- (10). 13. Frontal orbits white; upper basal nervure strongly postfurcal 7. *bellicosum*, Hal.
- (1). 14. Wings with flavidous streak at base of stigma and on hind stigma 8. *annulicorne*, Ashm.

1. JOPPIDIUM RUBRICEPS, Cress.

Trans. Amer. Ent. Soc. 1872, p. 160, male and female; *J. ruficeps*, Walsh, Trans. Acad. St. Louis, 1873, p. 70, female.

This is the typical species of the genus, and a single pair was captured in North America on umbelliferous flowers during July. I am not aware that it has been noticed since 1873, and greatly doubt the synonymy, suggested by Walsh, with *Banchus æquatus*, Say (Boston, Journ. Nat. Hist. 1836, p. 247; Leconte, Writ. Say, ii. p. 701). The typical male was acquired by the British Museum in 1873, and the female was possibly destroyed in the Chicago conflagration of 1871, at which time Cresson tells us Walsh's MS. was already completed; this male is from "Texas (Belfrage)," and was labelled by Fred. Smith "*Joppidium nebriceps* (sic), Cress." It is at once known from the remainder of the genus by its entirely black thorax and abdomen, and its bright orange-coloured antennæ with their apices alone slightly infusate; the description of Walsh's name appears to differ solely in its slightly darker flagellum.

2. JOPPIDIUM DUBIOSUM, Cress.

Proc. Acad. Philad. 1873, p. 138, male and female.

Sumichrast found both sexes at Cordova in Mexico; but it was unknown to Cameron when writing the Ichneumonidæ part of *Biologia Centr.-Amer.* of 1885. As its author remarks: "The female is closely allied to that of *rubriceps*, Walsh, but distinct

by the very different sculpture of the metathorax. The males of the two species are very distinct." This is a shining black insect with all the tibiæ and tarsi conspicuously flavous. In the National Collection are half a dozen examples, comprising both sexes, from Xucumanatlan in Guerrero at 7000 ft. in July, Teapa in Tabasco in March, and taken by Schumann about Atoyac in Vera Cruz.

3. JOPPIDIUM ARDENS, Cress.

Proc. Acad. Philad. 1873, p. 139, male and female; *J. ruficolle*, Cam. Biologia, p. 210.

First described from Cordova; Isthmus of Tehautepec; but a very common species, and obviously the same as Cameron's *J. ruficolle*, figured at Biol. pl. ix. fig. 16, female. Known by the constantly black meta- and red meso-thorax, the black hind tibiæ with their basally pale tarsi. Over sixty examples were found in Mexico at Chilpancingo at 4600 ft. in July, Atoyac in April, Xucumanatlan at 7000 ft., Dos Arroyos in Guerrero at 1000 ft. in September, R. Papagaio in Guerrero at 1200 ft. in October, Amula at 6000 ft. in August, Venta de Zopilote at 2800 ft. in October, Acaguiztla in Guerrero at 3500 ft. in October; Temex by Gaumer; Tierra Colorado; and by Champion at San Geronimo, whence is Cameron's type in the British Museum, in Guatemala, and San Joaquin in Vera Paz.

4. JOPPIDIUM CÆRULEIPENNE, Cam.

Biologia Centr.-Amer. 1885, Hym. i. p. 211, pl. ix, fig. 17, male and female.

Extremely similar to *J. fuscipenne*, Brullé, but quite certainly distinct in its larger size, broader wings with strong cærulescent reflection, black hind tarsi, distinctly antefurcal basal nervure, and especially in the glabrous and glittering metanotum. Apparently a rare species; the male, taken by Champion at David in Chiriqui (and figured in Biologia), is not in the National Collection, though the female type, found by Boucard in Panama, is there along with a male, labelled "Amerique meridionale," and correctly named by the late Rev. T. A. Marshall—probably ex coll. André—though the abdomen is mainly ferrugineous.

5. JOPPIDIUM APICALE, Cress.

Trans. Amer. Ent. Soc. 1872, p. 160, female.

"Quite distinct from *rubriceps* by the colour of the legs and abdomen"; the former are testaceous with their hind tibiæ and tarsi flavidous, the coxæ with hind femora and trochanters black; the latter is ferrugineous, basally nigrescent. One female in the British Museum was captured by Herbert H. Smith at

Atoyac in Vera Cruz during May, and has the metathorax transaciculate, not "deeply punctured," as Cresson describes it; the basal nervure is continuous. It was originally brought forward upon a single female collected in Comal Co.

6. JOPPIDIUM FUSCIPENNE, Brullé.

Cryptus fuscipennis, Brullé, Nat. Hist. Ins. Hym. iv. 1846, p. 189, female; cf. Cam. Biologia Centr.-Amer. 1885, Hym. i. p. 211. *J. yucatanense*, Cam. lib. cit. p. 211, pl. ix. fig. 18, female. *J. donabilis*, Cress., Proc. Acad. Philad. 1873, p. 139, male and female.

No doubt can, I think, be experienced that Brullé's description refers to *J. donabile*, and it was placed in the present genus by Cameron in 1885; the metathorax is rather transaciculate than "rugueux," but the "deux chevrons parallèles" are obviously the two transcarinæ, which are often centrally incomplete. It is an abundant Mexican species, found by Sumichrast at Cordova; subsequently described from a single female as new by Cameron from Valladolid in Yucatan (this type differs from the usual form of *J. donabile* only in its paler—by no means whitish, as figured—flagellar base). I have examined eighty examples, among which the male much predominates, from Venta de Zopilote at 2800 ft. in October, Chilpancingo at 4600 ft. in July, Temex in northern Yucatan, Cuernavaca in Morelos in June, Acaguizotla at 3500 ft. in October, Guadalajara in Jalisco in July, and Dos Arroyos in Guerrero at 1000 ft. in September. This and *J. cæruleipenne* are the only Mexican species with entirely rufescent thorax and unicolorous wings.

7. JOPPIDIUM BELLICOSUM, Hal.

Cryptus bellicosus, Hal., Trans. Linn. Soc. 1836, xvii. p. 318, female. *C. nitidipennis*, Brullé, Nat. Hist. Ins. Hym. iv. 1846, p. 188, female. *Ichneumon macrocercus*, Spin., Gay's Hist. fis. Chile Zool. vi. 1851, p. 484, male and female.

The above three authors record their species, which have not before been synonymised, respectively from the Straits of Magellan, Chili, and "Se halla en las provincias centrales, Santiago, &c." Dalla Torre misspells Spinola's specific name; and incorrectly associates *Cryptus bellosus*, Curt. (*Aritranis signatorius*, Fab.), noted at Proc. Ent. Soc. iv. 1845, p. lvii, with Haliday's species. This insect is very different from all the others of the present genus in its narrowly clear white internal orbits, and is probably worthy of generic rank in its slender and elongate antennæ, short metathorax, small areolet, postfurcal upper basal nervure, and tremendously elongate terebra; it is precluded from the genus *Cryptus* by the elongate cheeks and mandibles. The size varies considerably through the whole

structure, and, excepting the density of alar infumescence, the colours are very constant; I have seen examples varying from: body 14 and terebra 35 mm. in length, to others with body, 19 mm. and terebra fully 60 mm. in length. The National Collection is somewhat rich in this South American species:—Chili (Bartlett Calvert; in 1856 by T. Edmonds; and in 1875 by Edwyn C. Reed); Valdivia, Corral or Conal in 1898 (Cameron); South Chili, Maquehue, Temuco, January, 1906 (R. M. Middleton); Santiago in 1869 (Reed); Patagonia, Volcan del Lago Xanco, two in 1903 (Chubut); Terra del Fuego, Rio McClelland on December 30th, 1904, and Nose Peak on January 15th and 18th, 1905 (R. Crawshay); and Haliday's type, labelled "*Cryptus bellicosus*" by him, presented by the Linnean Society in 1863.

8. JOPPIDIUM ANNULICORNE, Ashm.

Proc. Californ. Acad. v. 1895, p. 549, male.

I have not seen this Californian species.

NOTES ON EUROPEAN HESPERIDS.

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

A YEAR or two ago, until the researches of Dr. Reverdin threw a flood of light on certain species in this group, those of us who were interested in the genus labelled our specimens with doubt and trembling, and described them, if we said anything about them in print, as examples of species which they almost invariably had no pretence to belong to. Consequently, reliable data for these species are at present non-existent, except those contained in Dr. Reverdin's papers on the subject in the Bulletin of the Geneva Society.

My friend Mr. A. L. Rayward has most kindly, recently, made preparations of all the doubtful specimens of the *alveus* group which I have met with in my various wanderings in different parts of Europe during the past twelve years, and as the species those specimens belong to can now be with certainty determined, I append a list of localities in which they were found, in the case of each species, and the actual dates on which the specimens were taken:—

Hesperia alveus.—I have specimens from Simplon Kulm, July 24th and 25th, 1903. Berisal, July 22nd and 23rd, 1903. The Laquinthal, July 26th, 1903.

H. serratulæ.—Buda Pest, May 22nd, 1910. Berisal, July 7th, 1902. Albarracin, June 18th and 19th, 1913.

H. onopordi.—Albarracin, May 26th to June 6th, 1913. Ronda, April 19th, 1908. Hyères, April 11th, 1904, and May 13th, 1905. Digne, July 13th, 1904.

H. armoricanus.—Hyères, May 18th, 1905.

H. carlinæ.—Abries (Hautes Alpes), July 20th to 22nd, 1904. Berisal, July 22nd and 23rd, 1903.

H. cirsii.—Albarracin, July 27th to August 2nd, 1905.

H. bellieri.—Beauvezer (Basses Alpes), August 1st and 2nd, 1906.

Mr. Rayward also made preparations of all my *Hesperia malvæ* and *H. malvoides*, and these come out as follows:—

Hesperia malvæ.—Aigle, June 26th, 1902. Buda Pest, May 30th, 1909, and May 11th, 1910. Saeterstoen, Norway, June 4th, 1912.

Hesperia malvoides.—Riffelalp, Zermatt, July 4th, 1902. Martigny, June 27th to 29th, 1902. Aigle, July 12th, 1902. Albarracin, June 6th to 19th, 1913. Guethary, near Biarritz, May 23rd, 1908, and June 23rd to 26th, 1913. Hyères, April 13th, 1904, and May 13th to 18th, 1905.

It will be noted that I have specimens of both these species from Aigle. The examples of *H. malvæ* were taken in the fields at the back of the Grand Hotel, and those of *H. malvoides* somewhere along the Sepey Road. I cannot at this length of time remember the exact spot where they occurred, but on the day on which they were taken I walked up as far as Vuargny.

Youlgreave, South Croydon: March 21st, 1914.

A BEE RESEMBLING A WASP.

BY T. D. A. COCKERELL.

AUSTRALIA has long been known as the home of the curious genus *Hylæoides*, bees presenting the most extraordinary resemblance to Eumenid wasps. I have now to record a bee, just received from the Queensland Museum, which looks at first sight like some Crabronid wasp; so much so that I could hardly believe, until I had examined it with a lens, that it was really a bee.

Euryglossa crabronica, sp. n.

♀. Length, 11 mm.; expanse, $14\frac{1}{2}$, the wings unusually short; robust, black, marked with yellow, with very scanty greyish-white pubescence; head broad, face and front shining; palpi short; blade of maxilla rounded, about as long as wide; mandibles bidentate, dull yellowish basally, ferruginous apically; labrum black; clypeus bright lemon-yellow, the lower border narrowly black, the yellow area depressed in middle above (following clypeal margin) and constricted at sides, the whole having the outline of a low-crowned soft hat with the brim turned down; supra-clypeal area shining, with very sparse strong punctures; flagellum bright ferruginous beneath; thorax wholly black except the tubercles, which are partly yellow; mesothorax and scutellum shining, well punctured; area of metathorax

smooth and polished, the extreme base in middle rough; tegulae piceous; wings dusky, nervures and stigma dark fuscous; lower side of first s. m. strongly arched; first r. n. meeting first t. c.; legs black with white hair, the femora polished; anterior and middle knees yellow; anterior tibiae light yellowish-ferruginous in front; tarsi ferruginous apically; abdomen dull black, segments 2 to 4 with very large transversely elongated yellow triangular or cuneiform patches basally on each side; fifth segment with a pair of quadrate chrome yellow patches, separated by a black band; apex of fifth segment with black hair.

Hab. Brisbane, Queensland, October 17th, 1913 (Hacker; Queensl. Mus., 105). A very remarkable species, quite unlike any previously known.

BRITISH ORTHOPTERA IN 1913.

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

JUDGING by results, the season of 1913 was a very ordinary one as regards the British Orthoptera. On June 23rd Mr. P. Richards sent me from Seabrook, a small village between Hythe and Sandgate, in Kent, a living female nymph of a large Locustid, presumably *Phasgonura viridissima*. It was captured at Seabrook on June 21st, and Mr. Richards reports that there were a good number in the place. He fed it on flies, which it ate greedily. On the other hand, Mr. C. W. Bracken, writing July 21st, says of another Locustid, *Pholidoptera griseo-aptera* (= *T. cinereus*), that he fed it on lettuce. Many of our Locustid grasshoppers are often found to be carnivorous, but how far this habit is natural to them does not seem to be well ascertained, and reports on food that they take most readily would be useful, for it seems likely that some of them at any rate may be good friends to the gardener or agriculturist.

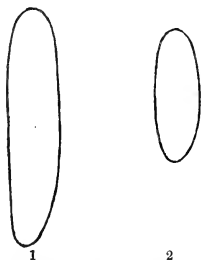
In the New Forest, on July 5th or 6th, I met with my first mature grasshopper, a male of the Acridian species *Chorthippus parallelus*. On July 30th the large bog-loving Acridian *Mecostethus grossus* was mature in the New Forest, two males being captured on that date near Holm Hill.

Mr. S. E. Brock has forwarded me a few dates from Linlithgowshire. He found *Omocestus viridulus* stridulating at Drumshoreland and Riccarton Hills on July 20th, and *C. parallelus* was heard at the former locality on July 27th. On the next day *Gomphocerus maculatus* was stridulating at Craigton. A small colony of the last species was found on the south slope of Cockleroy (altitude about 800 ft.), on September 21st. The "courtship" of the same species was observed at Craigton, on August 8th (*vide antea*, p. 104).

In the New Forest, from July 26th to September 8th, the

following species were met with:—*M. grossus*, *O. viridulus*, *C. parallelus*, *Stauroderus bicolor*, *G. maculatus*, *O. rufipes*, *Tetrix bipunctatus*, *Nemobius sylvestris*, *P. griseo-aptera*, and *Metrioptera brachyptera*.

On September 9th a visit was paid to Bookham Common, Surrey, to get *Gomphocerus rufus*, this being the only locality in which I have found it. A spot of no great extent by the side of one of the string of ponds near Bookham Station yielded specimens, and it could be seen nowhere else. We took eighteen examples. Even at this late date several were still but nymphs, and two of these, together with three imagines, were brought home alive. On the morning of September 14th one of the nymphs was found to have cast its skin, thereby becoming an imago (female), and, judging by its appearance, the change had occurred but a short time before the imago was noticed. Those brought home alive fed on grass, as did others of the British Truxalidæ that I have kept in captivity. Thirteen that were put in a laurel-bottle, with perhaps a spot or two of benzine, were of a brilliant crimson colour when removed a day or two later, and this tint to some extent they retained when dry. An egg is



1. Egg of *Gomphocerus rufus*
2. Egg of *Diastemma marmorata*
(Both $\times 10$)

illustrated in fig. 1 to a scale ten times natural size. Its length is 4 mm., and width in position drawn about .9 mm. If this may be called a lateral view, the dorsal width is about 1 mm. It is somewhat rounder at the upper end as drawn, and the lower end turns very slightly to the left. The surface is a little wrinkled transversely. The examples used were extracted from a dead female and put in spirit and water, so I am not able to say anything about the natural colour.

Mr. B. S. Williams sent me a living female of *Leptophyes punctatissima*, which he took from a fence in a wood at East

Finchley, N., on September 16th.

Somewhat late records are:—The little earwig (*Labia minor*), a male and two females taken by Mr. J. R. le B. Tomlin, on October 2nd, at Glemsford in Suffolk; *S. bicolor* (one very dark) and *M. brachyptera*, taken by Mr. E. Step, on the occasion of the Fungus Foray of the South London Entomological and Natural History Society, at Oxshott, on October 4th; one *Stenobothrus lineatus*, a local species, taken as nymph, by Mr. T. A. Chapman at Buckland, Surrey, on October 18th, which became an imago on October 21st; *G. rufus*, a female taken by Mr. Chapman at Buckland on October 31st.

Considerable interest attaches to the capture, in Kent, of a

large Locustid, *Diestrarmena marmorata*, de Haan (fig. 3), which Mr. M. Burr brought up to the Entomological Society for exhibition on October 1st. It appears that Rev. E. N. Bloomfield received three specimens that had been taken on September 23rd, October 19th, and November 12th, in an outhouse at St. Leonard's. It seems clear that the origin of these insects was to be found in Relfe's Nursery at St. Leonard's, whence



FIG. 3.—*Diestrarmena marmorata*, de Haan, ♀, nat. size. W. J. Lucas, photo.

Mr. Bloomfield received six more specimens, they being not uncommon in a fern-house. *D. marmorata* is a native of Japan, but has been taken under conditions very similar to those at St. Leonard's in several places on the Continent. Nor are these the only British examples; for, strange to say, I received on the same day (October 1st) some decomposing fragments of Locustids from Mr. Harwood, of Colchester. They came from a wall covered with "virgin cork," at Sir Ernest Cassel's residence at Ipswich; but whether the wall was indoors or not was not mentioned. Though considerably decomposed, there was but little doubt about their belonging to the species under notice. *D. marmorata* is a large insect with very long appendages of all kinds, and is very spider-like in appearance and movements. Its colouring is a mixture of different tints of bright brown. I

possess another female of good size, which was taken in Kew Gardens four or five years ago. Since this species appears to be chiefly carnivorous in its habits, it is probably more useful than otherwise to the gardener (see above). The egg (fig. 2) is small for so large a grasshopper, its length being about 2.2 mm. and width about .8 mm. It is nearly, but not quite, a cylinder with somewhat hemispherical ends, and the surface is slightly, but regularly, roughened. Of the colour I cannot speak, as the eggs examined were extracted from the body of a dead female.

Kingston-on-Thames: March, 1914.

SOME DORSET HEMIPTERA-HETEROPTERA.

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

THE following list of Hemiptera-Heteroptera found by me during the last few years in this neighbourhood may be of interest:—*Thyreocoris scarabæoides*, L. Once in numbers. *Podops inuncta*, F. West Lulworth, common on the chalk. *Schirus luctuosus*, M. & R. On the coast. *Gnathoconus albomarginatus*, Goeze. Two, May, 1913, at West Lulworth. *Palomena prasina*, L., *Piezodorus lituratus*, F., *Pentatoma rufipes*, L., *Picromerus bidens*, L., *Rhacognathus punctatus*, L., *Zicrona cærulea*, L. Common on the heathlands. *Acanthosoma hamorrhoidale*, L., *A. interstinctum*, L., *Elasmostethus griseus*, L. The females may be commonly found with their young, in June, on *Betula*, near the outskirts of woods. *Enoplops scapha*, F. Four, last August and September, at Ringstead. *Syromastes marginatus*, L., *Coreus denticulatus*, Scop., *Stenocephalus agilis*, Scop. Very common on the coast. *Corizus maculatus*, Fieb. One at Tadnoll on Sept. 10th, 1908. *Neides tipularius*, L. One in my garden, May 2nd, 1908. *Nysius lineatus*, Cost. One at Holme, near Wareham, on August 29th, 1912. *Cymus glandicolor*, Hahn, *C. claviculus*, Fall., *Ischnorhynchus geminatus*, Fieb. Very common on the heaths. *Heterogaster urticae*, F., *Rhyparochromus prætextatus*, H. S., *R. chiragra*, F., *Ischnocoris angustulus*, Boh., *Macrodema micropterum*, Curt., *Stygnus pedestris*, Fall., *Aphanus pini*, L., *Drymus sylvaticus*, F., *D. piceus*, Flor. One at East Stoke on Oct. 1st, 1908. *Notochilus contractus*, H. S., *Scolopostethus affinis*, Schill., *S. thomsoni*, Reut., *S. decoratus*, Hahn, *Serenthia læta*, Fall., *Campylostira verna*, Fall., *Dictyonota tricornis*, Schr., *Monanthia humuli*, F., *Aradus depressus*, F., *Hydrometra stagnorum*, L., *Velia currens*, F., *Gerris lacustris*, L., *Coranus subapterus*, De G., *Nabis lativentris*, Boh., *N. major*, Cost., *N. flavomarginatus*, Scholtz., *N. limbatus*, Dahlb., *N. lineatus*, Dahlb., *N. rugosus*, L., *N. ericetorum*, Scholtz., *Salda*

littoralis, L., *S. saltatoria*, L., *S. pilosella*, Thoms., *S. cincta*, H. S., *S. cocksi*, Curt., *Lycocoris campestris*, F., *Anthocoris nemoralis*, F., *A. nemorum*, L., *Triphleps minuta*, L., *Microphysa elegantula*, Baer., *Pithanus maerkeli*, H. S., *Miris calcaratus*, Fall., *M. lævigatus*, L., *M. holsatus*, F., *Leptopterna ferrugata*, Fall., *L. dolobrata*, L., *Lopus gothicus*, L., *Phytocoris reuteri*, Saund., *P. ulmi*, L., *Calocoris ochromelas*, Gmel., *C. roseo-maculatus*, De G., *C. bipunctatus*, F., *C. lineolatus*, Goeze, *C. ticinensis*, Mey., marshy places, August and September. *C. infusus*, H. S., *Stenotus binotatus*, F., *Lygus cervinus*, H. S., *L. pastinacæ*, Fall., *L. kalmii*, L., *Liocoris tripustulatus*, F., *Rhopalotomus ater*, L., *Halticus apterus*, L., *Campyloneura virgula*, H. S., *Cyllocoris histrionicus*, L., *C. flavonotatus*, Boh., *Orthotylus tenellus*, Fall., *O. ochrotrichus*, D. & S., *O. ericetorum*, Fall., *Heterotoma merioptera*, Scop., *Macrotylus paykulli*, Mey., *Harpocera thoracica*, Fall., common on oaks. *Phylus palliceps*, Fieb., *P. melanocephalus*, L., *P. coryli*, L., *Psallus ambiguus*, Fall., *P. betuleti*, Fall., *P. variabilis*, Fall., *P. quercus*, Kb., *P. fallenii*, Reut., *P. varians*, H. S., *P. roseus*, F., *Plagiognathus arbustorum*, F., *Nepa cinerea*, L., *Notonecta glauca*, L., *Corixa geoffroyi*, Leach, *C. hieroglyphica*, Duf., *C. sahlbergi*, Fieb., *C. mæsta*, Fieb.

This district is varied in character. The chalk downs and other formations of the coast are partly replaced inland by heaths of Bagshot and Reading sands. Sometimes I fancy the Bagshot more prolific than the Reading beds. Areas of London Clay occur, on which is wood. Here and there is marshland, and there are margins of fenland by the Frome. I have not specially searched for these insects, or, doubtless, many more would have been met with.

An almost bare list suffices, as most species occurred under usual conditions.

Brookside, Winfrith, Dorset.

AN ACCOUNT OF AN ENTOMOLOGICAL TRIP TO CORSICA.

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

THE following notes of a trip which I made last summer to Corsica are in no way records of varieties captured or an account of a profusion of butterflies seen; for, as a matter of fact, in many respects the time I spent in that delightful and romantic island was, entomologically speaking, rather a failure. The reasons for this were, that in the first place it was an extremely late season, at any rate in the mountains, many insects not appearing until a fortnight or more after one had a right to

expect them, and then only in very small numbers. The greater part of May and early June had been very wet and cold, and at Vizzavona I was told there had been more rain and snow during the early part of the summer than had been known for at least ten years. An old French gentleman who lives at Ajaccio told me that the backwardness of plant life generally (he was something of a botanist) was phenomenal, and that the excessive cold and wet which they had been having had done considerable damage to fruit trees and crops; and so of course in the same way insects suffered. Except with one or two exceptions butterflies were never plentiful; and even when we went down from Vizzavona to Corte, two thousand feet lower, we still found the same condition of things prevailing and heard the same story: that never had there been such a wet, cold summer. Consequently, when we arrived in the island towards the end of June many of our first days resulted in seeing very little, and we had literally to wait for the butterflies to come out, which they chose to do very slowly indeed; and when we had to leave on July 17th our "bag" was by no means a large one, though I am bound to say we were able to see and obtain good series of the majority of the interesting Corsican specialities. Before going to Corsica I had spent a few days collecting in the forests near Laon, in Northern France. Here on June 19th *Dryas paphia* was emerging and becoming common; in Corsica, hundreds of miles further south, I did not see *D. paphia* until July 5th, when at Corte, in the Restonica Gorge, which is very warm and sheltered, this species was then only just commencing, and was not out at Vizzavona a week later, where most collectors have generally found it abundant in the second week of July. However, if butterflies were not plentiful, Corsica itself is so beautiful and full of interest that one must indeed be without resources if one cannot fill up the time in other ways. We found the natives charming and always pleasant to talk to; while with its splendid mountain scenery every corner is a perfect picture for an artist; and of course the flora of Corsica is well known for its variety and interest. I had as companion my friend Mr. Robert Trapper-Lomax, who, although at starting somewhat of a novice in matters entomological, soon became an adept with the net, and quickly began to talk with the greatest glibness of "*elisa*" and "*hospiton*," though his great wish to secure a specimen of the latter butterfly was never realized. Leaving Marseilles at 4 o'clock in the afternoon, we slowly steamed out to sea under a cloudless sky, the statue on the church of "Notre Dame de la Garde" standing up above the tower like a figure of living gold, illuminated by the rays of the hot afternoon sun. Next morning, however, when we arrived at Ajaccio at 5 a.m. a drizzling rain was falling, and the hills surrounding one of the most beautiful bays in Europe were

shrouded in vapour and mist; but in spite of the wet it was very hot when we got on shore, with a close, almost tropical atmosphere. We engaged rooms at the Hôtel de France in the middle of the town, as the much better and more comfortable Grand Hotel is closed at this time of year. By 10 o'clock the rain had stopped and the sun was shining brilliantly, quickly drying up the sopping vegetation, and we were on the war-path, and once again experiencing that feeling of intense excitement which always fills one when, after perchance a year's interlude, one starts for one's first walk with a butterfly net in a perfectly new country, where one imagines one is at once going to see every sort of rarity, and where every insect that comes along is eagerly captured and carefully examined before being either released or consigned to a pill-box.

Quickly walking through the town in a north-westerly direction, we came out on to some rough ground, partly cultivated terraces and small fields; but everything was frightfully burnt up and insects were not common. A small form of *Polyommatus icarus* was rather frequent, fresh specimens of probably a second or third brood; and flying about amongst the burnt-up herbage was *P. astrarche*, also of rather small size but with the red spots large and brilliantly coloured; these might be referred to as var. *calida*. Working round by the back of some villa gardens, a few *Pieris brassicæ* were noticed, but further along, at the foot of some dry hills, we found *Epinephele ida* to be rather common; they were quite fresh, and are, I think, somewhat larger than my Spanish examples. Here also Mr. Lomax secured a fine specimen of *Tarucus telicanus*, which with two or three rather ragged *Lampides boeticus* were haunting the flowers of a small wild "pea" (?) which rambled over the dry stony ground, but which further along, where a tiny spring welled up and where the vegetation in consequence became a little more luxurious, grew into quite a fine plant. A good many butterflies were attracted to this spot—*Pararge egeria*, fresh *Colias edusa*, *Issoria lathonia*, one or two *Leptidia sinapis*, and a single lovely *Pyrameis cardui*.

The dry hillsides were in many places covered with heliocysum in full blossom, making fine patches of golden colour; these were attractive to a fair large form of *Epinephele jurtina* var. *hispulla*, both sexes being in good order. Here also were *P. icarus*, more *E. ida*, and numerous *E. tithonus*, with a few very darkly-coloured *Chrysophanus phlæas* var. *eleus*; and as we were walking back to Ajaccio by the roadside, and flying literally amongst the thick white dust *Pararge megæra* var. *tigelius* was not infrequent, though generally shabby individuals.

The following morning, as there did not seem to be anything to detain us in Ajaccio, we left for Vizzavona, a journey which takes some four hours or more, but which is always interesting

because of the gradual ascent from the hot low plains and hills, fragrant with the scent of endless sweet-smelling herbs, through the dense "maquis," which is the Corsican name for the thick, in many places almost impenetrable, bush which covers all the hillsides up to about 2000 ft., and which is composed of arbutus, Mediterranean heath, and myrtle scrub, leaving which the line goes through woods of splendid chestnut trees, with picturesque villages perched on the tops of rocky hills, or lying hidden in sheltered valleys, till it reaches the pine forests and eventually stops at the station of Vizzavona.

Here we were very soon comfortably settled in the very clean and nice Grand Hotel, which in spite of its name is a sufficiently simple establishment, but perfectly comfortable for a lengthened stay. Vizzavona is right on the edge of the magnificent pine and beech forest, and consists of the hotel, post-office, two or three small villas, and half a dozen cottages; but it is a convenient centre, and most of the Corsican butterfly specialities may be taken within a short distance. The afternoon we arrived we went for a short walk in the direction of Tattone, a small hamlet some three miles further on. It was very cool and dull, with only occasional gleams of sun, and we did not see a *single* insect of *any* description, which was rather a damper to one's entomological enthusiasm. The heliocrysum, which was so conspicuous a feature at Ajaccio, covering the ground with golden blossom, was at this elevation not in flower.

Next morning was brilliantly fine, and we started off betimes, through the forest, past the Monte d'Oro hotel, which is forty minutes' walk from Vizzavona, and on to the Col de Vergio; on the way up we saw very little, an occasional *L. sinapis* and a single fine *Pyrameis atalanta* sitting on a plant in a patch of sunlight which forced its way through the thick pine trees.

However, when we emerged from the forest on to the mountain side matters mended somewhat, and it was not long before I had taken one of the Corsican specialities, viz. *Cænonympha corinna*. Near the Monte d'Oro hotel, in the very black-coloured Corsican nettles, were many larvæ of *Aglais urticae* var. *ichnusa* in all stages of growth. I collected a good number of these, but only took the smallest specimens, as I knew if I took full-fed ones I should probably breed out about ninety per cent. of ichneumons; those I kept fed up and emerged nearly a month later, when I had got back to England, all fine large examples of this interesting insular form of *urticae*, not a single one being ichneumoned. On the "Nek" itself *Lycæna argus* (*ægon*) var. *corsica* was flying about quite commonly amongst the bracken and small juniper bushes, which here thickly cover the top of the Pass on either side of the road; they were quite fresh, but the beautifully marked females were rather scarce.

Passing over the "Nek" and descending a little the other

side, *C. corinna* turned up frequently; curiously enough many were quite worn, giving the appearance of having been on the wing for some time. Others again in the same locality were evidently freshly emerged—rich brilliant orange, the males with intense black tips to the wings; it is a very pretty little butterfly when quite fresh. Here also were a few *P. brassicæ*, which deserve no special mention as they were quite typical. Climbing up to the old fort, which stands so picturesquely guarding the Pass, we found a few very dark *C. phlæas* var. *eleus*; and worn *P. megæra* var. *tigelius*, and *L. argus* (*ægon*) var. *corsica*, were plentiful, while an interesting object was the Corsican sharp-headed Lizard, *Lacerta oxycephala*—a finely-marked black and green form, which was very common on the rocks round the Tour.

Undoubtedly much the best ground in the vicinity of Vizzavona is the meadows and rough land in the direction of, and beyond, the little village of Tattone; to reach this one has a walk of nearly three miles, either by the winding road or, more quickly, along the railway line. Here, where the very picturesque village school is built, is some excellent ground, and our second morning, and very many others as well, were spent collecting and sketching hereabouts. On the left of the road is much rough bracken-covered ground, with open spaces covered with flowers and luxuriant grass, rendered more luxuriant still by the little streams of water which have been cut to irrigate the land and which flowed in all directions. Here *L. argus* (*ægon*) var. *corsica* was in the greatest profusion, both sexes abundant and in beautiful condition, and it was pretty to see them sitting with expanded wings on the bracken. Two specimens of *Lycæna argyrognomon* var. *bellieri* were netted here, but I have no note of taking this species anywhere else

(To be continued.)

NOTES AND OBSERVATIONS.

WICKEN FEN.—The National Trust for Places of Historic Interest or Natural Beauty have now made arrangements for the appointment of a watcher for their property in Sedge Fen, Wicken, Cambridgeshire. Applications for permission to visit this property should be addressed to A. H. Evans, Esq., Secretary of the Local Committee, 9, Harvey Road, Cambridge, or to S. H. Hamer, Esq., Secretary of the National Trust, 25, Victoria Street, London, S.W.

HIBERNATION OF *Pyrameis atalanta*.—As there is a controversy regarding the hibernation of *Pyrameis atalanta*, it may be of interest to know that a specimen was seen at Cripplestyle, near Fordingbridge, on Thursday, April 16th.—A. S. CORBET; Bournemouth.

PROLONGED PUPAL DURATION IN *ERIOGASTER LANESTRIS*.—From larvæ taken on June 19th, 1909, I obtained in 1910 seven moths, six males and one female emerging on February 27th, and one female on March 8th: no moths appeared in 1911, but in 1912 five males emerged, two on February 21st and three two days later. There was no further emergence in 1913, but on the 2nd inst. a perfect male emerged. I have still three pupæ remaining, but whether living or not I am unable to say, the cocoons being intact. The date of the last emergence would seem to be unusually late.—LLOYD CHADWICK, 7, Northgate Street, Warwick, April 19th, 1914.

MACROGLOSSA STELLATARUM.—I saw a specimen of *M. stellatarum* this morning flying over a rhododendron which is just bursting into flower. This seems to be an unusually early appearance, in view of the rainy and comparatively sunless March which we have experienced.—H. V. PLUM; Kelly College, Tavistock, April 3rd, 1914.

DESCRIPTION OF THE FULL-FED LARVA OF *THECLA SPINI*.—Whilst at Albarracin in June last summer I beat sundry Theclid larvæ from two species of *Rhammus*, one of which was *R. licyoides*; these eventually produced specimens of *T. spini*, and as descriptions of the larvæ of all Continental European Rhopalocera hardly exist, I am induced to publish the following details of the full-fed larva:—Length 15 mm.; breadth 4 mm. Head jet black and shining; second segment much narrower than those following, and narrower in front than in the rear; third segment is the full width of the larva (4 mm.). Colour of all segments except first (the head) light grass green. On the front of third segment commence two subdorsal stripes, greenish white in colour, these stripes are interrupted at the front and rear of each segment and they extend through ten segments. The spiracular stripes are the same colour as those on the subdorsal area, and extend from the third to the anal segment, both inclusive. Between subdorsal and spiracular stripes is an inconspicuous series of diagonal stripes. The ventral area is bluish green with claspers of grass green. The spiracles are inconspicuous and of a somewhat lighter green than the surroundings.—W. G. SHELDON; Youlgreave, South Croydon, April 26th, 1914.

BUTTERFLY COLLECTING IN SICILY AND CALABRIA IN 1912 AND 1913.—I was persuaded to stay at Messina for the first week in May, and on the first I climbed Monte Ciccì (2000 ft.); on the 3rd I walked up to Gravittelli, and on the 6th I visited the low hills at the extreme north-east point of Sicily overlooking the Faro, and though the weather was fine and hot, the rain had evidently retarded the appearance of the summer butterflies. I reached Forest Hill on May 10th with a very small "bag," which to my disappointment did not contain a single fresh species to add to my list. Then followed the wet summer in England.

In the spring of 1913 circumstances delayed my leaving England for Sicily until May 14th. Again I started in brilliant sunshine, again I left the finest weather in England. Crossing the Channel clouds gathered, and at Dieppe there was a heavy thunderstorm, and rain fell as I journeyed across France and entered Italy. In

order to escape arriving at Messina at the inconvenient hour of 2 a.m., I broke my journey on the morning of May 16th at Cajanella (pronounced Canella), a roadside station fifty miles north of Naples. The village itself was very picturesque, nestling at the foot of an isolated hill between higher hills. This hill was crowned with a ruined castle and a roofless chapel, which reminded me of Corfe Castle, Dorset, and I found there was a grand view (as at Corfe) from the top across the plain. On the plain, farmhouses sheltered by trees and bushes were dotted about, and nightingales were in full song in broad day at each of them, while near the station hundreds of house-martins had their nests in the eaves of an immense old building, probably a former monastery. The main road was good, but the lanes were very muddy, and in places quite impassable owing to recent heavy rains, and as a consequence butterflies were very scarce, *icarus* and *rapæ* being most in evidence. When I was nearly stuck in the mud, a youth came to my assistance and acted as guide until I left, and would take no tip! He was quite satisfied with the opportunity to pick up a little English, his ambition being to emigrate to America shortly. Reaching Messina at 8.30 a.m. on March 31st, I was in time for a good breakfast and able to spend a full day enjoying the delightful atmosphere of Sicily, this being, I was told, the first really nice day for several weeks past.

Next day a picnic was arranged for me at the Campo Inglese, where Lord Nelson formed his camp over one hundred years ago, but from experience I recognise that picnics, like field meetings, are seldom successful from a collector's point of view. Before reaching the top of the hill I separated from my party to climb a spur of Monte Cicci, intending to rejoin them at the camp. The only butterflies on the wing were whites, and while I was on the steep slope I noticed a cloud of large whites crossing the valley below, moving towards the west. There must have been thousands of them, and a few stragglers came up the hill in my direction, males of *Pieris brassicae*, in good condition. I learnt afterwards that a couple of friends of mine saw the cloud passing over the torrent bed at La Scala, two or three miles further west, and captured some specimens. With regard to the migration of butterflies I was told in 1910 by a native of Cucuraci, the nearest village to the Campo Inglese, that the people there look for an annual invasion of white butterflies about May 20th, but he could not say where they came from. Across the Straits in Calabria, not many miles distant, there is a very extensive plain formed by the River Messina and its tributary, the Marepotamo, which is a possible source of origin, and I should like to explore that district at a future date. When I joined my friends at the Campo Inglese, I found four thousand soldiers in camp, many of them being engaged in drill, which was interesting to watch.

On May 19th I hurried off to spend three or four days at Randazzo, the railway communication being so slow that I did not arrive until sunset. At my hotel I met an entomologist from Vienna, Herr Carl Hosfer, and he, with his wife, asked to be allowed to join me next day. The forenoon was bright and sunny,

and with our combined three nets we captured fifteen specimens of *Euchloë damone* in excellent condition, before rain practically put an end to collecting for the day. We each took a specimen of *Lycæna alciphron* (var. *gordius*), and amongst other species were *Polyommatus baton*, *Aporia cratægi*, *Pieris daphnidice*, *Thais polyxena* (quite *passé*), *Euchloë belia* (var. *ansonia*), *cardamines*, &c., and a small form of *zygæna*. We got shelter from the rain and enjoyed a cup of tea which Frau Hosfer was able to make by the aid of a spirit lamp carried with them, and water obtained at the adjoining farmhouse.

Next day (May 21st) we agreed to take different directions. We got up early, and before 9 a.m. *damone* was flying in the sun. Later on clouds began to gather, and about eleven o'clock specimens of *Aporia cratægi* became quite common. Apparently I was in a swarm, they were on all sides of me, moving steadily in one direction—westward. I captured about a score—all males—not one female, in order to get a series of the Sicilian form, which has been named *augusta*, and I had to hurry up, for before noon a thunderstorm broke. Then I had to run for shelter from the downpour, and fortunately reached a cave excavated by the labourers for that purpose. The storm lasted about an hour, and then of course *Aporia cratægi* had disappeared, and the herbage being soaked, it was necessary to keep to a pathway. After lunch I followed a mule track up the mountain in the endeavour to reach the highest zone of vegetation, where only *Sedum* grows, but after a three hours' climb, I had to be satisfied with finding out that the various trees which form a wood, very conspicuous from below, are not pines as I expected, but beech, oak, white poplar, and a kind of berberry. Making a hurried return to Randazzo, I had a narrow escape of a night out, for at dusk a dense cloud, damp as well, enveloped the district and hid Randazzo from view, though I had almost reached the railway station, where an engine was whistling continuously. In the dark I missed a sudden turning in the broad cinder path and got on a dangerous rocky slope, where I thought it prudent to remain still. Fortunately, after a couple of hours the cloud lifted a little, and after some careful searching I found a narrow track which led to some huts. The occupants had retired to bed and at first refused to open their only door, but at the third hut I found a Good Samaritan willing to direct me. The following day was nice and sunny, but we found the heavy rain had apparently diminished the number of butterflies. Herr Hosfer and myself were both desirous to visit Palermo, and we agreed to meet there. I returned to Messina and he continued his tour *viâ* Girgenti.

From May 24th until I left Messina on June 14th there was an entire absence of rain, and a heat-wave gradually increased in intensity. I found Messina hot and dusty, and Palermo still hotter. By arrangement I met Herr Hosfer and his wife, on Monte Ciuccio, near Palermo, on May 26th, early. It is a steep rocky slope without any shelter. *Melanargia pherusa* was flying about in abundance, but we failed to capture a single specimen worth keeping. The heat, combined with the slippery slope, fairly beat us, and we had to retire to the valley below for shelter. In the valley I caught a newly

emerged specimen of *galatea* flying most erratically, and a few blues and skippers.

I decided to return to Messina from Palermo by easy stages along the north coast, and finding that a motor-omnibus runs daily from Termini Imerese (twenty-three miles from Palermo) inland to Nicosia, &c., I caught an early train (5.45) with a view to getting a ride to the foot of one of the Madonie Mountains. The motor was waiting at the station, filled already with passengers, so my plan failed. Then I decided to climb the hill at the back of Termini Imerese, and somehow was wrongly directed, so that I found myself in a labyrinth of paths in the vineyards, and in consequence of the intense heat in the middle of the day I never reached the uncultivated top region at all. I saw numerous specimens of *podalirius*, *machaon*, *edusa*, *cleopatra* (male and female), *daplidice*, *ausonia*, *cardamines*, and other species common to the vineyard district, but nothing novel. About five o'clock I struck the mule track which I ought to have taken going out, and was able to get back to the town in a very short time. Here there is a magnificent hotel in connection with the Baths (Hôtel de Bagnes), with a grand marble staircase, fine bedrooms with ante-rooms for washing, table d'hôte, and every comfort at moderate cost (I made a note of this).

The following morning (May 28th) I caught the early train, and arrived at San Stefano di Camastra (fifty miles) at 7.30 a.m. I had planned to take the motor-omnibus to Mistrella, six miles distant, and return on foot. Again there was not a seat vacant. Again I never reached the top of the hill owing to the intense heat. The industry of the town is the manufacture of earthenware jars of all sizes and shapes; also bricks and tiles; while the flowers on the waste places adjoining the works were very attractive to the butterflies named yesterday, and I also took *Polyommatus astrarche*, *Spilothyrus altheæ* and *Hesperia sao*. Burnet moths were also plentiful. Hotel accommodation and meals were quite Sicilian, and certainly inexpensive.

San Stefano lies west of the Forest of Caronia, whence it obtains brushwood for its kilns; the next station is Caronia itself. On May 29th I reached Caronia station early, hoping to get a glimpse of the forest. The village (or rather big town of 20,000 inhabitants) is four miles up the mountain, and on reaching it I found there was no decent place to sleep at, and the only food I could get was fried eggs, cold beans, and bread, at a dirty wine-shop, so I gave up the idea of the forest and returned to the station in time to catch the evening train to Sant' Agatha, the next town. On my way down in the afternoon I struck a wide provincial road, where I captured fresh *galatca*, several *Vanessa c-album*, also *V. egea*, and a fresh specimen of *Argynnis cleodoxa*. I reached Sant' Agatha after dark, and there the sleeping accommodation and food were of a very primitive and inexpensive character. I returned to Messina on May 30th, and I have not quite given up the idea of a visit to the Forest of Caronia and a trip in the Sicilian long-distance motor-omnibuses, which are not run for profit, but for the convenience of the residents.

I found the heat at Messina very trying, and several picnic parties we made up in June proved entomological failures, as it was

quite necessary to take shelter in the middle of the day, and generally butterflies go to rest early. On June 6th I ventured on a long excursion to Scylla in Calabria, and reached the station quite early. The locality for *M. arge* being on the plateau 2000 ft. above the station, when I reached there I could only spare a few minutes to search for it, and I think I was too late, as its place was occupied by *galatea*.

Nearer home *galatea* var. *prociða* was well out at Gravitelli on June 8th, and on June 9th the Sicilian form of *japygia* was plentiful on a particular slope at Cattarati. This species flies later in the evening than most butterflies, and on this occasion had for its companion the showy *Melitæa didyma*, which, as the sun begins to disappear behind the hill, has the habit of settling on the top of the long grass with its wings wide open, exactly resembling a crimson flower. It was sufficiently abundant to create a veritable living flower garden, a sight never to be forgotten.

Another locality for *japygia* is at the foot of Monte Scudari (4000 ft. high), and on June 11th I trained to Scaletta and walked to Itala, a highly picturesque village. The wind was blowing a gale, and in the open it was impossible to get any butterflies. By following a rocky path up the bed of the stream for a considerable distance I reached a sheltered spot and there found *japygia* and some other species in full force, amongst them being *Argynnis pandora* and quite ordinary *galatea*. The heat in the narrow gorge was terrific.

My last excursion was with an entomological friend to Monte Cicci on June 13th. On our way up we discovered a fresh locality at the back of a fort with flowers galore and the common *Vanessæ* in abundance; also *Hipparchia circe*, the latter not easy to catch, owing to the breeze. Subsequently I found a specimen of *H. hermione* amongst them, and my friend was able afterwards to capture more. It was rather too late for the early brood of blues, but we secured several specimens of *semiargus*, also *argus* (one) and *telicanus* (one), and amongst the skippers *Hesperia comma* (one) turned up. Both *galatea* and *japygia* were present, and apparently we were too early for *statilinus* and *niobe* var. *eris*, which were both seen but not captured. The heat, however, proved too much for my friend, and we returned early.

Next day I left for England, and found Naples, Rome, Paris, and London, alike suffering from the heat-wave.—J. PLATT BARRETT; Westeroft, South Road, Forest Hill, S.E.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, February 4th, 1914.*—Mr. G. T. Bethune-Baker, President, in the chair.—Miss Maude Lina West Cleghorn, 57, Ballygunge, Circular Road, Calcutta, and Mr. William John Forsham, M.R.C.S., L.R.C.P., The Villa, Bubwith, Selby, Yorkshire, were elected Fellows of the Society.—The President announced that he had nominated Dr. H. Eltringham, the Hon. N. Charles Rothschild, and the Rev. G. Wheeler, as Vice-

Presidents for the present Session.—Mr. B. H. Smith exhibited specimens of *Prodenia littoralis*, bred from larvæ found feeding on bananas at Weymouth.—Mr. C. B. Williams, a specimen of the genus *Acerentomon* of the order Protura, taken from moss in the New Forest, Hampshire. He also drew the attention of the Society to the new order Zoraptera just described by Silvestri.—Mr. Donisthorpe, specimens of the ants *Ecophylla smaragdina*, F., from Ceylon, and *Ec. virescens*, F., from North Queensland. These ants use their larvæ to spin threads and fasten the leaves of their nests together.—Professor Poulton, a collection of Algerian Diptera and other insects associated with them, made by Dr. Adalbert Seitz, F.E.S. The specimens were chiefly taken at Batna (about 1300 metres) in July, 1913.—The following papers were read:—"On the Egg-laying of *Trichiosoma*," by T. A. Chapman, M.D., F.Z.S., F.E.S. "A Remarkable New Genus and Species of Odonata of the Legion *Podagrion*, Sél., from North Queensland," by Kenneth J. Morton, F.E.S. "Lepidoptera-Heterocera from S. E. Brazil," by E. Dukinfield-Jones, F.Z.S., F.E.S. "The Myrmecophilous *Aphides* of Britain," by Professor F. V. Theobald, M.A., F.E.S.

Wednesday, March 4th.—Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., President, in the chair.—Messrs. Wm. J. von Monté Pendlebury, Broadlands, Shrewsbury, and Keble College, Oxford; Robert Veitch, 7, Queen's Crescent, Edinburgh, and Francis Cardew Woodforde, B.A., Market Drayton, Salop, were elected Fellows of the Society.—Mr. H. Donisthorpe and Mr. W. C. Crawley exhibited a number of polymorphic forms in ants, illustrated by a chart, and read notes.—Dr. T. A. Chapman, a male and female imago of *Agriades thersites*, alive, bred from the egg; also two last-stage larvæ.—Mr. H. Main, a gynandromorphic specimen of *Eriogaster lanestris*, right side female, left side male, bred last year at Eastbourne.—Mr. O. E. Janson, a specimen which he believed to be the female of *Goliathus wisei*, Heath, hitherto unknown; also specimens of *G. kirki*, Gray, in which the white markings were very perfectly preserved.—Dr. F. A. Dixey, at the desire of Mr. J. C. Hawkshaw, F.E.S., a cocoon of *Lyonetia clerkella*, L., spun up on a cherry leaf. Mr. Hawkshaw suggested that the fine silken web attached to the leaf on each side of the supporting strands, and guy lines by means of which the cocoon is slung up like a hammock, served as a protection against ants.—Mr. Champion, on behalf of Mr. E. W. Morse, of Leeds, the second British specimen of the genus *Eudectus*, probably a variety of *E. whitei*, Sharp, from Ingleborough, Yorks., and a pair of *Edemera virescens*, L., from Symond's Yat, Hereford.—Mr. Ernest Green, a Coccid with double anterior limb, and read notes.—Mr. L. W. Newman, a fine female *Lasiocampa ilicifolia* taken on the wing at Cannock Chase, by Mr. G. B. Oliver, on May 25th, 1913. Mr. Newman stated that the larvæ in captivity took readily to aspen.—Mr. A. W. Mera, two specimens of *Cidaria suffumata*, of an unusual form, from East Devon, received from Rev. J. W. Metcalfe, who takes this form in damp woods and finds it not entirely confined to one wood.—Professor Poulton stated that he had just received, from Mr. E. E. Platt, of Durban, the male and female parents—both of the *wahlbergi* form—caught *in coitu*, and with their

large family of about two hundred *mima* and *wahlbergi* in about equal numbers. These results were quite unexpected.—The following paper was read:—"A Revision of the Central American Chauliognathinæ (Fam. Telephoridæ) based on the Genital Armature of the Males," by G. C. Champion, A.L.S., F.Z.S., F.E.S.—GEO. WHEELER, M.A., *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 12th.*—Mr. B. H. Smith, B.A., F.E.S., President, in the chair.—Mr. J. C. Fryer, Northumberland Avenue, was elected a member.—Mr. W. J. Kaye exhibited two quite distinct species of *Heliconius*—*H. hydara* and *H. amaryllis* var. *euryades*—of almost exactly the same facies, with microscopic slides of the genitalia.—Mr. Newman, *Gastropacha ilicifolia*, male, taken at Cannock Chase, May 25th, 1913, by Mr. G. B. Oliver.—Mr. Tonge, nest of the North American hornet, *Vespa maculata*, from Massachusetts, with several imagines.—Mr. Step, photographs of *Aleurodes* (*Aleyrodidæ*), a family allied to the *Coccidæ*, and gave notes on the habits of the insects. The rest of the exhibits were microscopical.—Dr. Chapman, the androconia of *Agriades thersites*; spring brood larger, much like those of *P. escheri*; summer brood much like those of *P. icarus*.—Mr. West, imagines of *Aleurodes* (*Aleyrodidæ*).—Mr. Adkin, armatures of *Ptycholoma lecheana*, cocoon structure of *Anthrocera filipendulæ* and *Saturnia pavonia*.—Mr. C. B. Williams, British species of the order Protura.—Mr. Coxhead, galls, with larvæ and pupæ, of *Cecidomyia saliciperda*.—Mr. Ashdown, small brilliant and metallic species of Coleoptera and Hemiptera, including *Hispa atra*, larva of *Jalla dumosa*, &c., with the Swiss *Centhorrhynchus horridus*.—Mr. Noad Clark, androconial scales of *P. brassicæ*, Diatoms, Desmids, and botanical structures.

March 26th, 1914.—Mr. B. H. Smith, B.A., F.E.S., President, in the chair.—Mr. Edwards exhibited a large coleopteron, *Archon centaurus*, found dead at Blackheath, and also a number of Lepidoptera from Burmah, including *Chalcosia venosa* and *C. zetica*.—Mr. Tonge, a long series of *Colias edusa* taken near Reigate in 1877-78, the years of great abundance.—Mr. H. J. Turner, *C. edusa* from Dawlish, &c., including female var. *helice* and bred examples of intermediate coloration.—Mr. A. E. Gibbs, *C. edusa*, with local forms from many European localities, with allied species from the Eastern Palæarctic area and from the Nearctic region.—Mr. B. Adkin, a large number of *C. edusa*, including many specimens of intermediate coloration.—Mr. Joy, a very long series of bred specimens of *C. edusa*, all of large size, many females with small or no spots in the marginal bands.—Mr. Dunster, *C. edusa*, taken along the south coast of England during the past three years.—Mr. Frohawk, very long series of *C. edusa* and female var. *helice*, showing almost complete gradation in ground from pure white to rich orange, including the rare shades of lemon colour and aberrations with black suffusion to the discoidal (fore wing), with black hind wings, with drab marginal borders, and a female measuring 67 mm.—Mr. R. Adkin, a long series of British *C. edusa*, and read a paper entitled "*Colias edusa* in Britain," deal-

ing in turn with Nomenclature, History in Britain, the Theory of its Occurrence, Probable Lines of Migration and Immigration, Local Habits, Variation and Aberration, Reasons of Irregular Abundance beyond the confines of its area of Natural Distribution, &c. A considerable discussion took place.

April 9th.—Mr. R. Adkin in the chair.—Mr. C. P. Emmett was elected a member.—Mr. R. Adkin exhibited three *Dasychira fascelina*, one with the usual black transverse lines largely yellow, and another with the black markings intensified with absence of the yellow freckling.—Mr. Edwards, several very conspicuous and beautiful Heterocera from Burmah, including *Argina argus*, *Euchromia formosa*, &c.—Mr. Sich, specimens of *Lita melanella*, first discovered in England by the late Mr. Boyd in 1858. They were from Weymouth.—Mr. H. J. Turner, a long series of *Erebia pronœ* from the Austrian Tyrol and Switzerland, and read notes on the variation, both local and aberrant, and the distribution of the species.—Mr. West, Greenwich, several drawers of the Society's collection of British Lepidoptera, to show the additions made in the Pyrales and Tortrices by the donations from Mr. Dawson.—Mr. Platt Barrett, a series of *Coccyx strobilella* bred from spruce cones collected at West Wickham some weeks ago.—HY. J. TURNER, *Hon. Rep. Sec.*

RECENT LITERATURE.

1. *The Life of the Spider.* By J. H. FABRE. London: Hodder & Stoughton.
2. *The Life of the Fly.* With which are interspersed some chapters of Autobiography. By J. H. FABRE. London: Hodder & Stoughton.

ENGLISH readers should owe a debt of gratitude to Mr. Alexander Teixeira de Mattos for the admirable translation which he has given in these two volumes of a number of J. H. Fabre's most delightful "souvenirs," and to the publishers, also, thanks. The books are light to handle, and so well printed as to be a joy to read. Although there are no illustrations, this is scarcely a matter for regret. Fabre is so proficient with the pen, and so perfect an artist in words, that no descriptive writer could need pictorial illustration less. And yet we should like to have seen a picture of the author himself in the second of these volumes, where, under the title of 'The Life of the Fly,' we can learn almost as much about his own life as we can about that of the fly. His early struggles; the enthusiasm, the patience and perseverance which carried him through all his difficulties; the nature of his ancestors and the kind of schooling he had, and how much, or how little, these could account for that passionate love of the insect, and that spirit of observation which gained for him from Darwin the title of "inimitable observer." All these, and other matters relating to his life, are so modestly and charmingly

told in the autobiographical chapters scattered through the volume, that it is a pity more prominence was not given to the fact in the title, which, however attractive it may be to the dipterologist, does not sufficiently make known the delightful field which it covers, or appeal so strongly to the general reader. Fabre is not an entomologist in the limited sense which that word now implies, and so we have him writing as intimately about the life-history and habits of spiders of all sorts in the first of these volumes as he does about those of flies in the second. To this volume there is a preface by M. Maurice Maeterlinck, which does full justice to Fabre's qualities of style and imagination, and contributes not a little to a proper appreciation of him as a philosopher and man of science.

C. J. G.

OBITUARY.

GEORGE BENTLEY CORBIN.

READERS of the 'Entomologist' will learn with regret of the death of Mr. George Bentley Corbin, which took place at Ringwood on March 12th last. Born in Ringwood in 1841, he developed an early love of Nature, in the study of which he showed considerable ability. He was a keen and observant entomologist. About 1866 and for several years he conducted 'The Amateur Naturalist'—a manuscript magazine, and his contributions were mainly on insect-life.

He wrote the entomological chapter in the second edition of 'The New Forest Handbook,' published by Phillips, in 1876, and for many years contributed articles upon the subject to 'Science Gossip' and similar journals. At one time he was a frequent contributor to the 'Entomologist,' and among his later contributions to that journal are—" *Deiopea pulchella* in Hampshire" (1893); "*Emydia cribrum*: A Reminiscence" (1897); "Aberration of *Zygana filipendule* and *Z. trifolii* near Ringwood" (1897); "Early hibernation of *Vanessa urticae*" (1905); and "*Plusia moneta* in the New Forest" (1907).

By the tragic death of his wife, who was killed in the railway accident at Downton, in 1884, he received a severe shock. The news of her death caused partial paralysis of the left side. This unfortunately put an end to his active interest in entomology, and deprived him of the fullest enjoyment of the life with Nature that had hitherto been his. He was an invalid for the rest of his days, and yet he lived a full life and overcame his incapacity. His spirit was uninjured and he was of a sunny disposition, as his writings show. He had a wide circle of friends and correspondents, including many eminent entomologists. He was a deeply devout man, and to those who enjoyed his friendship his memory will remain fragrant and kindly.

F. V. B.

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NEW SPECIES OF ARCTIADÆ AND NOCTUIDÆ FROM FORMOSA.

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

NOLINÆ.

Nola fuscimarginalis, sp. n.

Fore wings whitish becoming dark fuscous on outer area beyond the wavy, double, postmedian line; costa edged with brown expanding into a blotch before the postmedian line. Hind wings fuscous. Under side fuscous.

Expanse, 20 millim.

Collection number, 243.

One male specimen from Garambi, November, 1904.

This species comes near *N. distributa*, Walk.

LITHOSIANÆ.

Asura albidorsalis, sp. n.

♂. Head and thorax whitish grey, abdomen rather darker. Fore wings blackish with a twice interrupted white patch on dorsal area, this extends from the base of the wing almost to tornus; postmedian band white, narrow, wavy; subterminal band whitish, wavy, diffuse towards apex and tornus. Hind wings whitish. Under side whitish clouded with blackish on fore wings; traces of a blackish transverse band about middle of costal area on hind wings.

♀. Similar to the male but the band on the fore wings is much broader, and encloses some spots of the ground colour.

Expanse, ♂ 32 millim., ♀ 33-36 millim.

Collection number, 1253.

One male from Arizan (7300 ft.), August, 1908; and three females from Rantaizan (7500 ft.), May, 1909.

Allied to *A. umbrosa*, Hampson.

Eugoa sinuata, sp. n.

Fore wings white with blackish lines; antemedial line not continued to dorsum, curved, projected inwards on costal area to a dot representing subbasal line on the costa; postmedian line commencing in a black triangle on the costa, sinuous, angled above the dorsum; subterminal line undulated, originating in a black costal triangle; two black dots at end of cell. Hind wings, and fringes of fore wings,

whitish with faint fuscous tinge. Under side whitish suffused with fuscous especially on fore wings.

Expanse, 32 millim.

Collection number, 1797.

One female specimen (minus head and abdomen) from Rantaizan (7500 ft.), May, 1909.

Parasiccia nebulosa, sp. n.

Fore wings whitish with faint ochreous tinge, finely sprinkled with black; a black patch on costal half of basal area, its outer edge irregular; antemedial line black, wavy, commencing in a black spot on the costa, interrupted above dorsum; postmedial line blackish, wavy, traversing black spots; subterminal line black, interrupted widely so below costa; a terminal series of linear black spots, and two black spots in the cell, the outer one largest. Hind wings whitish, fuscous tinged, a blackish lunule at end of cell. Under side of fore wings fuscous, of hind wings same as on upper side.

Expanse, 30 millim.

Collection number, 1265.

One male specimen from Arizan (7300 ft.), August, 1908.

Seems to come nearest to *P. maculifascia*, Moore.

AGROTINÆ.

Noctua taiwana, sp. n.

Head and thorax purplish brown, patagia rather darker; abdomen fuscous, terminal segment fringed with ochreous hairs. Fore wings dark purplish brown; antemedial and postmedial lines black, double, the former deeply indented above dorsum; subterminal line ochreous, undulated, inwardly edged with black; terminal area beyond the line with clusters of bluish scales on the veins and at costal extremity of subterminal line; orbicular stigma of the ground colour, ringed with black; reniform outlined in black and partly filled up with ochreous. Hind wings fuscous. Under side dark fuscous, all the wings have a darker discoidal mark and postmedial line.

Expanse, 40 millim.

Collection number, 1502*b*.

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

The cotype, not in such perfect condition as the specimen described, is browner in colour, and the markings on the terminal area are absent.

HADENINÆ.

Hadena variegata, sp. n.

Head and thorax brown, collar and patagia paler edged; antennæ ciliated. Fore wings brown clouded and mottled with darker and lighter brown; subbasal line black extending only to median nervure under which it runs to the incurved, black, antemedial line; postmedial line black, incurved, angled about middle; stigmata of the paler ground colour, outer edges still paler and pinkish tinged, reniform outlined in black, its upper part extending almost to costa,

a black cloud in lower part; beyond the reniform the veins are marked with black and there are black streaks between the veins before termen; fringes black between the veins, pale brown at ends of the veins. Hind wings white-brown powdered with darker, venation and discoidal spot black; fringes brown, paler tips. Under side pale brown clouded with blackish on disc of fore wings; a black discoidal spot and an indistinct postmedial line (dotted with black on veins) on hind wings.

Expanse, 40 millim.

Collection number, 1757.

One male specimen from Rantaizan, May, 1909.

Stretchia acronyctoides, sp. n.

♂. Head grey, palpi brown, antennæ serrate; thorax grey, streaked with grey on the sides; abdomen brown. Fore wings grey clouded and suffused with brownish, and powdered with whitish especially on the dorsal area; transverse markings not distinct, but there are traces of a blackish, serrated, postmedial line, a short black streak from the base under median nervure, another, in line with it, extends to the termen; a black linear mark on middle of dorsum, and black dashes between the veins on terminal area, those between veins 4 and 6 most in evidence; orbicular and reniform stigmata united, edged above with black; some black dots on the costa above the stigmata. Hind wings brownish grey, discoidal dot black. Under side brownish, black discoidal dot on all wings.

♀. Similar to the male but larger.

Expanse, ♂ 38 millim., ♀ 41 millim.

Collection number, 1682.

A male specimen from Arizan, May, 1908, and a female from Rantaizan, May, 1909.

Allied to *Stretchia saxea*, Leech.

Eriopyga conspecta, sp. n.

♂. Head and front of thorax brownish grey, rest of thorax whitish with faint brown tinge; palpi dark brown, third joint paler; abdomen brownish grey, hind segments darker, anal tuft yellowish. Fore wings white transversely clouded with grey on the outer half; a reddish brown mark on costa towards base, and another, also on the costa, just beyond the middle; the first mark broadly margined with black on its inner and lower edges, and, except on costa, narrowly on its inner edge; the second mark has a small black spot on each side of it on the costa, one on its inner edge, and a large one below the lower outer edge of which is produced; a black mark on the costa before apex with a few reddish brown scales before it, and a row of black dots on the termen, the latter placed between the veins. Hind wings blackish with traces of darker discoidal mark and transverse line. Fringes of all the wings white. Under side whitish tinged with brown on the fore wings and on costal area of the hind wings; a cluster of blackish clouds beyond middle of the fore wings; the hind wings have black discoidal spot and postmedial line, and the costal area is freckled with black.

Expanse, 30 millim.

Collection number, 1441.

A male specimen from Arizan (7300 ft.), August 18th, 1908.

Cirphis bipuncta, sp. n.

♀. Head whitish, palpi and antennæ pale brownish; thorax whitish mixed with pale brownish; abdomen whitish. Fore wings pale brown streaked with darker brown between the veins on the terminal area; median nervure white; two black dots in the cell, and a series of black points on termen; fringes of the darker brown shade. Hind wings white, a series of black points on termen. Under side of fore wings whitish suffused with brown on costal and terminal areas, a dusky shade under median nervure; hind wings as on upper side.

Expanse, 15 millim.

Collection number, 135.

One female specimen from Takou (200 ft.), August, 1904.

Near *C. polemosa*, Swinhoe.

ACRONYCTINÆ.

Craniophora picata, sp. n.

♂. Head grey, palpi black, grey at tips: thorax grey with black line on lower edge, collar marked with black; abdomen pale grey. Fore wings blackish with white patches towards the base, around the orbicular stigma, and on apical third of the wings; costa marked with grey, three white dots towards apex; antemedial and medial lines black, double, wavy, the medial apparently merged in the antemedial below the orbicular stigma; postmedial line black, double, wavy, curved round outer edge of the apical white patch, thence slightly oblique to the dorsum; subterminal line white, edged with dark grey, preceded on the costa by a quadrate blackish spot, intersected above middle and again before dorsum by blackish marks; orbicular and reniform stigmata fairly distinct, both pretty much of the ground colour, the latter partly and the former entirely outlined in white; a pale patch at base of dorsum with some deep orange scales on its upper edge; fringes dark grey chequered with white and marked with black. Hind wings whitish, the termen broadly suffused with smoky grey, a dusky discoidal spot and traces of a postmedial band; fringes chequered with smoky grey. Under side whitish, clouded with blackish on disc of fore wings; hind wings with bar from costa to the cell, a discoidal spot, and a spotted post-medial line, all blackish.

Expanse, 44 millim.

Collection number, 1764.

A male specimen from Rantaizan, May 14th, 1909.

This species seems closely allied to *C. ligustri*, Schiff.

Chytonix variegata, sp. n.

♂. Fore wings brownish grey, clouded with darker brown; sub-basal line black, oblique, not reaching dorsum; antemedial line black, oblique, bluntly angled above dorsum; postmedial line black, ex-

curved from costa to vein 4, thence oblique to dorsum: a white dot adjoining postmedial under vein 2, and a blackish diffuse streak from white dot to antemedial line; orbicular and reniform stigmata pale with dark centres; two short black streaks between veins 1 and 4; fringes dark grey, paler marked at ends of the veins, a black line at their base interrupted by the veins. Hind wings whitish powdered with brownish, densely on terminal fourth; discoidal lunule and postmedial line dusky; fringes pale, traversed by a dark central line. Under side whitish, sprinkled, and on fore wings clouded, with brownish; all the wings have a blackish discoidal mark and a post-medial line.

Expanse, 34 millim.

Collection number, 1742.

One male specimen from Rantaizan, May 9th, 1909.

Chytonix variegata albidisca, ab. n.

Differs from the type in having a large white patch on central area of fore wings extending from postmedial almost to antemedial line, it encloses the stigmata and unites with the typical white dot.

Expanse, 35 millim.

Collection number, 1743.

One male specimen from Rantaizan, May 10th, 1909.

C. variegata is closely allied to *C. albonotata*, Staud.

Chytonix olivacea, sp. n.

♂. Head and thorax dark grey, black mixed, antennæ ciliated; abdomen pale grey, whitish at base and on last segments. Fore wings pale olivaceous grey clouded with darker, costa marked with black; subbasal line black inwardly edged with white, nearly straight but indented below costa and above dorsum; antemedial and post-medial lines black, both wavy, the former double and angled above dorsum, the latter outwardly edged with white; subterminal line pale, undulated; reniform stigma outlined in white; fringes variegated with white, preceded by a series of black lunules. Hind wings whitish powdered with dark grey; discoidal spot blackish, traces of a dusky postmedial line; fringes paler. Under side whitish, disc of the fore wings suffused with blackish; discoidal mark and post-medial line on the hind wings blackish.

Expanse, 38 millim.

Collection number, 1753.

One male specimen from Rantaizan, May, 1909.

Euplexia albirena, sp. n.

♀. Head pale brown darker mixed, thorax dark brown mixed with blackish; abdomen brownish, the sides and crests darker. Fore wings purplish grey; subbasal line ochreous, indistinct except towards the costa, where it is inwardly edged with black, some black marks beyond the indistinct lower half; antemedial and postmedial lines ochreous edged with black, the enclosed space below the cell rather darker than the ground colour; subterminal line ochreous, wavy; orbicular stigma, which is preceded and followed by a black quadrate

spot, is faintly outlined in ochreous and extends to the black outlined claviform stigma; reniform stigma white, its outer side straight, some brownish dots at each extremity; a white spot on the costa above the reniform and four white dots nearer the apex; beyond the reniform is a brownish clouded ochreous patch, outwardly limited by the postmedial line; on the costal area between the postmedial and subterminal line is a transverse white streak followed by a black one; black lunules alternating with ochreous dots on termen; fringes blackish, ochreous at base. Hind wings fuscous with dusky discoidal spot and two lines beyond, both lines edged externally with white on vein 2. Under side fuscous; all the wings have a discoidal mark and two transverse lines, the mark on fore wings and the outer line on hind wings are white.

Expanse, 38 millim.

Collection number, 1750.

Two female specimens from Rantaizan, May, 1909.

This species come near *E. albonota*, Hampson.

Laphygma connexa, sp. n.

♂. Head brown, palpi brown grey mixed; thorax grey, edge of collar paler; antennæ ciliated. Fore wings grey clouded with blackish; subbasal and antemedial lines indistinct, white edged with black, the subbasal only traceable on the costa, the antemedial interrupted below the costa and at dorsum; postmedial line white inwardly edged with black, sinuous, interrupted at the veins; subterminal line white, double, almost parallel with the termen, preceded and followed by black marks; orbicular and reniform stigmata white, grey centred, lower ends united by white streak along median nervure; fringes grey marked with white at ends of veins. Hind wings silky white. Under side silky white, the fore wings suffused with blackish on the disc; fringes as on upper side.

♀. Similar to the male but larger; the markings less clearly defined.

Expanse, ♂ 22 millim., ♀ 30 millim.

Collection number, 1403.

One example of each sex from Kanshirei; the male captured on November 10th, 1909, and the female in the previous month.

Allied to *Laphygma apertura*, Walk.

Micromonodes? ochreipuncta, sp. n.

♀. Head pale grey, palpi blackish; thorax and abdomen grey. Fore wings whitish grey, basal two-thirds suffused and clouded with darker; subbasal and antemedial lines blackish, not clearly defined; postmedial line whitish edged on each side with dark grey, sinuous; subterminal line whitish, angled before middle and above dorsum; orbicular and reniform stigmata indistinct, connected by a black bar; claviform stigma represented by a pale ochreous round spot, outlined in black; fringes grey mixed with black, preceded by a black line on termen. Hind wings grey, fringes paler. Under side grey, costal and terminal areas of fore wings sprinkled with whitish scales; hind

wings rather paler than fore wings; discoidal spot and postmedial line black but not distinct.

Expanse, 26 millim.

Collection number, 242 c.

A female specimen from Rantaizan, May 14th, 1909.

Archanara punctivena, sp. n.

♂. Head and thorax black sparsly mixed with ochreous; abdomen brownish, paler at base. Fore wings black-brown, dotted with white on the veins; an ochreous streak from the base passes through the reniform stigma and broadens out beyond it, some ochreous scales above the streak; antemedial line indicated by black dots; postmedial line black, wavy, inwardly oblique from vein 4 to dorsum; reniform stigma of the ground colour, its lower half partly outlined in white; fringes rather paler, grey mixed, preceded by a black line. Hind wings whitish with a faint dusky suffusion, traces of a dusky postmedial line. Under side of fore wings leaden grey with dusky discoidal spot and transverse line beyond: of hind wings whitish powdered with brownish on costal area, discoidal spot and line beyond blackish.

♀. Similar to the male but rather browner in colour and with more ochreous above the streak; the white outline of lower half of reniform stigma less distinct. Hind wings whiter.

Expanse, ♂ 25 millim., ♀ 30-32 millim.

Collection number, 620.

A male specimen from Kanshirei, November 13th, 1908, and two females from the same locality, August 13th and 26th, 1908.

ERASTRIANÆ.

Oruza albigutta, sp. n.

♂. Head and palpi black; thorax brown, paler in front; abdomen missing; fore wings brown, finely irrorated with grey, ochreous tinged on central area especially on basal half; antemedial and postmedial lines formed of white dots, the antemedial indistinct towards costa, the postmedial double excurved from costa to middle thence incurved to dorsum; medial line black, angled below cell and near dorsum; subterminal line pale, irregular, area beyond suffused with dark brown; fringes dark mixed with pale brown, preceded by a series of black outlined white dots. Hind wings brown, pale on costal area; discoidal mark white, linear, inwardly edged with blackish; postmedial line represented by double series of white dots, absent on costal area; subterminal line ochreous brown, diffuse towards costa, maculate towards dorsum: fringes as on fore wings. Under side white-brown, clouded and suffused with darker; traces of transverse lines, a pale spot at costal end of the postmedial line on forewings.

Expanse, 20 millim.

Collection number, 1388.

A male specimen from Kanshirei, April 17th, 1908.

Hyposada albicosta, sp. n.

♀. Head and thorax cinnamon brown, the latter marked with white behind collar: abdomen cinnamon brown, edges of segments white. Fore wings cinnamon brown, costa white with four black dots before apex; a black-ringed white spot at outer end of the cell; postmedial line blackish, slightly excurved below the costa, thence oblique to dorsum; subterminal and terminal lines represented by series of black dots. Hind wings cinnamon brown, discoidal spot black; postmedial line and black dots on terminal area as on fore wings. Fringes of all the wings pale. Under side whitish suffused with fuscous.

Expanse, 22-24 millim.

Collection number, 551.

Two female specimens from Kanshirei, one taken April 29th, the other August 16th, 1905.

Lithacodia postrivittata, sp. n.

♂. Head and palpi brown, the latter marked with darker; thorax brown marked with darker, tips of collar and patagia whitish; tarsi pale brown, barred in front with blackish; antennæ ciliated. Fore wings brown clouded with darker, a white dot at base of costa; antemedial line black, inwardly pale edged, curved round orbicular stigma, angled below; postmedial line black outwardly pale edged, obtusely angled below costa; subterminal line pale, undulated, indistinct towards dorsum; the space between postmedial and subterminal lines, except on costal area, pale, suffused with greyish; orbicular and reniform stigmata pale, dark outlined; a black line from base of the wing to subterminal line passes through the cell; fringes brown faintly pale chequered, preceded by pale edged black lunules. Hind wings fuscous, discoidal mark darker; fringes rather paler than those of fore wings, traversed near their base by a dark line. Under side of fore wings fuscous, paler on costa; discoidal mark blackish, postmedial line pale and rather broad on the costa; hind wings whitish powdered with fuscous except on dorsal area; discoidal spot and wavy postmedial line blackish.

♀. Similar to the male but the pale edging of transverse lines rather broader on costa.

Expanse, ♂ 26 millim., ♀ 30 millim.

Collection number, 622.

Two male specimens and one female from Kanshirei. The males were obtained in June, 1906, and April, 1909; the female in May, 1907.

This species comes near *L. cœnia*, Swinhoe.

Eustrotia bipartita, sp. n.

♂. Head pale brown mixed with darker, palpi dark brown, the third joint and part of second paler; thorax pale brown, front darker marked; abdomen pale brown darker mixed. Fore wings pale brown on basal half, suffused with darker on outer half; subbasal line dark brown, originating in a linear spot on the costa, not traceable below middle of the wing; antemedial line dusky,

double, slightly wavy, elbowed below middle; postmedial line dusky, double, irregular; a dark triangular mark, partly outlined in black, on costa; traces of a black medial line set in a brownish cloud below triangle; subterminal line blackish, undulated, dentate below costa, preceded on costa by a conspicuous black mark; slender black lunules on termen, fringes dark. Hind wings fuscous with traces of a darker discoidal mark. Under side whitish powdered with brown except on the dorsal areas; a blackish discoidal mark on each wing, and traces of a dusky postmedial line on the hind wings.

Expanse, 20 millim.

Collection number, 1387.

A male specimen from Kanshirei obtained April 29th, 1908.

Appears to come near *E. isomera*, Hampson.

SARROTHRIPINÆ.

Nanaguna sordida, sp. n.

Head white, palpi pale brown; thorax pale brown flecked with paler. Fore wings pale brown clouded with darker on medial and terminal areas; antemedial line blackish, indented below costa and before termen; postmedial line elbowed beyond end of cell thence gently incurved to dorsum, white with black inner edge, most distinct towards dorsum; reniform stigma pale brown enclosing blackish lunule; a black line on termen; fringes pale brown with darker line before the tips. Under side fuscous, hind wings and dorsal area of fore wings paler.

Expanse, 16 millim.

Collection number, 555.

One female specimen, Tainan, June 13th, 1905. Comes near *N. basalis*, Moore.

ACONTIANÆ.

Westermannia obscura, sp. n.

♂. Head white, antennæ brown, white at base; thorax and abdomen brownish grey, the former rufous tinged. Fore wings purplish grey inclining to brownish on the terminal area; costa (narrowly) and dorsal area, from base to postmedial line, pale brown slightly rufous tinged; a somewhat conical brown spot in the cell near its outer extremity, and a larger spot below it, both outlined in whitish; postmedial line whitish, excurved from costa to vein 5, thence onwardly oblique to dorsum; a brown spot before the tornus outlined in whitish; subterminal line blackish, wavy. Hind wings pale brownish outwardly suffused with dusky. Under side pale brown suffused with blackish, except on the costal area of the wings; two pale dots at end of the cell on fore wings.

Expanse, 34 millim.

Collection number, 174.

Two male specimens from Kanshirei, March, 1908.

This species is very close to *W. superba*, Hübn., from which it is chiefly distinguished by the more slender spot at end of cell, the gently curved not elbowed, postmedial line, and the general dingy coloration.

A MONOGRAPH OF THE GENUS *ACRORICNUS*, RATZBURG.
Family ICHNEUMONIDÆ : Subfamily CRYPTINÆ : Tribe CRYPTIDES.

BY CLAUDE MORLEY, F.Z.S.

THIS genus has been thrice described under distinct names : first as above by Ratzburg (Ichn. d. Forst. iii. 1852, p. 92), secondly as *Xenodocon* by Förster (Verh. pr. Rheinl. 1855, p. 237), and Kriechbaumer (Ent. Nachr. 1878, p. 22 ; cf. also p. 251 *et lib. cit.* 1879, p. 3), and finally as *Linoceras* by Dr. Taschenberg (Zeits. Ges. Naturw. xxv. 1865, p. 105) ; though its distinction from the earlier *Osprhynchotus*—of which I treated in Entom. 1914, p. 23—was only so recently understood that Dalla Torre commingled the species of both in 1900. From the latter it is at once recognised by the possession of two instead of a single basal, metathoracic transcarinæ ; and from both that genus and the closely allied *Joppidium*, Walsh, in its hyaline or subhyaline wings, which in both those genera are nearly or quite nigrescent or infumate throughout. Only six species are represented in the British Museum and my own collection ; a profusely ornate form from Persia (var. *pulcher*) is described by N. Kokujew in his "Hymenoptera asiatica nova" ('Revue Russe d'Entomologie,' 1905, p. 208) of *A. elegans*, Mocs. (Magy. Akad. Termész. Ertek. xiii. 1883, p. 11, female), which I do not know.

The genus is of peculiar interest on account of its parasitism upon bees and wasps, members of its own Order.

TABLE OF SPECIES.

- | | | | |
|-------|-----|---|--------------------------------|
| (10). | 1. | Upper and lower margins of the discoidal cell parallel. | |
| (7). | 2. | Posterior metanotal transcarina entire throughout. | |
| (6). | 3. | Mesonotum and most of the abdomen black. | |
| (5). | 4. | Face, abdomen and scutellum black ; legs rufescent | 1. <i>macrobatus</i> , Grav. |
| (4). | 5. | Face, abdominal bands and scutellum pale ; legs flavescent | 2. <i>seductor</i> , Scop. |
| (3). | 6. | Mesonotum and abdomen brick-red, with flavous markings | 3. <i>syriacus</i> , Mocs. |
| (2). | 7. | Posterior metanotal transcarina centrally obsolete | |
| | 8. | Metathorax long, subdeplanate ; face flavous | |
| | | | 4. <i>peronatus</i> , Cam. |
| | 9. | Metathorax short, convex ; face centrally black | 5. <i>ambulator</i> , Smith. |
| (1). | 10. | Upper and lower margin of discoidal cell distinctly divergent apically. | |
| (12). | 11. | Nervellus centrally intercepted ; abdomen red-marked | 6. <i>melanoleucus</i> , Grav. |
| (11). | 12. | Nervellus intercepted above centre ; abdomen all black | 7. <i>junceus</i> , Cress. |

[Of the remaining five species included in this genus, the three described from Brazil by Taschenberg (Zeits. Ges. Nat. 1876, pp. 71-74) have not been mentioned since first brought forward; nor has *A. edwardsi*, Cress. (Proc. Acad. Philadelphia, 1878, p. 365); though the last, *A. cloutieri*, Provancher (Natural. Canad. 1874, p. 150), has twice been figured (*lib. cit.* 1879, p. 110, fig. 2b *et* Faun. Ent. Canad. Hym. 1883, p. 343, fig. 35ab).]

1. ACORICUS MACROBATUS, Grav.

Cryptus macrobatus, Gr. Ichn. Europ. 1829, ii. p. 440; *Acoricus schaumii*, Ratz. 1852, p. 92.

The only species with entirely black abdomen and metathorax. Folard sent a pair to the Rev. T. A. Marshall from Avignon in August and September, 1891-2; of two in Ruthe's German collection, one was captured by Bermuth, possibly with Ratzeburg's type; Dr. L. W. Sambon found a female in Ostia during 1901; and Bucheker had the species from Lagern on August 8th in "Alp. Thät." in the Engadine above St. Moritz, from Zürich on July 1st, and elsewhere in Switzerland. This is the only British species of the genus, and has hitherto been known only from the extreme south—Hampshire, Isle of Wight, and Devonshire—though there appears to be no reason for supposing it confined to those counties, since Dr. A. Roman tells me that in Sweden it extends "at least as far north as western Dalecarlia" (latitude 61°—that of the Shetland Islands)—and that it is there not rare in dry localities. Its known British range is, however, extending, for I have recently seen specimens from Romsey in Hants (Buckell), Milford Haven in Wales on June 4th, 1910, and Stradbally, co. Waterford, in Ireland, at the end of June, 1907 (Andrews). It is known to parasitise several species of the wasp genus *Eumenes* and the bee genus *Osmia*.

2. ACORICUS SEDUCTOR, Scop.

Ichneumon seductor, Scop. Delic. Faun. 1786, p. 57; *Xenodocon ruficornis*, Först. 1855.

A large and handsome black and flavous species; occurring on both north and south shores of the Mediterranean from Provence to Algeria, but probably commonest in Italy. The Rev. T. A. Marshall told me in 1898 that he was then noticing the species abundantly about the nests of a wasp in stone walls at Ajaccio in Corsica, but his collection contains but a single example sent by Folard, who took it at Avignon on October 1st, 1892; I possess the species from Oldenberg's collection, taken in the middle of July, 1899; and the British Museum has a short series, taken in Italy by Birch, as well as in Albania between 1843 and 1850 by Sir Sydney Saunders, who says of one particular male there "Parasite on *Pelopæus spirifex*,"

taken with it. Mocsáry has bred it from a second species of the Sphegid genus *Sceliphron*, *S. destillatorium*, Illig.

3. ACRORICNUS SYRIACUS, Mocs.

Osprhynchotus syriacus, Mocs. Magy. Akad. Term. Ertek, 1883, p. 12, male; *Acroricnus syriacus*, Morl. Entom. 1914, p. 23, female.

The unique female of this handsome Syrian species is in the British Museum.

4. ACRORICNUS PERONATUS, Cam.

Osprhynchotus peronatus, Cam. Entom. 1902, p. 182; cf. *Spolia Zeylanica*, 1905, p. 97.

The author of this species, in 1905, pleads ignorance of *Osprhynchotus* when first bringing it forward, and then places it in *Linoceras*, where it is sufficiently correct, though the nervellus is intercepted somewhat below and not above its centre as is usually there the case; the metathorax is, however, bicarinate, though the apical transcarina is indistinct and obscured at the juncture of two colours. It is a common Indian species, and, besides the type, I have seen it from the Khasi Hills of Assam, Simla, in May, 1897, one which flew on to a table in Dehra Dun in the North West Provinces on June 22nd, 1902, Sikkim at 1800 ft. in 1897, the Kangra Valley of the Punjab at 4500 ft. in April, May and September, 1899, the Lushai Hills of Assam at 3600 ft. on July 14th and 17th, 1904, and Sukna in the Eastern Himalayas at 500 ft. on July 2nd, 1908.

5. ACRORICNUS AMBULATOR, Smith.

Cryptus ambulator, Smith, Trans. Ent. Soc. 1874, p. 392, female.

The British Museum type of this species belongs to the present genus and differs from the last species only in its much shorter and more convex metathorax, the apical colour of which is not centrally produced basally, in its centrally black face and in the black abdomen with apex of basal segment alone pale. It is from Hiogo in Japan and not, as given by Dalla Torre, from China.

6. ACRORICNUS MELANOLEUCUS, Grav.

Cryptus melanoleucus, Gr. Ichn. Europ. 1829, ii. p. 489; *Linoceras melanoleucus*, Tasch. 1865.

Gravenhorst knew a couple of Italian females, which were revised by Taschenberg, but hardly anything appears to be otherwise known of this species in Nature; and I do not vouch for the correct determination of a male so named by Marshall, who took it in "Corsica"; this male is very like a small example of *Habrocryptus porrectorius*, with no flagellar band.

7. *ACRORICNUS JUNCEUS*, Cress.

Cryptus junceus, Cress. Proc. Ent. Soc. Philad. iii. 1864, p. 295, female.

A pair of this species, which is a true member of the present genus, though not hitherto placed here, was sent by Professor Riley to the Rev. T. A. Marshall through the United States National Museum in 1888, and is now in the British Museum. It is similar to *A. macrobatus*, though much more slender and a little smaller with the scutellum, petiolar area of metathorax and the legs (except hind femora, trochanters and lower side of their coxæ) pale flavous. Dr. Lewis originally took the female in Illinois; it is poorly figured in the 'American Entomologist,' i. 1869, p. 137, in the excellent article "Wasps and their Habits" by Walsh, who had bred this "beautiful Ichneumon fly" from the "mud dabs" of the Fossorial genus *Agenia*, and noticed its "peculiar and, to us, very agreeable smell of a Humble-bee (*Bombus*)." At *lib. cit.* iii. 1880, p. 154, the same block is reproduced with the information that the species had again been bred from *Odynerus*, this time from *Odynerus birenimaculatus*, Sauss., in New Jersey.

AN ACCOUNT OF AN ENTOMOLOGICAL TRIP TO CORSICA.

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

(Concluded from p. 151.)

HERE also *E. jurtina* var. *hispulla* was abundant, and I took one very curious pale-bleached specimen. Presently a large bright orange looking butterfly got up at my feet, and dashed off, only to settle again further on. A careful stalk, and my first *Argynnis elisa* was safely netted—a male, and evidently but newly emerged. Almost directly afterwards I saw Mr. Lomax wildly pursuing a large butterfly with shouts of "Pandora!" and sure enough he presently came up triumphantly with a magnificent specimen of *Dryas pandora*. Further along, in a hayfield, we saw one of the prettiest entomological sights I have ever witnessed—masses of purple knapweed and large pink mallows grew everywhere in the field, and on these were great numbers of *P. cardui*, all exquisitely fresh; and as they flew from red flower to red flower, their own red wings shining like garnets in the sun, with occasional glimpses of blue and grey and brown under sides, I felt one could not see a more exquisite sight in nature. Butterflies were very numerous hereabouts; some fine big *P. icarus* shared the knapweed with the *cardui*, and *Cænonympha pamphilus* var. *lyllus* was not uncommon, with

plenty of *C. edusa* and odd examples of *P. atalanta* and *Vanessa io*, while *C. corinna* was generally distributed. Here also two or three specimens of *Hesperia serratulæ* were taken.

Going on past Tattone station we found more likely looking ground in a sheltered valley, along the bottom of which a delightful stream meandered, shaded by immense chestnut trees. Occasional fine *D. pandora* were taken off thistles near Tattone station, but it was still rare, and *A. elisa* proved to be just emerging, for we took several more males; they are a quick bold flyer, and not easy to catch. By the afore-mentioned stream we got two specimens of a fine form of *Cyaniris argiolus* var. *parvipunctata* and the first *Satyrus neomiris*, while we noticed *P. egeria* and *L. sinapis* to be not uncommon and a single *Pieris napi*, with stray examples of *V. io*, *P. brassicæ*, and one immense female *I. lathonia*.

A few days later—on June 30th to be exact—we walked over the Col de Vergio to Bocognano, a large village beautifully situated amongst groves of large chestnut trees, and at some 2000 ft. lower elevation than Vizzavona. It was very cold when we started, and there was much fresh snow on Monte d'Oro. However, when we emerged from the Vizzavona forest the sun was shining brilliantly, and as we walked along the white winding road, always downhill, we were soon warmed up; and though insects were few and far between, the odd examples of *A. elisa* and *C. corinna* which we picked up served to enliven the walk. When we got near to the village I missed a specimen of *A. urticæ* var. *ichnusa*, the first one I had seen. In one or two of the hayfields surrounding Bocognano, where the hay was still uncut, a magnificent form of *P. icarus* was found, the males extremely large and fine, the females equally large and distinct, with broad bands of orange spotting on the upper side of the lower wings. Here also *C. corinna* was almost common, and beautifully fresh *A. elisa* kept turning up, but were always difficult to catch; while a single fine *D. pandora* was added to the bag. But by one o'clock the weather had hazed in, and with the departure of the sun a cold wind sprang up with slight rain, and all collecting was over for that day; and for the next four or five days the weather remained most unpropitious and nothing could be done. Moreover, up at Vizzavona the conditions became quite Alpine, and one was glad of all one's thickest clothes. On July 4th we went to Corte, hoping to find at this considerably lower elevation better weather and things generally more advanced; but, however, the Fates were again against us, as although it was considerably warmer than at Vizzavona, we only had two really good collecting days, the remainder of the time being absolutely spoilt by the tornadoes of wind which made it quite impossible to do anything out of doors whatever.

Corte is certainly one of the most picturesquely situated towns I have ever seen. It is full of beautiful old eighteenth-century houses with fine wrought ironwork staircases, and an interesting church with a well-carved pulpit. Excepting, perhaps, Tangiers, it is the most malodorous place I have ever been in, and the Hôtel du Nord, where we stayed, is, to say the least of it, primitive in the extreme; our bedroom—for we had to share a room for the first two days—proved indeed to be a most happy hunting-ground, and quite a collection of various orders of insects was made here! All the same, for those who are not too particular, and do not mind roughing it a bit, Corte is an enchanting spot, and once outside the town, in the beautiful gorges of the Restonica and Tavignano, one very soon forgets the smells and disagreeables, for the romantic valleys are made quite lovely by the mountains and chestnut trees all round.

Butterflies, though not generally abundant, were certainly more advanced here than at Vizzavona. On the rough ground round the town *Satyrus semele* var. *aristæus* was not uncommon—all males and quite fresh. A few *Pontia daplidice* were noticed, and odd specimens of *Papilio machaon*, *C. edusa*, *Pieris rapæ*, and *P. brassicæ*, the two latter species rather frequent, haunting the small vegetable gardens outside the town; while in one place some very small *P. icarus*, *Carcharodus alceæ*, and *P. astrarche* var. *calida* turned up.

Next day we ascended the Restonica Gorge. *D. pandora* occurred occasionally, and some way up the valley *D. paphia*, with var. *immaculata* and var. *valezina*, was rather common and fond of sitting on the leaves of the chestnut trees. Here also, getting up off the path, *S. neomiris* occurred not infrequently, and *C. corinna*, too, was common and quite fresh. A large dark butterfly, when captured, proved to be *Eugonia polychloros*, the only one I saw in Corsica; and at one spot by the roadside two or three specimens of *Polyommatus baton* were taken, and the first fresh *P.* var. *tigelius* noted. Nearer the town, as we came home, *E. ida* and *E. tithonus* were both rather frequent amongst some bramble bushes.

The Tavignano Gorge, up which we went on the 7th, and in which we spent a most delightful day, proved to be the best place round Corte for butterflies. *C. corinna* in beautiful condition was very abundant, with plenty of fine, darkly-marked *C.* var. *eleus* and occasional *S.* var. *aristæus*, including the first female. Higher up *S. neomiris* became quite common, and I was soon able to take as many as I wanted. Magnificently fresh *D. pandora* were constantly seen, always sitting on the tall red thistle heads. The majority of the specimens which I took here and at Vizzavona have very little silver on the under side of the hind wing; they nearly all tend to ab. *paupercula*. Most of the specimens have the silver reduced to a row of pin-pricks,

and one small crescent-shaped mark next the costal margin; the central and hind marginal streaks are entirely wanting. In two or three specimens the ground colour of the under side is a rich golden green, very different from the pale blue green under sides of my Hungarian specimens, which are all heavily streaked with silver; the latter are decidedly larger than the Corsican examples, and of course not nearly so dark.

A few days later and we were back again at Vizzavona. Here things had certainly advanced in our absence. *A. elisa* of both sexes was now very common all round Tattone, but not out yet at Vizzavona itself. Amongst the chestnut trees or in the hay-fields near Tattone station fine fresh *Satyrus circe* were quite common, and *S. neomiris* was frequent; while on the yellow *spartium*—which looks so much like broom but isn't—*L. baticus* was by no means rare, and occurred up to Vizzavona station. Near here also we frequently took odd specimens of the fine form of *C. argiolus* var. *parvipuncta*. Our beautiful purple field of knapweed and mallow had been ruthlessly mown, and the butterflies had disappeared; but hosts of still fresh *P. cardui* and *E.* var. *hispulla* were abundant amongst the bracken further up; and *C. edusa*, with no var. *helice*, raced over the little flowery patches; and before we left odd examples of *D. paphia* were secured, for it was just beginning to come out on July 18th. These *paphia* and those which we took at Corte all incline very considerably to var. *immaculata*. I took none that could be considered type, and in many cases there is no trace whatever of silver on the under side of the hind wings. One or two specimens of var. *valezina* also have no sign of silver markings, but are of a very rich green all over.

We had naturally been always keenly on the look-out for *Papilio hospiton*, and had searched miles of country all round Vizzavona and Tattone for larvæ, but we never saw a sign of anything approaching either the butterfly or the larva, and I could only suppose that owing to the late season it was not yet out. There was a good deal of a species of fennel growing between Vizzavona and Tattone, which I thought very likely might be the food-plant of *P. hospiton*, but there were no larvæ on any of these plants. When we returned to Ajaccio, I met a French entomologist who lived there, and he gave me a lot of information about *P. hospiton*. He said it was certainly fully out, and the previous Sunday he had taken four near a village between Tattone and Corte, which he considered its headquarters; but that it was extremely local, and only to be found where its food-plant grew, and that the fennel I had seen at Vizzavona and Tattone was *not* the one the larva fed on; in fact it did not grow in that district at all. When I asked him why other collectors had found *P. hospiton* near Tattone, he said he considered that they were chance examples which had been carried

there out of their usual beat. He told me that he took *Charaxes jasius* in the hills above Ajaccio very commonly in August and September by means of jars of honey, which attract them. We stayed a day at Ajaccio, but beyond an apparently fresh brood of *E. ida* we found nothing of interest, and everything was fearfully burnt up. And so ended a trip, which, if not entomologically a very great success, at any rate gave us a delightful holiday in a new and particularly attractive country. Appended is a full list of the Rhopalocera which I identified during our stay in Corsica:—

Carcharodus alceæ, *Hesperia serratulæ*, *Chrysophanus phleas* var. *cleus*, *Polyommatus icarus*, *P. astrarche* var. *calida*, *P. baton*, *Plebeius argyrognomon* var. *bellieri*, *P. argus* (*ægon*) var. *corsica*, *Cyaniris argiolus* ab. *parvipuncta*, *Lampides boeticus*, *Tarucus telicænanus*, *Papilio podalirius*, *P. machaon*, *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Pontia daplidice*, *Leptosia sinapis*, *Colias edusa*, *C. hyale* (doubtful), *Gonepteryx rhamni*, *Dryas paphia*, and var. *valezina* and var. *immaculata*, *D. pandora* and ab. *paupercula*, *Issoria lathonia*, *Argynnis elisa*, *Pyrameis cardui*, *P. atalanta*, *Vanessa io*, *Aglais urticæ* var. *ichnusa*, *Eugonia polychloros*, *Polygonia c-album*, *Pararge megæra* var. *tigelius*, *P. egeria*, *Satyrus circe*, *Hipparchia semele* var. *aristeus*, *S. neomiris*, *Epinephele jurtina* var. *hispulla*, *E. tithonus*, *E. ida*, *Cænonympha corinna*, *C. pamphilus* var. *lyllus*.

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NOTES ON EUROPEAN HESPERIIDS.

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

ON pp. 141-142 of the May 'Entomologist,' Mr. W. G. Sheldon publishes a list of the more difficult Black-and-White Skippers of the genus *Hesperia* included in his collection. It may be further helpful to collectors on the Continent if I supplement this interesting catalogue with a list of the Hesperiiids of this group in my own collection, taken either by myself or by my friends, and specifically identified either by examination of the male appendages, or by myself, with the assistance of those entomologists of whose work I have already availed myself for previous notes published in this magazine (Entom. xliii. 306-309; xlv. 5-7 and 77-78; xlv. 8-11, 25-26, and 109-110). Mr. Sheldon does not adopt M. Oberthür's nomenclature for *cirsii*, Rbr., viz. *fritillum*, Hb. Otherwise he is in accord with this classification. But I only follow his arrangement of the genus under review for convenience of reference.

Hesperia alveus.—Unquestionably a mountain species, where it occurs throughout the western palearctic region, or, at all events, never in my experience descending to the plain. Arolla, August (middle), 1896; Saas Fée, August (middle), 1897; Zinal, August,

1898; Mt. Penegal, Mendel Pass, July, 1904; Mont Canigou, E. Pyrenees, July 7th, 1905; Gavarnie, July 14th-30th, 1911; Herkulesbad, S. Hungary, July 4th, 1912; Allos at the Lac, July 18th-23rd; Larche, July 25th-29th, 1913; Le Vercors, above Baraques (Drôme), July 7th, 1913.

Var. *ryffelenis*, Obthr.—Simplon, August (beginning), 1897; Saas Fée, August (middle), 1897; Franzenshöhe, Stelvio, July 13th-20th, 1900; Larche, July 25th-29th, 1913.

Var. *foulquieri*, Obthr.—Which, I suggest, is a form rather of *H. bellieri*, Obthr.; Cevennes, Balsièges, July 29th, 1901; Florac, Causse Méjean, July 18th; Empézou, July 19th, 1901; Digne, August (beginning), 1903, and August (beginning), 1908; St. Martin-Vésubie, July (middle), 1903.

H. serratula.—Chamonix, August, 1894 (Miss Fontaine); * Saas Fée, Bérival, Simplon, August, 1897; Zinal, August, 1898; Chiesa, Piedmont, July 8th-10th; Stelvio, July 12th-19th, 1900; Gavarnie, July (middle), 1905, and July 14th-29th, 1911; Lavey, June 6th, 1908; Simplon, June, 1908 (A. S. Tetley); Le Lioran, Cantal, August 1st-8th, 1909; Brenner, July (end), 1912; Larche, July 23rd-29th, 1913.

I have no examples in my collection at present of the plain form from the west of France, &c. (= var. *occidentalis*, Lucas).

H. onopordi.—Aix-en-Provence, April, 1894; Seb dou, Algeria, July and August, 1904; Albarracin, July, 1905 (Miss Fontaine); Brantes, Vaucluse (under Mont Ventoux), April, 1907 (H. Brown); Digne, April (beginning), 1902 (= *conyzæ*, Guen.).

**H. armoricanus*.—Gibraltar, San Roque, 1887 (J. J. Walker); Mentone, April, 1894 (Miss Fontaine); St. Malo, "été, 1899" (C. Oberthür); La Foce, Corsica, July (middle), 1903; Dunes de Miel Pot, between St. Malo and Cancale, August 15th-25th, 1910 (C. Oberthür); Cancale, no date (R. Oberthür); Constantinople, September, 1911, and May, 1912 (P. P. Graves). And to these localities may now be added probably all the northern and other lowland "alveus" of the French local catalogues.

H. carlinae.—Bérival, August, 1897; Saas Fée, August, 1894 and 1897; Zinal, August, 1898, Binnenthal, August, 1907; Allos, August, 1908, July, 1913; Larche, July, 1913.

Var. *cæcus*, Fr. Saas Fée, Aug. 1894 and 1897; Bérival, Aug. 1897.

H. fritillun, Hb. (= *cirsii*, Rbr.).—Chamonix, August, 1893 (Miss Fontaine); *Albarracin, July-August, 1901 (T. A. Chapman); Binnenthal, August, 1907; Allos, August, 1908; Mende, Lozère, August, 1st-6th, 1909.

H. bellieri.—Larche; Allos, July, 1913.

H. malvæ.—None from Continental localities.

H. malvoides.—Biarritz, August, 1905, and July, 1911; Bérival, July, 1897; Herkulesbad, July, 1900 (H. C. Lang); *Digne, April, 1902; *Aurunci Mountains, Central Italy, May 25th, 1910 (P. J. Barraud); *April, 1910 (O. Querci); *Lac d'Allos, July 21st, 1913.

**H. melotis*.—Beirut, Syria, April and July, 1911 (P. P. Graves, from F. Cremona).

* Confirmed by special examination of appendages.

HIBERNATION OF THE LARVA OF *LYCÆNA*
ARGIADES.

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

DURING July, 1913, I obtained a large number of eggs from *L. argiades* females which were captured at Rennes. Also many eggs of this species from females captured in Hungary; these were laid during the first half of August.

The larvæ from both the French and Hungarian parents entered into hibernation about the end of September.

After the first moult the larvæ became striped with brown, the ground-colour being pale yellowish; the medio-dorsal and oblique side stripes brown, and the lateral stripe rust-coloured.

After the second moult the ground-colour is pale ochreous-green, the medio-dorsal and lateral stripes are rich purple-brown, and the oblique stripes are paler. The colouring remains similar until after the fourth and last moult, and when fully grown the ground-colour is a very pale pinkish-ochreous; the medio-dorsal stripe is deep purplish-brown, the lateral stripe light chocolate-brown, and the oblique side stripes light rust-colour. They remain so coloured during hibernation.

As the larvæ develop, all the green colouring disappears; and during the last stage no green form existed in any of the larvæ when they entered into hibernation. Some of the larvæ hibernated in the dead rolled-up leaves of *Lotus corniculatus*, and some low down on the stems of the plant. They spin a fine layer of silk to rest upon during hibernation.

No brown form occurred in the last stage of the larvæ reared from eggs laid July 24th, 1904, by a female *argiades* captured in the South of France. Although when young (after the first moult) two distinct forms of the larvæ appeared, one being striped with brown, the other entirely green, with very slightly darker green markings. After each subsequent moult the striped forms gradually lost the markings, and after the last moult all were entirely green, excepting a few which had the lateral ridge tinged below with pinkish-brown.

The larvæ pupated at the end of August, and the imagines emerged between September 6th and 18th inclusive.

The complete life-history of this species I published in the 'Entomologist,' vol. xxxvii. pp. 245-9.

NOTES AND OBSERVATIONS.

PANORPA COGNATA (NEUROPTERA).—Mr. H. Scott (University Museum of Zoology, Cambridge) has been good enough to send me a few new records of the scarce British scorpion-fly *Panorpa cognata*. They are: One male, Henley-on-Thames, June, 1906, collected by

H. Scott and determined by K. J. Morton; one male and one female, Henley-on-Thames, August 1st, 1910, collected by H. Scott, determined by K. J. Morton; two males, Henley-on-Thames, June, 1911, collected by H. Scott, determined by K. J. Morton; one male, Wells (Somerset), 1902, collected by C. G. Lamb, determined by H. Scott; one male, "Britain; old coll." (without exact data), determined by H. Scott.—W. J. LUCAS; Kingston-on-Thames.

NOTES ON THE LARVÆ OF *ZYGÆNA EXULANS*.—The recent hot spell in Scotland proved very favourable for searching for larvæ of *Z. exulans* at Braemar, and I found them quite abundant on the flowers of *Empetrum nigrum* during the last few days of April. On one tiny plant I counted eight larvæ. In captivity they seem ready to eat almost any food (some of mine have a keen appetite for petals of wallflower and others take apple-blossom), but they seemed confined to crowberry as I found them. They are exceedingly active in the sunshine, and have a most extraordinary capacity for escaping from captivity.—C. MELLOWS; Bishop's Stortford College.

CALLOPHRYS RUBI IN APRIL.—On April 21st I saw several *C. rubi* flying round broom on the hills at Braemar about the 2000 ft. contour. Perhaps they were in a sense "forced" by the extraordinary "sun-heat," the maximum reading for the day being 70° F.—C. MELLOWS; Bishop's Stortford College.

[*Euchloë cardamines*, among other species, has also been seen on the wing at an unusually early date this year. Records of such occurrences would be of interest.—ED.]

AGRIADES (POLYOMMATUS) CORYDON VAR. HISPANA IN THE BASSES-ALPES.—A few days ago I received from my friend Mr. C. E. Morris, of Le Cannet, Alpes-Maritimes, a water-colour sketch of a Lycænid, with the request that I would identify the same for him. The butterfly turns out to be *Agriades corydon* var. *hispana*, H.-S., and according to the Rev. George Wheeler, who kindly named it for me, though by no means rare elsewhere, has never before been reported from the French Alps. This example, which must be regarded as an aberration rather than one of a local race, was captured by Mr. Morris near Barcelonnette, very little higher than the town, flying over mud, on June 25th, 1913.—H. ROWLAND-BROWN; Harrow-Weald, May 12th.

COLEOPTERA AND HEMIPTERA OF NORFOLK.—Mr. J. Edwards, Colesborne, Cheltenham, will be grateful to entomologists who have collected Coleoptera or Hemiptera in Norfolk during the past five years for particulars of their captures for present publication.

HIPOCRITA JACOBÆE IN EARLY MAY.—At Tuddenham, Suffolk, I saw great numbers of *Hipocrita jacobæe* on the wing on May 3rd. Is not this an unusually early date? Perhaps I might add, as an interesting parallel, a nest of the wheatear, with young, in the same district.—W. R. TAYLOR; Jesus College, Cambridge, May 5th, 1914.

MELANIC FEMALE OF *BISTON HIRTARIA*.—I have the good fortune to report the emergence of a perfectly melanic female of *B. hirtaria*. The insect was bred from a pupa dug up at Finchley. The specimen

is slightly larger than normal, and of a unicolorous black, absolutely devoid of all markings; the wings are thinly scaled, as is usual with the female of this species. Mr. Prout has kindly given me the following information regarding this uncommon form of *hirtaria*. He says: "I find in Oberthür's 'Etudes de Lepidopterologie Comparée' there is a figure of a unicolorous black female *hirtaria* from Silesia, and there is one equally unicolorous, but not quite as extreme (with a brownish tinge), in the British Museum collection from England. It is called by Oberthür ab. *fumaria*, Haw, and is mentioned by that name in one or two other books." I might add that the whole of the insect—body, legs, and antennæ—is jet black.—B. S. WILLIAM; 77, Durham Road, E. Finchley, N.

HIBERNATION (?) OF PYRAMEIS ATALANTA.—In view of Mr. Corbet's note in your last issue (p. 151), it may be of interest to record that I saw and watched for some time a worn *P. atalanta* flitting about in the flower garden here on March 23rd.—E. F. STUDD; Oxtou, Exeter.

EUCHLOË CARDAMINES TWO YEARS IN PUPA.—On October 20th last (Entom. xlv. p. 317) I brought to your notice a very late emergence of *E. cardamines*. I have now the pleasure to report an instance of a butterfly, a female, from the same brood of larvæ remaining in the pupal state for two winters. These larvæ were given me by my friend, the Rev. Gilbert H. Raynor, on June 20th, 1912, and the insect referred to emerged yesterday morning, the 20th inst.—B. W. NEAVE; Lyndhurst, 95, Queen's Road, Brownwood Park, N., May 21st, 1914.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, April 1st, 1914.*—Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., President, in the chair.—Mrs. Maria Ernestina Walsh, Soekaboemi, Java; Messrs. J. P. Ramakrishna Aiyar, B.A., F.Z.S., The Agricultural College, Coimbatore, South India; Eugène Bendefitter, 11, Rue St. Jacques, Le Mans, France; Rev. Prebendary Edward Grose Hodge, The Vicarage, Paddington; A. J. T. Janse, 1st Street, Gezina, Pretoria, South Africa; Charles Nicholson, 35, The Avenue, Hale End, Chingford, N.E.; Frederic de la Mare Norris, B.Sc., The Agricultural Department, Kuala Lumpur, Malay States, were elected Fellows of the Society.—Dr. T. A. Chapman exhibited some specimens of the genus *Curetis* from the Tring Museum, to illustrate a point in mimicry, and read notes upon them.—Dr. F. A. Dixey, specimens of Pierinæ from Western China, with drawings of their scent-scales, and remarked on them.—Mr. O. E. Janson, both sexes of a new *Papilio* belonging to the *gambrisius* group and apparently most nearly allied to *P. ormenus*, Guér., also the rare *Papilio gabrielis*, Roths., both recently received from the Admiralty Islands.—Mr. Donisthorpe, a small nest of the ant *Cremastogaster schenki*, Forel, from Madagascar,

fastened on the stem of a tree. Also a small beetle, *Semiclaviger sikoræ*, Wasmann, which came out of this nest, and is a guest of *C. schenki*.—Mr. C. B. Williams, specimens of the genus *Acerentulus* of the order Protura.—Mr. E. B. Ashby, a female of *Dryas pandora*, with darkly suffused underside hind wing, very near the ab. *lilacina*, Obth., from La Granja; also an aberration of *Melitæa athalia*, from Hintertarten, belonging to the *eos* group of aberrations of this species.—The following papers were read:—"Descriptions of South American Micro-Lepidoptera," by E. Meyrick, B.A., F.R.S., F.E.S.; "A Revision of the Tipulid Genus *Styringomyia*," by F. W. Edwards, F.E.S.—GEO. WHEELER, M.A., *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 23rd.—Mr. B. H. Smith, B.A., F.E.S., President, in the chair.—A special exhibition of Orders other than Lepidoptera.—Mr. C. W. Colthrup exhibited a large collection of British land shells.—Mr. Stanley Edwards, numerous large and conspicuous species of exotic Coleoptera and Hymenoptera.—Mr. Ashdown, a collection of Swiss Coleoptera, including forty species of Longicornia taken by himself.—Mr. Gibbs, the lantern-flies *Fulgoria lanternaria* and other conspicuous insects sent to him from British Honduras among a collection of butterflies and moths.—Mr. Step, male and female *Asilus crabroniformis*, a predaceous Dipteran, with *Tachinus grossa* and *T. fera*, two hairy flies which attack larvæ.—Mr. West (Greenwich), thirteen drawers of the Society's reference collection (Coleoptera, Orthoptera, Neuroptera, Hymenoptera, and Hemiptera), a box of typical examples of Diptera presented to the Society by Mr. Andrews, and his own collection of British Homoptera.—Mr. C. B. Williams, the beetle *Lochmæa suturalis*, on heather from Cheshire, and willow-stems damaged by larvæ of *Cecidomyia saliciperda*.—Mr. Andrews, the following very rare Diptera, and contributed notes:—*Lispe pygmea*, Fall., *Limnophora æstum*, Vill., *Macronychia griseola*, Fall., all from Porthcawl, *Phorbia parva*, Ztt., from Chattenden, *Fannia ciliata*, Stein., from Milford, and *Chirosia parvicornis*, Ztt., from North Kent.—Mr. Dennis, photograph of plant-galls.—Mr. E. E. Green, many species of Coccidæ, largely from Ceylon, with coloured drawings of their life-histories.—Mr. B. Adkin, pieces of bark showing depredations of the Homoptera *Chermes corticalis* on larch, and *C. viridis* on Weymouth pine.—Mr. Moore, nine hundred and twenty-five mites of the genus *Gamisus* taken from a beetle.—HY. J. TURNER, *Hon. Rep. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquhoun Street, Liverpool, March 16th, 1914.—Mr. R. Wilding, President, in the chair.—Professor Robert Newstead, M.Sc., F.R.S., gave a lecture entitled "Some Observations on the Natural History of Nyassaland." The lecture, which dealt with the Professor's own experiences during an expedition undertaken to discover the breeding habits of the Glossinidæ, was most interesting, especially the account of the finding of the first pupa of *Glossinia morsitans*, and of the connection between this fly and sleeping sickness and "ngana." A capital photograph shown on the screen recorded

this historic event.—Mr. A. W. Hughes exhibited *Phigalia pilosaria*, including a pale olive unicolorous variety, from Eastham, also *Hybernia leucophæaria* and var. *marmorinaria* from the same locality; he further reported that *Nyssia zonaria* had been plentiful at Crosby.—WM. MANSBRIDGE, *Hon. Sec.*

RECENT LITERATURE.

Catalogue of the Lepidoptera Phalœnæ in the British Museum.
Vol. xiii. By Sir GEORGE F. HAMPSON, Bart. Pp. i-xiv, 1-609.
London: Printed by order of the Trustees. 1913.

IN this volume, the tenth dealing with Noctuidæ, the genera and species of Catocalinæ remaining over from vol. xii. receive treatment, and the subfamilies Mominæ and Phytometrinæ are considered.

Altogether 70 genera and 679 species are here classified, and of these 379 species in 44 genera are assigned to Catocalinæ; 11 genera and 74 species to Mominæ and 15 genera with 226 species to Phytometrinæ.

The largest genera of the Catocalinæ now considered are *Safia*, Guen. (53 sp.), *Zale*, Hb. (49 sp.), and *Mocis*, Hb. (31 sp.).

Sir George Hampson does not accept Hübner's 'Tentamen' names for genera, *Euclidia*, Hb., is therefore rejected. He finds that *fixa*, Fab., is the type of *Euclidia*, Treit., and that the latter name will therefore supersede *Synthymia*, Hb. (a genus belonging to the Acronyctinæ, vol. ix., p. 372). The species usually referred to *Euclidia* are here placed under *Euclidimera*, Hamps. (type *mi*, Clerck), or *Gonospileia*, Hb. (type *munita*, Hb.). *Glyphica*, Linn., is included in the latter genus.

In *Mocis*, Hb., are included *Pelamia*, Guen. (t. *phasaianoides*, Guen.), *Remigia*, Guen. (t. *frugalis*, Fabr.), *Baratha*, Walk. (*disseverans*, Walk.), and *Cauninda*, Moore (t. *undata*, Fb.).

"*Catephia*" *trifasciata*, an Australian species described as a British insect by Stephens (Ill. Brit. Ent. Haust., vol. iii., p. 128), is assigned to *Mocis*.

Twenty-one of the species comprised in Mominæ belong to *Trisuloides*, Butl. (t. *sericea*, Butl.), which includes *Tambana*, Moore (t. *variegata*, Moore), and *Anacroniata*, Warren (t. *caliginea*, Butl.).

Cænobita, Esp., is the type of *Diphthera*, Ochs., also of *Panthea*, Hb., both of these names, together with *Audela*, Walk., and *Platycerusa*, Pack., fall under *Diphthera*, Treit. (t. *cænobita*, Esp.).

In this connection it may be mentioned that *alpinum*, Osbeck = *orion*, Esp., so frequently referred to *Diphthera*, Hb., has been transferred to *Daseochæta*, Warren (Phal., viii., p. 30).

Coryli, Linn., is the type of *Demas*, Steph. (1829), and also of *Calocasia*, Hb. (1827); the latter takes precedence.

In Phytometrinæ the largest genera are *Syngrapha*, Hb. (31 sp.), and *Phytometra*, Haw. (158 sp.). The majority of the species hitherto referred to *Plusia* are here placed under *Phytometra*, Haw. (t. *festuæ*, Linn.).

Some 450 species are depicted in colour on the eighteen plates forming the Atlas issued with this volume.

OBITUARY.

THE REV. E. N. BLOOMFIELD, M.A.

THERE passed away on April 29th, 1914, the most lovable and one of the most widely known of British entomologists, Edwin Newson Bloomfield, in his eighty-seventh year. He was laid to rest among the spring flowers that he loved, and "during the earlier part of the afternoon old and young, rich and poor, could be seen battling their way against a stiff breeze to pay honour to one who for over half a century had laboured for good in their midst." He had been rector of the village of Guestling, near Hastings, for exactly fifty years, and before that time he lived with the family at Great Glemham, in Suffolk, which house is still occupied by his brother, Col. Alfred Bloomfield, a Justice of Peace for the county in which he owns two hundred and fifty acres. Our subject was the son of Edwin Bloomfield, and was born as long ago as 1827 at Wrentham, near Lowestoft. So far from devoting himself to entomology, he was to a greater extent, probably, than any man living in these days of specialists, all things to all men throughout the gamut of Natural History. In insects he confined his investigations to the indigenous species, but in botany he was as familiar with the ornamental Coniferae of the garden as with the lowliest wayside flower, all of which he could name at a glance.

His chief hobby was, undoubtedly, the compilation of local catalogues, and when the project was mooted in the seventies of publishing an account of the Flora and Fauna of Hastings, he undertook the flying insects, while Mr. E. A. Butler compiled the ground Orders. Hence it came about that he was always more *au fait* with Lepidoptera, Hymenoptera, and Diptera, than with the Coleoptera and Hemiptera, of which, however, he was by no means ignorant; his range extended to the mammals, birds, fishes, fungi, and I know not how much further. Ecclesiastical architecture also received a share of his attention. No great standard work was issued by him, yet no standard work appeared without due reference to the author's indebtedness to him for assistance; and a great many of the foremost amongst us nowadays owe more than we can say to the kindly help given so freely and unostentatiously in our young days. His last labour was a detailed compilation upon the Diptera of Norfolk and Suffolk, the manuscript of which was sent for completion and publication to Mr. Atmore and the writer from the London nursing home, when he felt the task beyond his failing power; this will appear in the Trans. Norfolk Nat. Society during the present year. Last September Mr. Bloomfield wrote to me: "I find I am in much better health at home. I am in pretty good health and get about well for my age (eighty-six years), but I find a mile out and back is quite enough for me"; this I can picture accompanied by the beneficent and radiant smile which will always live in my memory—the smile with which he greeted us all in his speech at his last public appearance during the Verrall supper of 1913.

C. M.



REED BED NEAR WICKEN VILLAGE, SHOWING "JUNGLE" GROWTH.



A "LOAD" IN THE FEN.

Photos H. A. Storey.
Caus. Coll. Cambridge

WICKEN FEN AS IT IS.

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WICKEN FEN: ITS CONSERVATION FOR ENTOMOLOGY.

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

(PLATE IV.)

As no doubt many of our readers are aware, a great part of Wicken Fen has been taken over by the National Trust, and is now being administered by that body. A guardian has been appointed on the spot, and the Entomological Society of London is contributing a not disproportionate share of the necessary wage fund. As nominated member of the Society upon the Council of the Trust, I think, therefore, that it may not be out of place if I offer a few suggestions on the subject from the entomologist's point of view, and at the same time attempt to give some idea of the work being done for the preservation and upkeep of this Mecca of the British collector.

In the first place, it should be remembered that, while the National Trust property amounts in all to as much as 249 acres of the entire 300 acres or so of the area comprised in Wicken Fen, their holding is neither coherent nor coterminous. Within the area lying nearest to Wicken village there are several important strips which break up and divide it, and it stands to reason that this patchwork arrangement is a great hindrance to the work of the conservators. Visitors this year, provided with the needful permits, will find that the Trust lands have been delimited by means of black iron posts marked with the initials N. T. And here I may remark that the object of the Trust is not to close the parts of the fen which belong to them against *bona fide* naturalists, botanists, and other scientific workers, but to preserve for future generations, as far as possible, the fauna and flora characteristic of the locality, while possibly in the future helping to restore to the fen some at least of those species which, either by over-collecting, or much more likely by altered nature conditions, have completely disappeared, or nearly so.

The question then arises how far it is desirable to "garden "

for such purposes, and reduce by cutting and clearing the overgrowths which have sprung up during the last half century, when the wild part of the fenland all about has become ever smaller and smaller under cultivation. For when I visited Wicken on a fair day at the end of May I at once realized how great a change had come o'er the spirit of the scene. Except on the plots where the sedge had been cut already, the whole area presented the appearance of a jungle. A wide grassy drive divides the fen nearest to Wicken village from east to west. But on either side of it there is an almost impenetrable tangle of low shrubby trees, reeds, and coarse grass, by which the more fragile growths have been superseded. This is well enough for reed feeders; for other insects requiring a more delicate sustenance it may mean starvation. On the largest compact acreage belonging to the Trust these conditions are exaggerated; it is cut off from the rest of the fen on this side by a wide ditch; and there is no way of traversing it apparently save by struggling, often breast-high, through the tangle.

I should suggest, therefore, that so far as this last-mentioned piece is concerned a ride be cleared in continuation, as it were, of the one across the stream to which I have drawn attention, with the Pumping Station as objective in a straight line. Then, towards the centre, ways of similar breadth might be made, intersecting the main ride at right angles. This would afford access to this part without in the least depreciating its uses as a preserve, while the Committee, whose care it is to look after the maintenance of the Trust property, might then determine to what extent the work of clearing on this side also should be effected.

At present it seems that the dense growths are prejudicial as well to bird and insect life, and in greater degree to plant life. All such clearing, of course, requires to be done with discretion by those employed, and under direct supervision. But the Cambridge Committee are within easy reach, and skilled fen labour is available near at hand. A large number of the trees and bushes which encumber the inner parts might well be eradicated; their continued encroachment on the fen as such is a real menace.

Again, it is obvious that if the aquatic and semi-aquatic flora is to survive, and with it the special insects that feed thereon, there must be judicious treatment of the waterways. To take a single instance, the one in fact of which I am most competent to speak from experience elsewhere. In my opinion it is impossible to acclimatise *Chrysophanus dispar* var. *rutilus* in Wicken Fen under existing conditions. *Rumex hydrolapathum* is not the sole plant on which the species feeds, I am aware, but it was the Giant Dock upon which the larvæ of the long defunct *dispar* lived, and it is the same Giant Dock upon which the larvæ

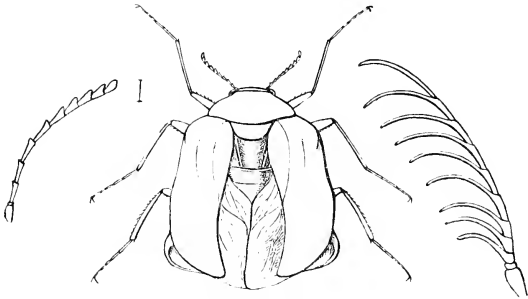
of the double-brooded var. *rutilus* live in the marshlands of Bordeaux.

In a paper published by me in the 'Entomologist' (vol. xliv. pp. 385-389) I gave a very short account of this species in the Gironde. The fen round Bordeaux is as restricted as at Wicken, and much more accessible; but so long as fen it remains, so long will var. *rutilus* remain there, judging by the quantity of this lovely Chrysophanid I saw on the wing the first week of August, 1911. What struck me at once was the favourable nature of the terrain for the food-plant. The vegetation of the ditches where I found belated larvæ was not too rank to strangle it; the banks of the little river where the butterfly was commonest were comparatively clear of over-growths, and the *hydrolapathum* flourished amazingly. If, then, we are to resuscitate the Large Copper in Wicken, whether from French, Hungarian, or German stock, it will be necessary to "garden" the ditches and their banks to this extent, and, further, I suggest that this treatment would encourage rather than quench the fertility of the Wicken specialities affecting other pabulum than reeds. Acclimatisation and the colonisation of species does not figure in the propaganda of the National Trust and the Society for Nature Reserves, but permission to use their property for such experiments would no doubt be readily conceded. *Papilio machaon* apparently requires no artificial stimulus. But here once more I would suggest that, if dealers are warned off altogether, amateurs also should be cautioned and asked to give the captured wasted females their liberty. Notices to that effect might be posted with other rules and regulations in conspicuous places at the entrance, and in the village of Wicken itself where collectors usually stay during the season. Especially are such precautions advisable so long as the whole of the collecting fen is not under the control of the Trust. Finally, I venture to appeal to the several fen proprietors whose lands are not for sale to give our keeper jurisdiction over them in their absence. Of these plots there are not many. One at least is well-defined and segregated from the rest of the fen by broad and well-kept waterways; for the others, I would urge upon their owners the benefit to be derived by allowing the Trust, through its servants, to supervise and prevent trespassers ransacking their natural treasures. A small annual contribution to the Wicken Fund would secure this, and at the same time the arrangement would materially assist the none too easy task of the Trust as entomological conservators of one of the most valuable, if not the most extensive, Nature Reserves in England.

Harrow Weald: June, 1914.

A NEW GENUS OF COLEOPTERA OF THE FAMILY PSEPHENIDÆ.

BY C. J. GAHAN, M.A.



THE interesting and remarkable beetles which form the subject of the present paper were discovered by Dr. A. D. Imms, who found them in all their stages in rocky, swiftly running streams—the larvæ and pupæ adhering to stones, and the imagines, newly emerged from their pupa-cases, resting submerged under stones alongside their empty pupa-cases. As Dr. Imms proposes to describe fully and give figures of the larvæ and pupæ, the imagines alone will be dealt with here; but in referring them to the family Psephenidæ I have taken into account the habits of the insects and the great general resemblance which the larvæ bear to those of *Psephenus*.

One or two characters possessed by these beetles suffice to distinguish them from all other known Psephenidæ, and from all but a few genera of Coleoptera. (1) The elytra do not meet in the middle line to form a suture in any part of their length. When first I noticed this character I thought it might possibly be due to immaturity, as most of the specimens under observation had apparently only just emerged from the pupa. But Dr. Imms was able to tell me that two specimens swept from grass and fully mature were like the rest in having the elytra rather widely separated from one another. (2) The middle area of the metanotum, behind the broad scutellum, is not grooved along the middle (as it is in the great majority of beetles), but is convex along the middle and marked with a groove along each side. This character is evidently correlated with the first, and shows pretty conclusively that the elytra never do meet in the middle line. We find the metanotum similarly devoid of a median groove in the heteromerous genus *Rhipiphorus*, in which the elytra are small scale-like structures, which do not meet

behind the scutellum; the latter also in this genus being relatively very broad.

PSEPHENOIDES, n. gen.

Head moderately exserted; subvertical or somewhat backwardly inclined below; eyes convex, entire, rather finely faceted; antennæ not widely separated, nearly as long as body in male, with the joints from the third increasing in length, and strongly flabellate, except the eleventh, which resembles the flabellum of the tenth; much shorter in the female, with the joints from the third serrate and gradually decreasing in length. Mandibles scarcely visible. Palpi slender and ending in a setiform joint; the maxillary about twice as long as the labial. Pronotum slightly convex above, turned down rather strongly at the sides, especially in front; basal margin broadly rounded in the middle, a little sinuate at each side, and making with the lateral margin an angle slightly greater than a right angle. Scutellum very broad, rounded behind. Elytra separated from one another, inner margins somewhat sinuate. Metanotum convex along the middle, marked with two very slightly curved, posteriorly converging grooves. Prosternal process triangular, pointed behind, but scarcely prolonged beyond the front coxæ; the latter prominent, strongly transverse, with their acetabula widely open behind. Mesosternal process broad, channelled along the middle. Legs long and slender, with very long tarsi, the first and fifth joint of which are much longer than either the second, third or fourth, which gradually diminish in length; claws long, with a slight "festion" at base. Abdomen in both sexes with six ventral segments visible, the sixth being very small and narrow, the fourth strongly arcuate in the middle behind, the fifth nearly truncate behind.

Type of the genus *P. immsi*.

Psephenoides immsi, sp. n.

Dull brownish black in colour, covered with a short faint pubescence. Femora yellowish, becoming dusky towards the tips, where the colour is nearly as dark as that of the tibiæ and tarsi. Scutellum glossy. Wings, visible behind between the elytra, are dusky in colour. (In the female specimen figured, the wings were bulged out a little at the sides of the elytra where they show behind, but this condition is not normal.) In all the specimens seen by me the short, bead-like, second joint of the antennæ is almost entirely yellowish in colour; but it would probably be darker in more matured specimens.

Length, ♀ $3\frac{1}{2}$ –4 mm. Breadth, 2 mm.

Hab. Bhowali, Kumaon, 5700 ft., May 15th, 1912 (A. D. Imms).

The male antenna figured is from a specimen taken at Lachiwala, near Dehra Dun, on February 8th, 1913; it is possible, as Dr. Imms thinks, that the specimens from this locality represent a distinct species. But I have not been able to detect any appreciable difference between specimens from the two localities. The type of the species is a female specimen from Bhowali.

BRITISH NEUROPTERA, 1913.

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

Alder-flies.—*Sialis lutaria* was noticed first on May 18th, at the Black Pond, Esher Common (Surrey)—probably not the beginning of its flight, for the species may sometimes be taken in April. On June 1st it was found at Frensham Pond (Surrey). Col. J. W. Yerbury gave me three examples, taken at Aviemore in the Highlands—males on May 25th and 26th, and a female on May 29th.

Snake-flies.—On April 20th Mr. G. T. Lyle and myself made a lengthy search for larvæ and pupæ of *Raphidia*, at Irons Hill Inclosure, in the New Forest. We were not at all certain where they might be found, but as the imagines had been plentiful in the spot the previous season, it seemed likely that we might discover where the earlier stages were passed. We at length found that a favourite habitation for larvæ and pupæ was the dead bases whence the lower branches of Scotch fir had been broken off. Though decayed, these were more or less dry inside, so, apparently, much moisture is not absolutely necessary for these insects. Two larvæ (by size apparently *Raphidia notata*) were obtained under the bark of a dead but standing Scotch fir. Judging by size alone, we found larvæ and pupæ of *R. notata* and *R. maculicollis*—a dozen or more in number. Pupæ were sometimes in a distinct chamber, but whether they were occupying one ready made by some other insect, or whether they had made it themselves as larvæ, was not clear. Usually the pupæ seemed to be nearer the boundary of the Inclosure, while those in the larval stage were deeper in the wood. Possibly the former developed earlier, owing to the fact that more sunshine reached them. On May 25th I captured a male imago of *R. maculicollis* at the Black Pond, Esher Common, while an imago of the larger species (*R. notata*) was taken on the occasion of the South London Entomological and Natural History Society's excursion to Netley Heath (Surrey) on May 31st.

Brown Lace-wings.—In April Mr. Lyle gave me a specimen of *Hemecrobis concinnus*, which he had bred from the larva. This he obtained when beating on April 16th. On the 18th it spun a very delicate cocoon of yellow silk with rather open meshes. In form the cocoon was a well-proportioned ellipse about 6 or 7 mm. long by 3 mm. wide. Pupation took place on the 30th, and the imago emerged between May 19th and June 9th, but was dead and stiff on the latter date. The pupa had left the cocoon by an irregular hole at one end. *H. quadrifasciatus* was taken on May 31st by Mr. A. Sich, on the occasion of the excursion of the South London Entomological Society to Netley Heath already mentioned. At Aviemore Col. Yerbury took

H. nervosus on May 27th and June 9th, and *H. stigma* on May 31st and June 11th. He also took *H. nervosus* at Woolhope, in Herefordshire, on September 7th. *H. micans* was captured in the New Forest on July 27th.

Green Lace-wings.—Very few were noted. They were: *Chrysopa perla*, on June 8th, in the Wisley district (Surrey); *C. tenella*, near Bedford, on June 15th; a large example of *C. flava*, on July 28th, amongst Scotch fir on Beaulieu Heath in the New Forest; *C. flava*, taken by Col. Yerbury on August 14th at Llangammarch Wells; *C. vulgaris*, in the New Forest on August 31st.

Dusty-wings.—On August 24th Mr. C. B. Williams and myself spent some time searching the holly leaves in the New Forest for *Coniopteryx psociformis*. We found egg, larva, cocoon, pupa, empty pupa-skin, and imago. The small white egg was laid on the margin of a holly-leaf, the mottled purplish brown larva was discovered on the under side of a leaf, in which situation also a number of white cocoons were found. The cocoon was double—a small one within a much larger one. From some the imago had emerged, leaving behind a delicate pupa-skin; but others contained the living pupa. The imago was taken on the wing. Mr. Williams has been breeding the British species of *Coniopteryx*, whose life-history was not well known, and the result of his experiments will be welcome reading.

Scorpion-flies.—On May 25th I met with the first example of *Panorpa*, a male *P. germanica*, at the Black Pond, Esher. In the Wisley district, on June 8th, *P. germanica* and a number of *P. communis* were taken. Mr. P. Richards sent me four *P. germanica*, from Seabrook, in Kent—an almost immaculate male taken May 2nd, another male on May 25th, and two females on May 20th; with them was a female *P. communis* taken on June 9th. Col. Yerbury took a female *P. communis* at Llangammarch Wells on July 22nd, and a female of the scarce *Panorpa cognata* at the same place on August 23rd.

Kingston-on-Thames: May, 1914.

THE ENTOMOLOGY OF HELIANTHUS.

By T. D. A. COCKERELL.

THE relations between insects and plants are of interest not only to the economic entomologist or the collector desiring to know where he can find rare species, but also to the general student of evolution, who sees in them an endless series illustrating various kinds and degrees of adaptation. In modern times, when so many plants are being purposely or accidentally

carried far beyond their original territory, exceptionally good opportunities arise for comparing the insects frequenting them in their native lands with those in places where they are aliens, without their normal insect enemies and allies. Work of this kind requires observers in different countries, as it rarely happens that a single individual can travel sufficiently to make the necessary observations. The writer in the course of his work on *Helianthus* is collecting all available data regarding the insects visiting or attacking sunflowers, and the object of the present discussion is to arouse interest and (it is hoped) secure some co-operation.

As an illustration of the work which may be done even by one who is no entomologist, I will describe the collection made by Mrs. Maybanke Anderson at Pittwater, New South Wales, during the winter (Australian summer) of 1913-14. Mrs. Anderson grew some of the new "red" annual sunflowers, derived from a cross between the red variety of the wild *Helianthus lenticularis* and the garden *H. annuus*. Her material was heterozygous, and of eight plants raised two were red and six had yellow rays. When they came into flower, "bees began to visit the flowers at once, some from our own hive [*Apis mellifera*; two sent, neither had collected pollen], and many of what we call the native bee [*Trigona carbonaria*, Smith; four sent]. Ants [*Iridomyrmex itinerans*, Lowne, var. *depilis*, Forel, det. Wheeler] from a nest of small black ants are always on the plants, but seldom, if ever, on the flowers. They are always busy in the edge (hairy) of the young green leaves or in the joints. John [assistant in the garden] tells me he has seen one carrying pollen. I have never seen one on a flower. There is a small fly [*Psilopus* sp.] with iridescent wings, who seems to stand high on his legs, who is seen there often, many of him. He is hard to catch. There is a green flying creature [a Fulgorid, *Siphanta acuta*, Walker], a pretty thing, who squeezes himself in between the swelling seeds. He also is very clever at getting away." Several other miscellaneous insects were captured and sent, including another Fulgorid, *Oliarus*, probably *O. asaica*, Kirk., but perhaps new; two other flies, one apparently a *Phormia*, but species new to me; the other a minute thing close to *Sepsis*; two beetles, a Chrysomelid, and a small hairy Coccinellid; also two spiders, one of them an Attid.

Thus we see that even in Australia, where no *Helianthus* is native, the plant attracts a considerable series of insects, which on the whole (especially the bees and ants) behave exactly as do their representatives in America. The *Trigona* workers had collected pollen, and were apparently making full use of the flowers, although no *Trigona* exists within the natural range of the *H. annuus* group. At Boulder, Colorado, we find Homoptera (*Publilia modesta*, Uhler, and *Ceresa bubalus*, Fabr.) on our

sunflower plants. We also find Coccinellids (especially *Hippodamia convergens*, Quér.) and Chrysomelids (*Chrysomela exclamationis*, Fabr.).

Are we then to conclude that the American insect fauna, which seems to be specially adapted to *Helianthus*, is in reality not so at all? That all these insects are in a general way adapted to plants of this type, or even to plants in general, and special, precise adaptations do not exist? By no means; there are in America numerous special sunflower insects, whose place cannot be truly occupied by alien species; but, nevertheless, it is evident that the majority of the species which may be collected from *Helianthus* are only loosely adapted to it, and could get along very well were this particular genus to become extinct.

It will be noted that Mrs. Anderson mentions no butterflies. Until I came to investigate the subject, I supposed that sunflowers were freely visited by butterflies, to the needs of which the long tubular corollas seem specially fitted. Observations on the red sunflowers in my garden at Boulder did not confirm this idea. On July 30th I saw one *Basilarchia weidemeyeri*, Edw., on the flowers. It was especially noticeable that the introduced species, *Pieris rapæ*, L., which abounded in the garden would fly among and over the sunflowers, never visiting them, although it would visit *Gaillardia*. On September 10th, in Boulder, I saw a *Colias eurhytheme*, Bdv., visit a wild *H. lenticularis* for an instant, and then go to a *Grindelia*.

Dr. Max Ellis informs me that at Vincennes, Indiana, he took *Junonia cœnia*, Hb., at flowers of garden *H. annuus*.

Dr. H. Skinner, of Philadelphia, who has had so much experience with butterflies, writes me that he cannot recall a single instance of butterflies visiting sunflowers. Mr. Geo. Wheeler writes me that *H. annuus* in English gardens is frequently visited by *Pyrameis atalanta*, L., but he has never seen any other butterfly on it, and it is useless in his experience as an attraction for moths. (It does attract some moths at Boulder; e.g. *Stibadium spumosum*, Grote.) M. Buysman writes that he has not seen any insects visiting *Helianthus* at the Botanical Garden, Lawang, Java, but "perhaps the almost incessant rain is the cause." Knuth cites seventeen species of Lepidoptera, all but three being butterflies, from flowers of *Helianthus* in America; but these are all from the perennial sunflowers, *H. tuberosus*, *grosseserratus*, *divaricatus*, *mollis* and *strumosus*. Graenicher adds, from Wisconsin, twelve Lepidoptera (nine butterflies) at flowers of *H. strumosus*, and three butterflies at *H. giganteus*. Thus it appears that, while the perennial species are quite freely visited, the annual ones are so rarely, in America or Europe; though no doubt careful observations will bring to light a long list of instances.

When we come to Lepidoptera feeding on the plant as larvæ,

there is a very different story to tell. At Boulder, on our red sunflowers, we have found larvæ of different kinds feeding exposed on the leaves, folding the leaves, mining the leaves, burrowing inside of receptacles, feeding on the unripe seeds, and feeding on the disc florets. Are all such absent in Europe? Mr. A. G. Scorer, in his 'Entomologist's Log-Book' (1913), fails to mention a single species attacking *Helianthus*.

The following are some of the more important or interesting insect enemies of *Helianthus annuus* (including *lenticularis*, which is the wild representative of *annuus*).

LEPIDOPTERA.

Phyciodes ismeria, Bdv. & Lec.

This is identical with *P. carlota*, Reak.; Mead (1875) refused to recognise *ismeria*, on account of the rather poor description, but it really seems to apply to our species. The larvæ are common on the sunflowers at Boulder, and the species extends eastward across the plains into Nebraska, becoming rare as far east as Omaha, according to R. A. Leussler.

The larvæ exist in two colour varieties as follows:—

- (1) A row of large subquadrate dark orange spots down back; subdorsal region black, speckled with creamy white; sides pallid, with a broad reddish band, the spiracles enclosed in angular elongated grey-black patches spotted with white; under side dark; dorsal and subdorsal spines black, but lateral ones pale; head shining black. Larva about 20 mm. long, found by my wife August 17th; pupated about August 22nd; imago August 31st.
- (2) Entirely orange-red with black spines and dusky subdorsal and lateral bands (the lateral bands just above bases of legs); head shining black. Larva about 21 mm. long, found by my wife August 22nd; imago September 5th.

The original *P. ismeria* fed on a perennial sunflower, *Helianthus tracheliiifolius*, and probably came from North Carolina. It is perhaps probable that the butterfly will be found to have two distinct subspecific forms, one (true *ismeria*) of North Carolina and adjacent regions, feeding on perennial sunflowers; the other (subsp. *carlota*) of the Rocky Mountain region, feeding on annual sunflowers. The former was said by Boisduval and Leconte to be very rare in collections, and it appears still to be so, as I have never seen a specimen, and the Academy of Natural Sciences at Philadelphia has none. The latter is abundant along the eastern foothills in Colorado, and goes north (*vide* Dr. H. Skinner, in litt.) to Manitoba, where it is taken at Beulah as early as May 24th, and Stony Mountains, June 11th. Dr. Skinner also tells me that the Philadelphia Academy has one from as far east as Minneapolis, Minnesota, taken May 25th.

Synchlœ lacinia, Geyer.

This polychroic Nymphalid takes the place of *P. ismeria* in southern New Mexico and adjacent northern Mexico, where the larvæ abound on sunflowers. A good account was given by W. H. Edwards in 'Canadian Entomologist,' Nov. 1893, pp. 286-291. It chanced that Edwards had at the same time eggs and larvæ of *P. ismeria* (*carlota*) from Montana and Colorado. He found the eggs, and larvæ in first two stages, of the two species "in no way distinguishable." In later stages they are alike in shape and armature, but differ in coloration. However, the pupa of *S. lacinia* is closely like that of *Melitæa baroni*, and is not like that of *P. ismeria*, which is typical of *Phyciodes*, like *P. tharos*. As to the differences in the colours of the larvæ, it will be seen from the above account that *P. ismeria* presents two varieties, and these nearly correspond to two varieties of *S. lacinia*. *S. lacinia*, interpreted in the broad sense as a variable species, goes south to Peru and Bolivia, but I have no information about its habits in those regions.

DIPTERA.

Tephritis finalis, Loew.

This Trypetid, kindly determined for me by Mr. F. Knab, breeds in numbers in the heads of our red sunflower at Boulder, Colorado. The species is widely distributed, from Idaho and South Dakota, west to California, and south to Orizaba, Mexico. It might by some accident be introduced into Europe (*e. g.* Russia) and there become a formidable pest; precautions should be taken to prevent such an occurrence.

Another Trypetid, *Strauzia longipennis*, Wied. (det. Knab), was found in Boulder on the sunflower plants, but it is not as yet known to feed upon them.

COLEOPTERA.

Dectes alticola, Casey.

In October, 1913, my wife found in a head of the red sunflower a creamy white Coleopterous larva with large humps on the body. It was sent alive to the National Museum in Washington, and Mr. Craighead placed it in the stem of a chrysanthemum, and thus very cleverly succeeded in raising the adult, which was determined as *D. spinosus*, Say. Just about this time, however, Casey published his *D. alticola*, a segregate from *D. spinosus*, readily recognisable by the black humeral spots. The Boulder species, which I had earlier taken in the adult state (July 18th), is *D. alticola*. True *D. spinosus* is from the Eastern States, and Mr. Craighead very kindly sent me a pair of these, which he has bred from stems and roots of ragweed.

Chrysomela exclamationis, Fabr.

This is extremely abundant in all stages on the red sunflowers at Boulder, and is a great pest. The larvæ void their excrement when touched, and are probably avoided by birds. The beetles are, however, attacked by the Hemipteron *Perilloides claudus*, Say, which resembles them to a certain extent in its colour-scheme. Fabricius published *C. exclamationis* in 1801, stating that it was obtained by D. Smith Barton in North America. This was evidently Benjamin Smith Barton of Philadelphia; how he obtained this western insect in 1801 I do not know, but the description of Fabricius seems clearly applicable. Mr. F. Knab has very kindly copied out for me all the localities for *C. exclamationis* in the U.S. National Museum, the Hubbard and Schwarz collection, and the Knab collection. The most eastern localities are in South Dakota (Aberdeen, R. A. Vickery; Volga, Truman); Kansas (Riley Co., Popenoe; Topeka, Hubbard and Schwarz; Onaga, F. F. Crevecoeur); Nebraska (Lincoln, H. Soltau; West Point); and Texas (Dallas, Boll). One specimen is labelled "Pennsylvania," from the collection of C. V. Riley, but, as Mr. Knab says, this is surely a mistake.

One specimen is said to come from Arizona (from collection of J. B. Smith), but there are none from the Pacific coast region, where I incline to believe that *Helianthus lenticularis* is not truly indigenous.

There are in addition some very characteristic sunflower weevils (especially *Desmoris constrictus*, Say, and *D. fulvus*, Lec.), but my materials have not yet been fully examined.

HEMIPTERA.

Aphis helianthi, Monell, occurred in quantity on leaves of the red sunflower in my garden at Boulder; but I also obtained a species of *Macrosiphum*, a new genus for *Helianthus*. Specimens of this were kindly examined by Professor C. P. Gillette, who reported that he could not distinguish them from *M. ambrosiæ*, Thomas.

The predatory bug *Phymata fasciata*, Gray, was found at Boulder on the red sunflower, preying on the honey bee, *Apis mellifera ligustica*, Spin.

THYSANOPTERA.

A thrips abundant on heads of the red sunflower at Boulder was carefully examined by Miss Elizabeth Robinson and the writer. We could not distinguish it in any way from the common *Frankliniella tritici*, Fitch.

A NEW SCELIONID PARASITE OF LOCUST EGGS FROM
THE NORTHERN TERRITORY OF AUSTRALIA.*

BY A. A. GIRAULT.

THE following species was received from Mr. G. F. Hill,
Government Entomologist, Northern Territory, Australia.

Genus SCELIO, Latreille.

1. *Scelio semisanguineus*, n. sp.

Female.—Length 3.20 mm.

Blood red, the head, abdomen and distal six joints of antennal flagellum, black; joints 5 and 6 of antennæ suffused with blackish; segments 2–5 of abdomen suffused more or less with reddish, ventrad and dorsad. Distal half of fore wings rather deeply infuscated. Scape long, about equal to the next six joints; pedicel somewhat longer than joint 3 which is somewhat longer than wide at apex; following joints wider than long, 7 longest of them, 5 and 6 shortest. Mandibles very long, strongly bidentate at apex, the teeth subequal; maxillary palpi 3-jointed. Venation faint. Segment 4 of abdomen distinctly longer than the two preceding segments; segments 2 and 3 of abdomen with longitudinal striæ more or less anastomosed; segments 4 and 5 densely polygonally reticulated, the lines raised; 6 striated like 3, also the entire venter; segment 5 with the striation along distal half. Thorax umbilicately punctate, the punctures unequal in size, smallest on propodeum; the latter also obliquely longitudinally striate but not densely, two of the striæ down the meson as median carinæ which are separated for some distance. Lateral margin of propodeum and the shoulders fringed with silvery pubescence. Parapsidal furrows complete, rather distinct. Head coarsely punctate and with short silvery pubescence.

Male.—Unknown.

Described from five females labelled "No. 31, Botanic Gardens, Darwin, N. T., Feb. 13, 1914, G. F. Hill," and captured over acridid egg-beds on sandy soil.

Habitat.—Australia: Port Darwin, Northern Territory. Associated with Acridiidae.

Types.—Queensland Museum, Brisbane, five females on a tag.

NEW AUSTRALIAN BEES.

BY T. D. A. COCKERELL.

Euryglossidia purpurascens, sp. n.

♂. Length about 8½ mm.; black, the abdomen dark rich chestnut-red, suffused with purple, the basal segment dark; antennæ black, extremely long, reaching to third abdominal segment; head

* Contribution No. 24, Entomological Laboratory, Bureau of Sugar Experiment Stations, Bundaberg, Queensland.

broad; mandibles black; clypeus shining, with sparse distinct punctures; supraclypeal area dullish, appearing minutely granular, contrasting with clypeus; hair of head and thorax mainly white, but there is fuscous or black hair on clypeus, vertex, and discs of mesothorax and scutellum; mesothorax dull, without evident punctures; scutellum a little more shining, slightly bigibbous; area of metathorax large, with only microscopical sculpture; tegulæ piceous, with a large testaceous spot posteriorly; wings strongly infuscated, brownish; the large stigma dark reddish; nervures fuscous; b. n. falling far short of t. m.; lower side of first s. m. with a gentle double curve; first r. n. joining second s. m. at a distance from base equal to length of first t. c.; legs black basally, red apically, the black ending on femora, near middle on anterior ones, near apex behind, but at middle or before in front, on the other ones; middle and hind tibiæ with a dusky suffusion on outer side; abdomen broad basally, not clavate, not punctured; apical plate circular, its margin broadly translucent.

♀. Length about 9 mm., much like the male, but antennæ short, ordinary; supraclypeal area elevated, smooth and shining; sides of second abdominal segment with a large dark spot; apical fimbria dark fuscous, not very large.

Hab. Yallingup, S.-W. Australia, September 14th–October 31st, 1913, 1 male (= type), 2 females (R. E. Turner); British Museum. The three species of *Euryglossidia* now known may be separated thus:—

Wings hyaline, nervures ferruginous (W. Australia)

ichneumonoides (Ckll.).

Wings brownish 1.

1. Nervures ferruginous; second s. m. receiving first r. n. at a distance from base equal to about half of first t. c. (Victoria)

rectangulata, Ckll.

Nervures fuscous; second s. m. receiving first r. n. at a distance from base equal to length of first t. c. (W. Australia)

purpurascens, Ckll.

All three show more or less purple lustre on abdomen, at least in the male. The species now described is considerably larger than the others.

Euryglossa undulata, sp. n.

♀. Length about 10 mm.; robust, black, the head and thorax with rather scanty dull white hair, the end of the abdomen with dark fuscous hair; head broad; mandibles black, with a broad bright ferruginous subapical band; clypeus shining, with scattered distinct but not large punctures; flagellum beneath dark brown with pallid bands or spots, one to each joint; mesothorax dull, microscopically tessellate, with irregular shallow punctures, sparse on disc; scutellum more shining, with scattered large punctures, and a very fine median impressed line; area of metathorax large, shining, with only microscopical sculpture; tegulæ rufopiceous; wings smoky-hyaline, nervures and stigma piceous; b. n. meeting t. m.; lower side of first

s. m. very strongly arched or undulated; legs dark reddish brown with glittering white hair; anterior knees and tibiæ in front yellow; abdomen broad, first segment with a large yellow patch (bidentate posteriorly) at base; second to fourth segments with interrupted yellow bands, which become very broad in the sublateral region; second and third segments dull basally, shining apically; apical plate small; greater part of venter yellow.

♂. Length 8 to 9 mm.; much more slender; face and front with much white hair, but not hiding the surface; flagellum beneath dark coffee-brown, not spotted; b. n. not reaching t. m.; all the femora yellow at apex; anterior tibiæ yellow with a large black patch behind; middle and hind tibiæ yellow at apex behind; first abdominal segment not yellow at base; second to fifth with transverse yellow maculæ, successively smaller, at sides, those beyond the third segment sometimes hidden by the retraction of the segments; apical plate circular, orange-fulvous; venter mainly yellow.

Hab. Yallingup, S.-W. Australia, September 14th–October 31st, 1913, 1 female (= type), 3 males (R. E. Turner); British Museum. The sexes were taken mated on September 30th. The female is superficially rather like *E. crabronica*, Ckll., but differs by the dark face, venation (first r. n. entering second s. m. some distance from base, second r. n. a short distance from apex), &c. *E. maculata*, Sm. (of which *E. villosula*, Sm., is probably the male, judging from the descriptions), has yellow legs, while *E. nitidifrons*, Sm., has yellow mandibles.

Binghamiella insularis, sp. n.

♂. Length about 7 mm.; rather slender, black; first abdominal segment black or nearly, with the apical margin broadly red; rest of abdomen bright chestnut-red, with the apical margins of the segments stained with dusky; face with white hair, not dense. Compared with female *B. antipodes* (Smith), from New South Wales, the following differences are apparent: abdomen a much brighter red; wings dusky, not so red (very red in *antipodes*), with the stigma and nervures piceous; third s.m. broader above than second (the reverse is true of *antipodes*); mesothorax extremely densely punctured. Apical plate of abdomen very small and narrow; antennæ wholly dark; flagellum very long, reaching to end of thorax; lobes of tongue quite long and slender.

Hab. Eaglehawk Neck, S.-E. Tasmania, February 12th–March 3rd, 1913 (R. E. Turner). Two males. British Museum. As we know only the male of *B. insularis* and the female of *B. antipodes*, it is difficult to determine the true specific characters of the new form, but it seems to be sufficiently distinct.

Exoneura turneri, sp. n.

♀. Length about 8 mm.; head and thorax black, wholly without light markings; abdomen bright chestnut-red, the first segment with two rather small dusky spots near base; femora, tibiæ, and tarsi bright chestnut-red, anterior femora black at extreme base;

mandibles with a very obscure reddish spot; face broad, orbits practically parallel; scape with a narrow red stripe in front; flagellum dark; tegulae piceous; wings strongly reddened; mesothorax very smooth, polished; hair of hind tibiae and tarsi rufolvous.

Hab. Eaglehawk Neck, S.-E. Tasmania, February 12th–March 3rd, 1913 (R. E. Turner). Two females. British Museum. Allied to *E. hamulata*, but distinguished by the entirely black face. It is perhaps not more than a local race of *hamulata*.

Exoneura angophoræ occidentalis, subsp. n.

♀. Length $6\frac{1}{2}$ –7 mm.; face wholly without light markings; face narrowed below; scape red or yellowish-red in front; wings reddish; anterior and middle femora above, and below apically, and their tibiae and tarsi entirely, bright ferruginous; hind legs black, the femora and tibiae narrowly red at apex; hind tibiae and tarsi with much fuscous hair; basal segment of abdomen black except the apical margin, the hind border of the black obtusely bilobed; second segment with a broad biundulate dusky band.

Hab. Yallingup, S.-W. Australia, September 14th–October 31st, 1913 (R. E. Turner). Four females. British Museum. Mr. Meade-Waldo notes:—"Not *E. bicolor*; differs in colour of hind legs, &c." It is, however, so close to *E. angophoræ* that I treat it as a subspecies.

Exoneura insularis, sp. n.

♀. Length about 6 mm.; black, including the abdomen; orbits moderately converging below; clypeal and lateral marks cream-colour; clypeus with a very broad median band, which suddenly broadens above, so as to include all of upper part of clypeus; lateral marks rather small, subtriangular; scape with a red mark near base, and one at apex; flagellum thick, very obscure reddish beneath; tubercles black, with white hair; pleura and sides of metathorax with thin white hair; tegulae piceous; wings reddish, nervures and the large stigma dull ferruginous; legs black, anterior tibiae obscure reddish at base and subapically; hair of hind tibiae and tarsi black; abdomen very broad.

Hab. Stradbroke Island, Queensland, September 24th, 1906 (W. W. Froggatt, 155). Allied to *E. botanica*, but easily separated by the lateral face-marks and dark tubercles.

Allodape bribiensis, sp. n.

♀. Length about 4 mm.; black, the abdomen dullish, not shining as in *A. unicolor*; eyes greyish-green; clypeus with a broad white vertical bar, narrowest at top, and gradually widening downwards; scape black; flagellum ferruginous beneath, except at base; mesothorax shining; tegulae testaceous; wings moderately dusky; nervures and stigma dusky reddish; tubercles white; anterior femora with two white spots at apex, their tibiae brown with a white line on outer side; middle tibiae with a white spot at base;

posterior tibiæ with more than the basal half broadly white posteriorly; hind margins of abdominal segments more or less reddish, but very narrowly and obscurely.

Hab. Briбие Island, Queensland, November 2nd, 1913 (H. Hacker; Queensland Museum, 112). Nearest to *A. unicolor*, but smaller, with different clypeal mark, and white marks on the legs.

NEW SPECIES OF GEOMETRIDÆ FROM FORMOSA.

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

Bapta conspersa, sp. n.

♂. Head white, face brown; antennæ brown, white at base; thorax and abdomen white, the latter speckled with grey. Fore wings obtusely pointed at apex, white speckled with grey, costa narrowly ochreous; discoidal dot black; antemedial and postmedial lines grey, the former slender and only distinct towards dorsum, the latter diffuse, curved and recurved. Hind wings white speckled with grey; discoidal dot minute, black; postmedial line grey, narrower than that on fore wings. Fringes and under side of all the wings, white.

Expanse, ♂, 33 millim.; ♀, 35 millim.

Collection number, 778.

One example of each sex. The male from Daitozan (8500 ft.), September 17th, 1906, and the female from Arizan, August 21st, 1908.

Bapta marginata, sp. n.

♂. Head white, face brown; antennæ brown, white at base; thorax and abdomen white powdered with grey. Fore wings white, thickly powdered with grey on the basal area, which is limited by the slightly darker and almost straight antemedial line; postmedial band grey, fairly parallel with termen; a broad grey band on terminal area; discoidal dot black. Hind wings white, basal two-thirds finely powdered with grey; terminal third grey, traversed by a narrow band of ground colour; discoidal dot black. Fringes and also the under side of all the wings, white.

Expanse, 36 millim.

Collection number, 778*b*.

A male specimen from Arizan (7300 ft.), August 22nd, 1908.

Pseudomicronia fasciata, sp. n.

♂. Head, thorax, and abdomen white, the latter faintly brownish-tinged. Fore wings white with nine slightly oblique fuscous grey transverse lines, the third and fourth bifurcate towards the costa, the fifth and sixth approximate on dorsum and diverge towards costa, where they enclose a fuscous grey transverse streak; all the lines are blackish on the costa and have short blackish linear marks between them; a fuscous grey band just beyond the fourth line; terminal

line blackish. Hind wings white with four fuscous grey transverse lines, one before the fuscous grey band (which is broader and more oblique than on the fore wings), and three, united below middle, beyond the band; two black spots at angle; terminal line blackish. Under side white.

Expanse, 43 millim.

Collection number, 781.

A male specimen from Kanshirei, June 11th, 1906.

Allied to *P. cœlata*, Moore.

Arichanna postflava, sp. n.

♂. Head, thorax, and abdomen grey. Fore wings grey with some blackish clouds at the base and three transverse series of black spots; first series of four spots—two on costal area, one below median nervure, and one just above the dorsum—represent an irregular antemedial band; second series of seven spots—three on costal area, and four on dorsal area (5 and 6 confluent)—represent a curved and recurved postmedial band; third series of nine spots—5 faint, 7 and 8 confluent—indicate a band almost parallel with the termen; discoidal spot black. Hind wings yellow, grey on the basal area; discoidal spot black; postmedial and subterminal bands represented by black spots of irregular size, the spots of each series confluent on dorsum. Under side similar to above.

Expanse, 66 millim.

Collection number, 772.

A male specimen from Daitozan (8500 ft.), September 11th, 1906.

Comes near *jaguarinaria*, Oberthür.

Percnia suffusa, sp. n.

♂. Head and thorax brownish grey, the latter with two rows of black dots; abdomen grey, two black dots on each segment. Antennæ serrate and fasciculate. Fore wings white suffused with brownish grey on basal third and along the costa; two black dots at base and six spots representing subbasal and antemedial lines, all spots placed on veins; discoidal spot black, rather large; postmedial line sinuous, formed of black dots on the veins, outwardly broadly suffused with dark grey; subterminal and terminal lines formed of black dots between the veins, the space enclosed suffused with dark grey. Hind wings white, finely sprinkled with brownish grey on basal area; antemedial line represented by blackish spots on the veins; discoidal spot black, rather large; postmedial, subterminal, and terminal lines as on fore wings. Fringes of all wings white. Under side white, discoidal spot and transverse markings beyond as on the fore wings; apical area of fore wings darkened.

Expanse, ♂, 48 millim.; ♀, 50 millim.

Collection number, 812.

A male and a female from Kanshirei, April 29th, 1908, male; June 22nd, 1906, female.

This species comes near *P. maculata*, Moore.

Anticlea taiwana, sp. n.

Head and thorax blackish; antennæ bipectinated; abdomen brown, blackish at base. Fore wings pale brown slightly suffused with fulvous on the disc; basal fourth blackish, limited by a brownish line; antemedial line brownish, preceded by a double dusky line, which, together with antemedial, terminates in a black mark on the dorsum; postmedial line serrate, irregular, indicated by a series of partly black-edged white dots on the veins which towards the costa are connected by a slender black line; some indistinct and irregular lines before the postmedial, and a series of black dots on the veins beyond the postmedial; subterminal line blackish, undulated, only distinct towards costa where it is inwardly edged with blackish mixed with brown and outwardly bordered with greyish white and dark grey, and above tornus where it has a blackish mark on its inner edge; discoidal mark blackish linear. Hind wings fuscous. Fringes of all wings brown, chequered with darker. Under side fuscous, two darker transverse lines on each wing.

Expanse, 28 millim.

Collection numbers, 817, female, and 1694, male.

One example of each sex from Arizan (7500 ft.), September 13th, 1906, female; August 30th, 1908, male.

The transverse lines are not very distinct in either of the specimens, but they are rather better defined in the female than in the male.

CONTINENTAL ODONATA AND NEUROPTERA, 1913.

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

MR. W. G. SHELDON was kind enough to give me a number of Odonata and Neuroptera taken in France and Spain in the summer of 1913. They were:—

Odonata.

Libellula depressa, Linn., Biarritz, June 25th, a nice deep-coloured male.

Orthetrum cærulescens, Fab., Biarritz, June 27th, a fragmentary male. Albarracin, June 13th, a female. Another female, with incomplete data.

**Onychogomphus uncatas*, Charp., Albarracin, June 6th, a male. Albarracin, June 17th, a male and a female. Biarritz, June 25th, a female. All four were in somewhat teneral condition.

Calopteryx virgo, Linn., Biarritz, June 25th, a male with broad wings, blue to the tip.

Calopteryx splendens, Harr., Albarracin, June 7th, one male with the blue colouring only just commencing to show its position on the wing. Albarracin, June 16th, a male in condition similar to the last; a male without any sign of blue appearing on its wings; two females. They must be referred to the race or variety *xanthostoma*, Charp.

**Calopteryx hæmorrhoidalis*, Vanderl., Biarritz, June 24th, a male with teneral colouring; June 25th, two males, one fully coloured, the other teneral, and a female not strongly coloured.

Cordulegaster annulatus, Latr., Biarritz, June 27th, a female.

Platycnemis pennipes, Pall., Biarritz, June 27th, two females in poor condition.

Pyrrhosoma nymphula, Sulz., Albarracin, May 28th, a teneral female; June 13th, a male and a female, the latter teneral.

Agrion mercuriale, Charp., Albarracin, June 13th, a male. Biarritz, June 23rd, a female, June 25th, a male and female *in cop.*, and June 27th, a teneral male.

Neuroptera.

**Ascalaphus longicornis*, Linn., Albarracin, about mid-June, a male.

**Ascalaphus beticus*, Ramb., Albarracin, about mid-June, a male.

**Ascalaphus hispanicus*, Ramb., Albarracin, about mid-June, a male—an interesting species less frequently obtained than the previous two.

**Creagrís plumbeus*, Oliv. (an ant-lion), Albarracin, June 13th, a female.

Those species with an asterisk (*) prefixed do not belong to the British fauna.

Kingston-on-Thames: May, 1914.

NOTES AND OBSERVATIONS.

GYNANDROMORPHOUS BRED SPECIMEN OF CATOPSILIA (CALLIDRYAS) CROCALE.—I had been breeding a good many specimens of *C. crocale*, when I noticed, to my astonishment, that one recently hatched out to-day had the right wing like a male, while the left wing was like a female. I showed the butterfly to Miss Fountaine, who at once told me it was an hermaphrodite and a great prize for me to have secured, saying that amongst several hundred specimens, including a number of different species of *Callidryas* bred by herself in various parts of the world, such a thing had never occurred. Unfortunately the butterfly was lying on its back at the bottom of the cage when I found it, so that at the root of the fore wings it is deformed, but otherwise well-developed.—R. L. HUNTER; Barron Falls Hotel, Kuranda, North Queensland, April 29th, 1914.

PACHYS (AMPHIDASYS) BETULARIA ab. DOUBLEDAYARIA IN BERKSHIRE.—On May 22nd I took a female specimen of *P. betularia* var. *doubledayaria* on a door-post. I think it interesting to record this, because I believe this form is not very often taken in the Reading district.—H. L. DOLTON; 36, Chester Street, Reading, Berks.

MYELOPHOLA (MYELOIS) CRIBRUM IN NORTH-WEST LONDON.—In 1907 I recorded the occurrence of this species at Upper Tooting

on July 14th of that year (Entom. xl. p. 213). This was followed by other records of the species from the same district, also from Thornton Heath and from Kingston (Entom. xl. p. 237). I have now to put on record the capture of two specimens at Brondesbury. The moths, which were captured by Mr. Alec Urquhart, flew to the electric light in one of the lower rooms here at about 11 p.m. on June 18th last.—RICHARD SOUTH; 4, Mapesbury Court, Shoot-up-Hill, Brondesbury, N.W.

ACHERONTIA ATROPOS IN KENT.—I had a male specimen of *A. atropos* brought to me on June 15th ult. It was flying, about 9.40 in the morning, and was knocked down by the captor, consequently it is somewhat rubbed.—PERCY RICHARDS; Seabrook, Hythe.

PLUTELLA MACULIPENNIS (CRUCIFERARUM) ABUNDANT.—*P. cruciferarum* is a veritable nuisance just now. It occurs everywhere in this district in thousands. I wonder if this abundance of the species is general throughout the South of England?—PERCY RICHARDS; Seabrook, Hythe, June 17th, 1914.

[When in Scarborough recently I noted *P. maculipennis* in some numbers on the cliffs on June 9th and 10th, but on the moors above Goathland on June 11th the species was exceedingly common.—R. S.]

LYTHRIA PURPURARIA.—While examining recently a small collection of unnamed Lepidoptera, made by a schoolboy at Meads, near Eastbourne, in the years 1902–3, I was astonished to find amongst them a specimen of *Lythria purpuraria*. It is not quite typical, having the dark cross-bars very broad, as well as being under the normal size. With the exception of the *L. purpuraria*, all the specimens are of very common species; all are pinned with large white English pins, and “set” in the usual schoolboy style, and all are in very bad condition. Under the circumstances, I cannot but regard the specimen as a genuine British example of this species. It is now in the possession of a son of Dr. Rowland, of Lichfield, to whom the collection was given by the captor—a son of Dr. Homan, also of this city.—L. A. CARR; Lichfield, May 29th, 1914.

ZYGÆNA TRANSALPINA, Esp., var.—I think it may be worth while to record the capture, on August 4th last, of a variety—or aberration—of *Zygæna transalpina*, Esp., to which I can find no parallel noticed in any works that I have been able to consult. There is no similar specimen in the collections in South Kensington or in Oxford. The distinguishing feature consists in the absence of the lower of the two usual red spots of the *central* group on the fore wings. (The absence of one of the *outer* group of spots appears to be not very infrequent in allied species, though I do not remember having seen any such variety of *transalpina*.) The specimen, which is a male, was taken on the shores of the Oeschinen-See (about one-and-a-half hour's walk from Kandersteg); and as I did not notice its peculiarity at the time, and *Zygænas* were swarming, I did not work for more. I was for some time uncertain to which species to assign it, but inclined towards *transalpina*, and this identification

has been confirmed by Dr. E. A. Cockayne, who kindly examined the specimen for me.—A. W. PICKARD-CAMBRIDGE; Balliol College, Oxford.

EARLY APPEARANCE OF *EUCHLOË CARDAMINES*.—The first "Orange Tip" I saw this season was on April 22nd. The specimen was a male, and it was flying along a hedgerow within a mile of Chester. The species is unusually common in the district this year.—J. ARKLE; Chester.

With reference to the early appearance of *Euchloë cardamines* this year, it may be of interest to note that I first saw it on April 18th. Last year it appeared on April 23rd, in 1912 on April 19th, and in 1906 on April 9; but the latter was at Chudleigh, S. Devon. I saw a male *Colias edusa* at Groombridge on May 16th.—E. D. MORGAN; 24, Queen's Road, Tunbridge Wells, Kent, May 6th, 1914.

I noted *E. cardamines* at Tonbridge on April 12th last.—P. A. BUXTON; Trinity College, Cambridge.

BUTTERFLIES OF VENICE AND NEIGHBOURHOOD.—Being at Venice in the middle of April this year, and my interest in the butterflies of the neighbouring Lido having been aroused by Mr. Gurney's article (Entom. xlv. p. 232), I took my net to this island, anxious to see what this early time of year might afford in the way of butterflies. On April 20th, the Pierids *rapæ*, *napi* and *brassicæ* were common; also an exceedingly richly coloured form of *Pararge megæra* and *Cænonympha pamphilus*. *Erynnis alcea* was not rare, beautifully fresh, and evidently just emerging. I saw one specimen of *Vanessa io*, exceedingly large and brilliant. The next day the weather began to get really hot, and "whites" were frequently seen flying over the canals of Venice herself. On the 22nd I again went to the Lido. The extra warmth since my last visit had brought out five more species, besides trebling the quantity of butterflies previously noted. *Polygonia c-album*, *Epinephele jurtina*, *Cyaniris argiolus* and *Nisoniades tages* had emerged; I had feared that I was too early for *Colias edusa*, but I at last came across a fine fresh female, which I took after an exciting chase. The moth *Ematurga atomaria* was taken also. A few locusts were flying about, causing a peculiar metallic-like sound. One settled on a branch within a few yards of my head, so that I got a good look at it. I think it was *Acridium peregrinum*. It is interesting to note that nine out of the twelve species of butterflies which I came across on the Lido in April were met with by Mr. Gurney in September. This suggests that there must be at least three broods of most of these species. All along the railway line through Venetia and Lombardy, on my way from Venice to the Italian Lakes, I kept a sharp look-out for insects. Amongst numerous Pierids, Nymphalids and "blues," the most conspicuous (beyond the usual "whites") were *Euchloë cardamines*, *Leucophasia sinapis* and *V. io*, with *C. edusa* quite common, and *C. hyale* almost everywhere. In the clover fields bordering the line some distance past Verona, there appeared to be an orange-coloured *Colias*, like *C. myrmidone*; but of this I could not be absolutely certain. Is this

insect found in Northern Italy? It would interest me very much to know. I broke my journey at Verona, where *Papilio podalirius* hovered lazily over the flowers in the Piazza Indipendenza. This insect, together with *P. machaon*, was quite common at Lugano on May 2nd, selecting the very top of Monte San Salvatore as its chief playground. At this same elevation were *E. cardamines*, *P. megæra* and *Cupido minimus*, also a large *Argynnis* which I failed either to catch or identify. On the lower slopes of the mountain *P. napi*, *P. brassicæ*, *P. rapæ*, *E. cardamines*, *L. sinapis*, *C. minimus*, *P. icarus*, *Chrysophanus dorilis* var. *subalpina* and *V. io* were common, with an occasional *Melitæa athalia*, *M. aurinia* (?), *Argynnis euphrosyne*, worn *P. megæra* and *P. egeria* (the females of this species with the light spots enormous), and of course *P. podalirius*. On my homeward journey I saw nothing of interest except *Colias hyale* near Lucerne.—JOHN B. HICKS; Stoneleigh, Elmfield Road, Bromley, Kent, June 16th, 1914.

[There is no authentic record, I believe, of the occurrence of *C. myrmidone* in Italy, but it has been reported from Carinthia, and its area of distribution over S.-E. Hungary is wide.—H. R.-B.]

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—May 14th, 1914.—Mr. B. H. Smith, B.A., F.E.S., President, in the chair.—Mr. B. S. Williams, on "The Thysanoptera," and showed lantern-slides and specimens under the microscope in illustration.—Mr. Hocking exhibited branches of the common furze from Danbury Common, which had been covered by a dirty white web and killed by an attack of countless numbers of *Tetranychus linteanus*, an extremely small mite which congregated in reddish brown dust like patches. Mr. Step had seen a similar attack of a mite on lime at Mickleham.—Mr. B. Adkin, aberrations of *Colias edusa*, including a male with very pale marginal bands one half the usual size, and a yellowish form of the var. *helice*.

May 28th.—The President in the chair.—Mr. Buckstone, one male and three female hybrids of the cross *Nyssia zonaria* male and *Apocheima hispidaria* female. The larvæ were very like those of the latter species and were constitutionally weak, only four imagines resulting from some three hundred fertile ova.—Mr. West (Greenwich), a specimen of the extremely rare Hemipteron *Pygolaempe bidentata*, taken by him in the New Forest in May. Only one specimen had previously been captured in Britain.—Mr. Newman, a living pupa of *Strymon pruni*, which closely resembles bird's excrement.—Mr. Gahan, examples of a mealy-bug, both sexes of which had occurred two years running on flowering currant in his garden at Bedford Park. It was supposed to be *Pseudococcus citri*, a hot-house species.—Mr. K. C. Blair read a paper on "Luminous Insects,"

many examples of which were exhibited by himself, Messrs. Main, Edwards, and H. Moore.—HY. J. TURNER, *Hon. Rep. Secretary*.

April 9th.—*Correction*, p. 159, l. 12, for *Lita melanella* read *Lita leucomelanella*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. — *April 20th*, 1914. — The President in the chair. — Mr. A. W. Boyd, M.A., F.E.S., gave an address entitled "The Natural History of Rostherne Mere." Having described the physical characters of the mere and the probable causes of its formation, the nature of the surrounding land and its flora, both arboreal and herbaceous, he dealt exhaustively with the birds known to frequent the mere, and finally the insecta of the locality were discussed. Several very interesting records have been made, *viz.*: *Acidalia circumcellata*, a fine female specimen in 1913, *Ornix avellanella*, *Laverna raschkiella*, this species being an addition to the Lancashire and Cheshire county list, and *Nepticula argentipedella*. Mr. Boyd exhibited the Lepidoptera catalogued for the locality, and was congratulated upon having made such good use of the opportunity of collecting upon the private ground surrounding the mere. At the close of the address Mr. Boyd was heartily thanked for his kindness in coming from Manchester to give his experiences.—Mr. W. Mansbridge exhibited several xanthic varieties of *Fidonia atomaria* bred among a large number of the species from Burnley females. The xanthism was confined to the hind wings, and in most of the specimens it affected only one of the hind wings, in two instances, however, both the secondaries were nearly white all over.—Mr. F. N. Pierce exhibited generic types of the British Geomitridæ, arranged according to their affinities as indicated by the genitalia.—WM. MANSBRIDGE, *Hon. Sec.*

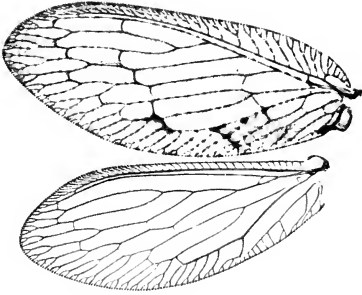
RECENT LITERATURE.

Memoirs of the Queensland Museum. Vol. i. (Nov. 27th, 1912), and vol. ii. (Dec. 10th, 1913.) Brisbane.

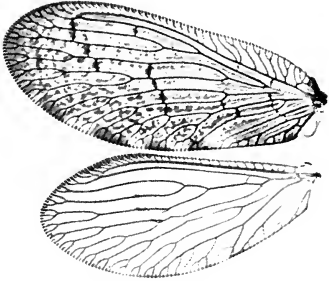
AMONG the papers of interest to entomologists in these volumes are a series on "Australian Hymenoptera Chalcidoidea," by A. A. Girault. Parts i., ii. and iii. are published in vol. i. (pp. 66-189). Parts iv., v. and vi., and Supplement to Parts i.-iii., appear in vol. ii. (pp. 101-334). A number of new genera are diagnosed, and very many new species are described. The families treated are: Trichogrammatidæ, Mymaridæ, Elasmidæ, Elophidæ, Pecilampidæ, and Pteromalidæ.

Another paper describing some new genera and species of South Queensland Proctotrypodæ (vol. ii. pp. 335-339) is by Alan P. Dodd. There is also a short article entitled "Some Field Notes on Queensland Insects," by Henry Hacker (pp. 96-100).

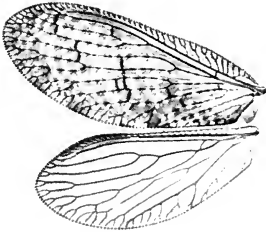
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HEMEROBIID WINGS.

Photo Dr. Fr. Ris.

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NOTES ON THE BRITISH SPECIES OF *SYMPHEROBIUS* (*HEMEROBIUS*), INCLUDING ONE HITHERTO UNNOTICED.

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

(PLATE V.)

In the Trans. Am. Ent. Soc. xxxii., December, 1905, pp. 28-29, Banks split up the genus *Hemerobius* into three, giving the following synopsis:—

No outer cross-veinlets in hind wings, only four, or less, in outer gradate series of fore wings; usually but two radial sectors; a cross-veinlet connecting first radial sector to median; the median is usually a little bent toward the cubitus at connecting veinlet; in hind wings the median usually forks plainly beyond forking of radial sector: small species. *Symphorobius*.

Outer cross-veinlets present in hind wings; more than four veinlets in outer gradate series in fore wings; usually three or four radial sectors.

(a) A cross-veinlet connecting first radial sector to median some distance out on the former; often four radial sectors; the median is rarely bent toward the cubitus at connecting veinlet; in hind wings the first radial sector forks as far out as forking of median: larger species. *Boriomyia*.

(b) The cross-veinlet from median to radius is before or at origin of radial sector, never out upon it; three, rarely four, radial sectors; the median is more or less bent toward cubitus at connecting veinlet; in hind wings the median is forked further out than fork of first radial sector. *Hemerobius*.

The author states that this division will apply to the European species thus:—*Hemerobius* (s. str.): *humuli*, *micans*, *atrifrons*, *nitidulus*, *stigma*, *limbatellus*, *lutescens*, *orotypus*. *Boriomyia*: *concinus*, *4-fasciatus*, *subnebulosus*, *nerrosus*. *Symphorobius*: *elegans*, *parvulus*, *inconspicuus*.

H. pini remains in the restricted genus *Hemerobius*. The species described by McLachlan as *H. mortonii* is to be referred to *Boriomyia*; and if Banks is right in regarding *H. inconspicuus* as a *Symphorobius*, then *H. pellucidus*, Walk., should be placed in the same genus. But it must be kept in view that both *H. inconspicuus* and *H. pellucidus* have regularly three radial sectors, while in all the examples of the former in my collection there is a cross-veinlet between the radius and branch of the radial sector at the apex of the hind wing. In the five examples of *H. pellucidus* before me the same cross-veinlet exists in the left hind wing of one specimen only.

However, the purpose of these notes is not to discuss the genus or genera as a whole, but rather to bring under notice the fact that two species have hitherto been mixed in British collections under the name of *S. elegans*.

In this country these small insects do not appear to have been taken usually in numbers, and until I received from Mr. Martin E. Mosely a male taken by him in Hampshire, I had no British specimens in my collection. Since then I have seen a nice series of twelve specimens taken by Mr. Hugh Scott, of the University Museum of Zoology, Cambridge, to which I shall again allude, and of which he very kindly presented me with three specimens. All these belong to the smaller species.

Of the other species, to which I shall refer as *S. striatellus*, Klapálek, I had seen no British example until recently, when Professor J. W. Carr, of Nottingham, sent me one in fine condition in a large collection of Neuropteroid insects forwarded for determination. I then applied to Mr. Porritt to let me know what he had of supposed *elegans*, and he at once very kindly forwarded all he possessed, not a great deal and nearly all "carded" specimens, but including both forms, and therefore of much interest and use to me in helping to a more satisfactory understanding of the matter.

S. striatellus was described by Klapálek from the Transylvanian Alps ('Vest. Ceske Akad. Frant. Jos.', vol. 13, p. 7, 1905). A specimen in a lot of Neuroptera-Planipennia received from the Zoological Museum, Berlin, for determination called my attention to another female in my own collection from Macugnaga, received from McLachlan along with others of the so-called *S. elegans*.

The following short diagnosis will, with the aid of the wing photographs, serve to separate the two:—

Face dark shining piceous; dorsum of thorax also dark pitchy brown; neuration of fore wings entirely fuscous without pale interruptions, these wings heavily marked to the wing base, the markings more or less radiate, especially those proximal to the middle series of gradate veinlets, those in the distal part

of the wing much broken up into irregular dots; gradate veinlets usually heavily shaded. Larger darker species

striatellus.

Face and dorsum of thorax yellowish; neuration of fore wings with pale dotted interruptions; dark markings on outer half of fore wings mostly placed opposite each other on either side of the dark portions of the longitudinal veins. A pale space at the base of these wings in which the veins are rather indistinct, the transverse veinlets being hardly visible. Paler smaller species

elegans.

Of *S. striatellus*, in addition to the specimen sent by Professor Carr (Nottinghamshire, from ash), I have seen two examples from Blackheath (July 2nd, 1895, November 9th, 1895, Beaumont), and one from Wells, Lincolnshire (August 3rd, 1888, Eardley Mason), all in Porritt's collection.

S. elegans is represented in the specimens before me by the example from Hampshire (by the Test, June 12th, 1913, Mosely); two from Blackheath (June 27th, 1896, June 27th, 1901, Beaumont); and one from Lewisham (June 6th, 1873), from Porritt's collection. Mr. Scott's fine series of twelve examples were taken on June 30th last at Henley-on-Thames. They were fluttering round the ends of the branches of some oaks in an isolated clump of trees. The oaks were much blighted and very sticky. The time was about 7.15, and the evening warm and fine. Other specimens were seen at the same trees at just the same time one or two evenings later.

My friend Dr. Ris, to whom I am once more indebted for the beautiful photographs which illustrate this paper, tells me that he has of *S. striatellus*: three females, Katzenssee, July 31st, 1892 (1), and July 3rd, 1893 (2); one female, Rheinau, September, 1907—believed to be all from birch. Of the smaller species: two females, Salgesch, Valais, June 15th, 1889 (the late Moritz Paul); one female, Rheinau, May, 1894.

When McLachlan wrote his "Monograph of the British Neuroptera-Planipennia" (Trans. Ent. Soc., 1868, part 2, p. 176), he may have had both species before him. Both occur in the Blackheath and Lewisham district, which he certainly at a later period knew well, and some points in his description might be considered suggestive of both. Thus with regard to the colour of the front he says "sometimes yellowish testaceous," also "anterior wings closely spotted with darker grey and varying according to the extent to which the spots coalesce." On the other hand, his reference to the whitish dotted interruptions on the longitudinal veins of the disc gives a very definite bias in the direction of the smaller species which I believe has been generally accepted as *S. elegans*. But Stephens's descriptions of *elegans* and *marshami* (for a copy of which I am

indebted to Mr. Herbert Campion) refer to something which has immaculate neuration, and Mr. Campion, who has also very kindly examined Stephens's supposed types in the British Museum, is of opinion that the *elegans* and *marshami* of Stephens are conspecific with *striatellus*. If there has been no confusion about Stephens's types, a change in the nomenclature here used will be inevitable. I leave the matter as it is in the meantime, pending further inquiries. I confess that it is a little puzzling that McLachlan should have failed to notice the immaculate condition of the neuration of *elegans* and *marshami* when he examined them in 1868, and that he should have distinctly stated that there existed in *elegans* an important character at variance with Stephens's diagnosis and with his type of *elegans*. If *S. striatellus* prove to be the true *elegans* of Stephens, Rambur's name *pygmæus* will require to receive consideration in connection with the smaller species.

The wing figures here given are both from female examples, and, as is usual in these insects, the markings are more pronounced than in the average males. A number of closely allied forms have been described by Father Navás from Spain and elsewhere. Of two of these the author has generously given me examples, *S. conspersus* and *S. venosus*, and although they present a certain amount of difference, especially in the coloration of the body, I am not prepared to say that they are more than varieties of what is here called *S. elegans*. A much more exhaustive examination of all the forms, especially with regard to the structure of the genitalia, is required before a proper valuation of these is possible.

EXPLANATION OF PLATE V.—1. Wings of *Boriomyia subnebulosus* (nat. length of fore wing, 9 mm.). 2. Wings of *Symphorobius striatellus* (nat. length of fore wing, 5 mm.). 3. Wings of *S. elegans* (nat. length of fore wing about 4 mm.).

13, Blackford Road, Edinburgh: May, 1914.

THE SLEEPING ATTITUDE OF LYCÆNIDÆ.

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

It is generally supposed that the Lycænidæ sleep throughout the night, sitting head downwards on the flower-heads and stems of grasses and other plants, in the characteristic attitude they assume during evening and twilight. But later, when darkness supersedes, these butterflies (*L. icarus*) turn round and sleep head upwards. I am indebted to Mr. W. Holland for kindly calling my attention to this interesting fact. In a letter recently received from him, he alludes to marking down groups of *L. icarus* at rest on marram grass in the evening, and states

“they were all head downwards from 4 p.m. until darkness. These groups I stayed to watch, and in every case they reversed their position to head upwards at dark. In fact, they hardly waited for it to get quite dark.” This habit he has often previously noticed.

I recently turned down some *icarus* on large plants of flowering grasses, upon which they rested each evening in the usual way, head downwards, and remained so until darkness set in, when they turned round and rested head upwards, which position they retained for the night. No doubt other species of “blues” act in a similar way.

It is considered that these butterflies rest for the night head downwards so as to defeat the attacks of birds which would be unlikely to inflict an injury on the vulnerable thorax, and would only grasp the wings if they attempted to seize a resting butterfly, and when darkness has compelled the birds to sleep, the butterfly can safely resume a normal resting attitude.

Possibly this may be so, but such is mere conjecture, and it is most unsatisfactory to theorize on natural phenomena. When butterflies have taken up their resting attitudes, it seems somewhat improbable that they are attacked by birds to any appreciable extent, or very seldom. I cannot remember having seen an instance of such, but have occasionally seen birds pursue butterflies on the wing, but directly the latter settled with closed wings the birds were eluded and gave up the chase.

AUSTRALIAN BEES OF THE GENUS *EURYGLOSSA*.

By T. D. A. COCKERELL.

Euryglossa calliopsiformis, Cockerell.

♂. Differs from description of female as follows: clypeus all yellow except a minute spot on each side; supraclypeal mark large, broadly triangular, with a spear-head shaped prolongation from its apex; lateral face-marks pointed at end; yellow band on posterior orbits rather narrow, its upper end diverging from the orbit; antennæ long, scape yellow in front; pleura with additional yellow markings; abdominal bands yellow.

Hab. Mackay, Queensland, at flowers of *Leptospermum*, October, 1898 (Turner). British Museum. This male is easily known from that of *E. calliopsella* by the colour of the scutellum.

Euryglossa altitudinis, sp. n.

♂. Length 4 mm.; black, with the clypeus (but no supraclypeal or lateral marks), labrum, mandibles (except red apices), scape in front, and tubercles, all light yellow; flagellum long, light ferruginous beneath; head broad; face with long white hair; front dull; meso-

thorax very feebly shining, rather coarsely microscopically tessellate; tegulae fuscous; wings hyaline, slightly reddish, stigma and nervures rather pale dull reddish; first r. n. entering basal corner of second s. m.; legs yellow, with the anterior femora and tibiae mainly black behind, the middle femora and tibiae also dark behind and their tarsi brown, the hind femora and tibiae black, their tarsi dark reddish (the hind coxae and trochanters are yellow); abdomen rufopiceous, with yellow bands, usually mostly concealed, at bases of segments; venter yellow.

♀. A little larger; no yellow markings on head; tubercles yellow; legs black; yellow bands at bases of abdominal segments 2 to 4, very broad at sides, but interrupted in middle; apical segment more or less reddish.

Hab. Mt. Lofty, S. Australia, December 31st, 1912 (R. E. Turner). British Museum. Two of each sex; the type is a male. This may be compared with *E. ridens*, Ckll., but is at once distinguished by the dull mesothorax and the shape of the head. Mr. Meade-Waldo notes: "In *Euryglossa calliopsella-rubiginosa-maculata* group, but distinct."

Euryglossa hemichlora, sp. n.

♂. Length 4 mm.; head and thorax dark olive-green, the head dull, the thorax shining; mandibles, labrum, the low and broad clypeus (but no supraclypeal or lateral marks), scape in front, and tubercles, all yellow; hair of head and thorax white, thin and rather long; flagellum very long, light ferruginous beneath; tegulae pallid, reddish; wings hyaline, iridescent, nervures and the large stigma light reddish-brown; second s. m. broader than high, receiving first r. n. a short distance from base; legs yellow, the femora and tibiae dark brown behind, hind femora dark except apex and a stripe above, hind tibiae and middle and hind tarsi reddish-brown; abdomen reddish-brown, paler at apex, and with pale bands at ends of first three segments; venter yellow. The hind trochanters are yellow, and their coxae yellow at apex.

♀. A little larger; no yellow markings on head; clypeus and supraclypeal area piceous, with scattered punctures; labrum and mandibles (except at base) reddish; tubercles yellowish-white; abdomen darker, very broad, without evident pallid bands; venter dark; legs piceous, anterior knees and tibiae in front yellow, middle tibiae with a yellow stripe.

Hab. Yallingup, S.-W. Australia, September 14th–October 31st, 1913 (R. E. Turner). One male (= type), four females. British Museum. Allied to *E. altitudinis*, but easily known by the green colour.

Euryglossa melanosoma, sp. n.

♀. Length about $4\frac{1}{2}$ mm.; black, shining, with thin white hair; head broad; flagellum short and thick, variably fulvous beneath, especially pallid apically; front, mesothorax and scutellum shining; tegulae piceous; wings hyaline, nervures and stigma dilute sepia;

recurrent nervures meeting transverso-cubitals; apical plate of abdomen narrow, ferruginous.

Hab. Yallingup, S.-W. Australia, September 14th–October 31st, 1913 (R. E. Turner). Two females. British Museum. Resembles *E. inconspicua*, Ckll., but readily distinguished by the black legs and shining metathorax. Readily known from *E. nigra*, Sm., by the normal antennæ and the shining, polished abdomen.

Euryglossa latissima, sp. n.

♀. Length about $4\frac{1}{2}$ mm.; very broad and robust, with thin white hair; head and thorax olive-green, shining, the front dull; head very broad; mandibles cream-colour, with bidentate dark rufous apex; labrum dark; clypeus sparsely punctured; flagellum ferruginous beneath; mesothorax microscopically lineolate; tubercles densely fringed with white hair; legs black or slightly chalybeous basally, but knees, tibiæ and tarsi ferruginous, the middle and hind tibiæ largely dusky; tegulæ pale testaceous; wings hyaline, stigma dark rufous, nervures pallid; second s. m. very large, quadrate, receiving first r. n. near base; second r. n. meeting second t. c.; abdomen shining, very broad, honey-colour, the first segment mainly piceous, the following three with narrow subapical dusky bands and suffused dusky lateral spots.

Hab. Eaglehawk Neck, S.-E. Tasmania, February 12th–March 3rd, 1913 (R. E. Turner). British Museum. To be compared with *E. rubiginosa*, D. T., but without the dense fulvous hair of that species.

GARDEN NOTES.

By CLAUDE MORLEY, F.Z.S.

We constantly find in the English periodicals a multiplicity of records from moors, fens, marshes, mountains, and all kinds of wild corners where insects most do congregate, because they are undisturbed by our civilization; but how seldom are published notes from those spots actually inhabited by entomologists and consequently those where most leisure can be enjoyed to note details of history and habits! In treating of a particular spot, such as one's own garden, it is well to set forth the geological formation underlying it, since upon this depends the soil of the district and consequently a large percentage of the vegetation upon which the great majority of its insects subsist. The garden of Monk Soham House is about four acres in extent (including the paddock), and lies almost in the centre of High Suffolk, a somewhat vague district, which may be said to be a ridge of somewhat elevated tableland obliquely crossing the county from north-east to south-west. The surface soil is composed of the Great Chalky Boulder Clay, which at certain points

is fully a hundred feet in depth. It appears to be the *moraine profonde* of an ice-sheet formed in the extreme period of the Glacial Epoch, and consists of grey clay intermixed with fragments of chalk, and is full of boulders of Oolite, Lias, and some other rocks, which are often polished and grooved by ice-action. So rich is the surface that little or no land in the neighbourhood goes untended, woods are rare and very small, and pasture at a minimum. Few more unpromising places could be imagined by the entomologist; and yet this garden, which was held by commendation by a freeman of Ely's abbot in Saxon times, by Robert Malet in 1086, and has undoubtedly been under cultivation ever since, produces things of interest, as I trust the following jottings will show.

1. *Dipteron preying upon Hymenopteron*.—We all know the manner in which Hymenoptera take toll of Diptera; the numerous species stored up as food for their larvæ, as well as the single specimens so often noticed outside the nests of Aculeates, and the large numbers slain entomophagously by the parasitic kinds. But I can recall no record of retribution on the part of the latter, except in the case of the genus *Dioctria*. To-day (June 1st, 1914), I saw a small Empid fly sitting upon a bramble leaf, holding in its fore or its anterior legs a yet smaller insect. These I tubed, expecting to find that the prey was (as is most usual in such cases) one of the smaller species of the Dipterous genus *Sciara*. What, then, was my surprise upon discovering that it was a Chalcid of the difficult—and to me unintelligible—genus *Eulophus*, Geoff.! It was quite dead, though I could not see what part of its anatomy the Empid, which proved on examination to be *Tachydromia minuta*, Mg., had been sucking.

2. "*These Animals Bite*."—My wrist was seized by *Anthocoris sylvestris*, Linn., in no friendly manner, while I was reading in the garden at 9.30 p.m. on July 7th. His proboscis was firmly inserted through the skin and effected a small, sharp pain like the prick of a No. 19 entomological pin. He sucked my blood at his own sweet will for two minutes, possibly three, thereafter I saw his face no more. The result was disappointing; none of the throb induced by *Cimex* was experienced; the small pricking lasted for fifteen minutes and then ceased; a slight blush at the point of insertion had faded in five, and nothing further was seen or felt. I have very rarely been the victim of Heteropterous onslaughts, and can recall no specific occasion since *Capsus lanarius*, Linn., was captured flying on July 21st, 1896, when it promptly turned upon me and caused my thumb "sensations similar to those set up by *Urtica dioica*," to quote my diary of that date.

3. *A Curious Aerial Dance*.—Records of unspecified insects are often useless, but the aerial dances of *Hilara* species form a

wide subject and the (doubtless specific) evolutions appear to have received little attention. It may be of interest, therefore, to note that on the morning of June 26th, at 8.30 a.m., members of this genus were forming a somewhat dense horizontal column near the west bank of the moat, and four feet to the east, on the edge of the sunshine, was a similar column; each column was about two and a half feet high, and between them individual specimens perpetually darted backwards and forwards at great speed, apparently mingling for a few moments with each column in turn, and straying away nowhere else. How long the dance lasted I failed to note, but similar evolutions were in progress at the same spot upon the two following days, when the movement seemed to vary in no way.

4. *Liophlæus nubilus*, Fab.—This appears to be a distinctly uncommon species of weevil in my twenty years' experience in Britain, occurring only in May (when I took it at Dover during 1896) and the first few days of June. In Suffolk it is both rare and local; and, although Garneys found three at Beddingfield about 1870, Tomlin noticed it at Glemsford in June of 1905, and Dr. Sharp tells me it occurs freely at Mildenhall, I have never taken it outside my garden. Here it may be annually seen sparingly, and on May 15th last we were much diverted by watching a perfect beetle consuming a leaf of ivy with its nasal mandibles. It held the outer edge of the leaf, like a lepidopterous larva does, and, like it, excised the leaf in a semicircular manner, beginning at the furthest point its rostrum could reach and gradually biting the edge towards its sternum, thence repeating the process from the furthest point. Here it is most usually found among the garden weed locally known as "ground elder," though never far from ivy.

5. *A Non-carnivorous Empid Fly*.—I have never noticed members of the Empidæ prey upon aught but perfect insects till May 5th, when a female *Tachydromia pallidiventris*, Mg., was seen on the disc of a large bramble-leaf, assiduously sucking the surface with its proboscis. The leaf was examined with a lens and found to be sparingly covered with minute excreta, which was not honey-dew, for no Aphids were present, but which had probably been emitted by either *Apion vorax*, Herbst., *Batophila rubi*, Payk., or an *Anthocoris* larva, all of which were sitting immediately above the leaf in question. I was careful to note that the Empid carried no prey; it is a common species throughout Suffolk, where I have studied its curious mode of copulation on the coast, Norfolk, Lincoln, and Wiltshire; Mr. Bedwell once bred it from a small (? Braconid) cocoon.

6. *Probable Host of Lissonota femorata*, Hlmgr.—Nothing has hitherto been ascertained respecting the economy of this Pimplid Ichneumon, and it may consequently be worthy of note that upon June 29th I saw a female walking over and investi-

gating a dead willow-trunk in my garden. This particular trunk has been under my observation for ten years, and no Lepidoptera (the usual hosts of the genus *Lissonota*) are known to breed in it. Nothing nests there, as far as I am aware, but Aculeates and, perhaps, *Dictenidia bimaculata*, Linn.; but the smaller Fossores—species of *Passalæcus*, *Trypoxylon*, and *Pemphredon*—are abundant; though the only thing of sufficient size to render it a probable host for this Ichneumonid is the bee *Osmia leaiana*, Kirby, of which numerous specimens were seen about the same time. The elongate ovipositor renders its parasitism upon some burrowing insect nearly certain.

7. *A Pugnacious Dolichopodid*.—*Pæcilobothrus nobilitatus*, Linn., is common about the moat, and on June 28th I watched one individual for about an hour. This was undisputed lord of a group of three overlapping water-lily leaves (*Nymphaea alba*), about which it briskly walked and occasionally sucked their surface as though for nutriment. At irregular intervals it would make short flights to neighbouring leaves, but these appeared purposeless, and it always returned to its particular three, from which it drove away by flying point blank at them all other Diptera—mainly Notiphilæ and Dolichopodids—while the presence of *Gerris gibbifera*, Sch., larvæ was ignored. The only foes it feared were *Pyrrhosoma nymphula*, Sulz., and *Agrion puella*, Linn.; from these it fled precipitately. At rest it would somewhat slowly and at long intervals vibrate its wings, much in the manner of *Scoptera vibrans*, Linn.

(To be continued.)

ACRONYCTA (HYBOMA) STRIGOSA IN WICKEN FEN.

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

IN the matter of Wicken Fen, Mr. Rowland-Brown's article in the 'Entomologist' for July, 1914 (p. 185), suggests to me to say a word for the protection of an old pet of mine, *Acronycta* (*Hyboma*) *strigosa*, if it still exists. Most probably it does; though I understand that of late years it is rare or absent. The expression in Mr. Rowland-Brown's observations that induces me to advance my plea is that in which he condemns, amongst other things, "low shrubby trees."* Many years ago I reared *A. strigosa* from the egg for several broods, and I carefully examined its habitat in the Wicken district, though I did not capture any specimens. It is long since I was at Wicken, and do not know what changes have occurred there since; nor

* I suggest, of course, that these be cut, if at all, only where necessary, and with the greatest discretion; I hope other entomologists will assist with their views.—[H. R.-B.]

do I recollect or know how far the habitat of *A. strigosa* was or is included in the now preserved portion of the Fen. *A. strigosa* feeds on hawthorn, and why it should be so localised is not very obvious. Various reasons may be suggested, climatic and others. There is one somewhat important one, as to which I feel tolerably certain. *A. strigosa* pupates in a cocoon which it forms by burrowing into rotten wood, and consequently it cannot thrive unless the trees on which it lives are old and possess some dead portions that have some fairly rotten wood. No doubt larvæ on other hawthorn trees will find places in which to pupate, but such places will be unsuitable, and will result in the greater number of individuals who do so perishing in the winter. Not impossibly stumps of cut reeds may afford as good substitutes as any.

The point, however, on which I desire for the moment to insist, is that old hawthorn trees should be jealously guarded, and that sufficient younger trees should be spared in order that in due time they may replace the older ones as these perish, and that none of the old ones and not all the younger shall be included in the sweeping condemnation of "low shrubby trees."

NEW SPECIES OF NOCTUIDÆ FROM FORMOSA.

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

Trachea conjuncta, sp. n.

♂. Head and thorax whitish, the latter marked with dark brown on edges of collar and patagia; antennæ bipectinate except at tip. Fore wings whitish, tinged and clouded with ochreous brown; subbasal line black, double, wavy, not clearly defined; antemedial line black, double, sinuous; postmedial line black, double, strongly curved from costa to middle, thence sinuous to dorsum; a broad oblique blackish band from costa to about middle of a black bar connecting antemedial and postmedial lines, and a narrow oblique blackish band from the connecting bar to dorsum; orbicular and reniform stigmata whitish, finely outlined in black and enclosing brownish marks; a blackish quadrate mark (extending to costa) between the stigmata; three blackish marks on terminal third of the wing—one at costal end of postmedial line, one (the largest) below middle of postmedial, one below apex; fringes chequered with black. Hind wings white with blackish discoidal dot and two dusky transverse lines beyond; fringes grey brown. Under side whitish; fore wings suffused with dusky except on margins, the blackish postmedial line is preceded by a blackish cloud on costal area; hind wings have a black discoidal lunule and blackish transverse line as above.

Expanse, 34 millim.

Collection number, 1751.

A male specimen from Rantaizan, May 9th, 1909.

Kerala lentiginosa, sp. n.

♀. Head and thorax pale brown, the latter marked with black; abdomen brown, slightly darker than the thorax. Fore wings pale brown, thickly freckled with darker brown except on middle of dorsal area; subbasal and antemedial lines blackish, originating in black spots on the costa, the first line indented above dorsum, the second line diffuse and angled below middle; reniform stigma represented by a black lunule; postmedial line dark brown, double, indented above dorsum; subterminal line blackish, wavy and interrupted, most distinct and black from below apex to middle; fringes pale brown marked with darker. Hind wings whitish, bordered with blackish on terminal area; fringes whitish. Under side whitish, fore wings suffused with blackish on the disc; a blackish subterminal line on all the wings.

Expanse, 32 millim.

Collection number, 934a.

One female specimen from Arizan (7350 ft.), August 22nd, 1908.

Comes nearest to *K. decipiens*, Butler.

Kerala lentiginosa suffusa, ab. n.

♀. Fore wings suffused with dark brown except at base and on the middle of dorsum; hind wings slightly tinged with brown, blackish border less distinct.

Expanse, 30 millim.

Collection number, 934.

One female specimen from Arizan (7500 ft.), September 16th, 1906.

Macrobarasa albibasis, sp. n.

♂. Head whitish grey; thorax somewhat darker grey, collar edged with blackish; abdomen brownish grey, whitish at base and anal extremity. Fore wings whitish grey suffused with brownish except on basal fourth; subbasal and antemedial lines black, sinuous, angled below costa; postmedial line black, angled below costa, slightly wavy to vein 3 where it is deflected inwards for a short distance, thence sinuous to dorsum; other irregular transverse lines between antemedial and postmedial; orbicular and reniform stigmata white, finely outlined in black; subterminal line black, wavy, edged with white on costa; fringes white mixed with brownish at the base, preceded by a black line. Hind wings whitish, veins and hairs thereon brownish; terminal area broadly bordered with blackish; fringes whitish mixed with brownish at the base. Under side whitish, all the wings have dusky discoidal marks and postmedial lines, and are broadly bordered with fuscous.

Expanse, 36 millim.

Collection number, 1752.

A male specimen from Rantaizan, May 12th, 1909.

Allied to *M. xantholopha*, Hampson.

Batracharta divisa, sp. n.

Head and thorax dark brown, the latter powdered with grey and cross-banded with lighter brown and black; abdomen brown above, paler below. Fore wings brown, clouded and mottled with darker, the basal portion of the wing limited by the postmedial line is suffused with greyish; postmedial line black, curved round cell with an obtuse angle opposite end of cell, slightly oblique from median nervure to just above dorsum where it turns inwards, terminating on dorsum at about one-fifth from base of the wing; a blackish irregular patch near the costa is outwardly margined by the postmedial line; subterminal line black, slightly wavy, almost parallel with the termen; fringes brown traversed by a darker line. Hind wings fuscous inclining to whitish on costal area; discoidal mark blackish, diffuse; fringes pale brown. Under side whitish buff, the fore wings suffused with blackish on discal area; all the wings have a black discoidal mark, that on the hind wings large and conspicuous.

Expanse, 46 millim.

Collection number, 1508a.

A male specimen from Kanshirei, November 17th, 1908.

This species comes nearest to *B. cossoides*, Walk.

Fodina contigua, sp. n.

Head and thorax black, a line between antennæ, edges of collar, patagia and the metathorax, pale ochreous; abdomen ochreous. Fore wings black, the costal area from near base to beyond middle, also a small patch at tornus, flecked with pale ochreous; subbasal line pale ochreous, not extending to dorsum; from outer end of flecked costal area a pale ochreous band tapers to the tornal patch; fringes dark grey, black at the base, preceded by a pale ochreous line. Hind wings ochreous broadly bordered with black, the border tapered towards tornal area, which is heavily flecked with black; fringes ochreous mixed with black. Under side ochreous; fore wings clouded with black; hind wings with dusky borders.

Expanse, ♂, 40 millim.; ♀, 44 millim.

Collection number, 1506.

One example of each sex from Kanshirei obtained in 1908; the male on April 22nd, and the female on June 6th.

The sexes are alike in colour and pattern, but as the female is in better condition than the male, it has been described. The species comes very near *F. postimaculata*, Hampson, from which it differs chiefly in colour.

Fodina contigua fusca, ab. n.

All the typical markings of the fore wings are obscured by fuscous suffusion; the hind wings and under side of all wings entirely fuscous.

Expanse, 44 millim.

Collection number, 1515.

A male example from Kanshirei, April 8th, 1908.

Harmatelia basalis obscura, ab. n.

♀. Differs from typical *basalis* (Moore) in the absence of white postmedial line and in the terminal area of fore wings being very little paler than the basal two-thirds.

Expanse, 50 millim.

Collection number, 1516.

A female specimen from Kanshirei, April 28th, 1908.

Aedia obscura, sp. n.

♀. Head and thorax brown, sparsely mixed with grey; abdomen paler. Fore wings brown, paler and sprinkled with grey on apical and terminal areas; antemedial line darker brown, double, sinuous, enclosed space paler than the ground colour; postmedial line darker brown outwardly edged with paler, excurved from costa to vein 4, inwardly oblique from vein 4 to dorsum, indented below vein 6; reniform stigma outlined in dark brown but not clearly defined; subterminal line dark brown, sinuous, indistinct; fringes brown, a dotted ochreous line at base. Hind wings white, broadly bordered with brown; fringes white at tornus. Under side of fore wings fuscous, and of hind wings white with broad fuscous border; all the wings have a dusky discoidal mark, that on the fore wings is lunular and that on the hind wings colon-like.

Expanse, 34 millim.

Collection number, 175.

A female specimen from Takow, September 1st, 1904.

Allied to *Æ. mosara*, Swinhoe.

Adrapsa quadrilinealis, sp. n.

Head, thorax, and abdomen brown, some whitish hairs in anal tuft; antennæ pectinate on one side. Fore wings brown, powdered with darker; antemedial and postmedial lines dark brown, the first sinuous, the second wavy, excurved and edged with whitish on costal area; medial line dark brown, diffuse, almost straight from white discoidal lunule to dorsum; subterminal line white towards costa, where it edges a whitish subapical patch, obscured towards dorsum, inwardly clouded with dark brown; fringes marked with whitish towards apex and preceded by black-edged whitish lunules. Hind wings slightly paler becoming whitish above tornus; transverse lines similar to those on fore wings, except that the medial line is absent. Under side whitish brown sprinkled with darker; markings as above but the transverse lines of fore wings are not distinct.

Expanse, ♂, 42 millim.; ♀, 40 millim.

Collection number, 1004.

One example of each sex from Kanshirei; the male obtained April 22nd, 1908, and the female, April 19th, 1906.

Mecodina (?) albipuncta, sp. n.

♂. Head fuscous brown mixed with paler; palpi fuscous brown, paler at the base and the tip of third joint; thorax and abdomen fuscous brown mixed with paler; antennæ finely ciliated. Fore

wings pale brown almost whity-brown on the disc, sprinkled and clouded with fuscous brown; two white spots in the cell, the outer lunular and smaller than the inner; antemedial line blackish, wavy, angled below costa; medial line blackish, sinuous, commencing in a blackish triangular mark on the costa; postmedial line blackish, wavy, curved round cell, united with outer edge of triangular mark on costa; subterminal line blackish, wavy; terminal area fuscous brown traversed by a diffuse and sinuous band of the ground colour, short black bars between the veins joining black lunules on the termen; fringes fuscous brown marked with paler between the veins. Hind wings fuscous grey with two dusky transverse lines, the outer one sinuous and most distinct; subterminal line whitish outwardly dentate, inwardly diffuse, not distinct towards costa; fringes pale brown marked with darker between the veins, proceeded by a series of black lunules. Under side pale brown; markings of fore wings as on upper side but the terminal area is not darker and the short black bars are not distinct except between veins 3 and 5; the transverse lines on hind wings are dark brown, the first bluntly angled beyond the black discoidal mark, the second is serrated and is followed by a brown band which is clouded with blackish about the middle and before dorsum.

Expanse, 35 millim.

Collection number, 929.

A male specimen from Kanshirei, June 16th, 1908.

Mecodina (?) subornata, sp. n.

♂. Head and thorax fuscous brown, the latter mixed with darker in front; abdomen whitish brown, heavily powdered with fuscous brown except on the anal tuft. Fore wings fuscous brown, traces of two whitish dots in the cell; antemedial line blackish, indistinct except on costa where it is inwardly edged with white; postmedial line blackish, sinuous and wavy, outwardly pale edged, the edge becoming white and diffuse on the costa; medial line blackish, almost parallel with the postmedial from cell to dorsum; fringes fuscous brown, variegated with white toward apex and tornus. Hind wings fuscous brown, traces of a pale transverse line above tornus. Under side pale brown, variegated with darker brown; on the fore wings the costa is paler, and the terminal area from tornus to a black spot at middle whitish; on the hind wings, the basal and terminal thirds are whitish; all the wings have dark transverse lines.

Expanse 38 millim.

Collection number, 929a.

A male specimen from Kanshiref, April 18th, 1906.

NOTES AND OBSERVATIONS.

PLUSIA MONETA IN NOTTINGHAMSHIRE.—I have great pleasure in reporting the capture in my garden of *Plusia moneta*; it was taken by my son, W. J. Daws, on the evening of July 4th, 1914, and is now in my collection. It is a fine female, but by the appearance of the

body it had already deposited its ova; three or four years ago I planted a few plants of monkshood, but this is the first time we captured *P. moneta*. The plants have been searched each season, but without result until this year. On Wednesday, July 8th, we made another search, and found one half-grown larva and one fresh cocoon. Would you kindly tell me if there are any previous records of *P. moneta* in Nottinghamshire, or is this the first for the county?—WILLIAM DAWS; 39, Wood Street, Mansfield, Notts, July 9th, 1914.

[*P. moneta* has been noted from most of the counties of England up to Cheshire, but I do not recall any previous record of this species from Nottinghamshire.—R. S.]

ACHERONTIA ATROPOS IN KENT.—Mr. Percy Richards (*antea*, p. 205) recorded a specimen of *A. atropos* captured at Hythe on June 15th last. In a communication dated July 8th he writes:—"Another specimen was found at rest on a mulberry tree in Hythe. It is a fine female, measuring 5 in. in expanse. I have no doubt, judging from its condition, that it had only just emerged from pupa, although the nearest potato patch is two hundred yards from the mulberry tree."

PAPILIO HOSPITON IN CORSICA.—Mr. Gurney states on p. 176 of the 'Entomologist' that a French entomologist, resident at Ajaccio, informed him that the food-plant of this species did not grow in the Vizzavona district, and that examples taken there were chance ones. This statement is an error, the food-plant of *P. hospiton* does grow at Vizzavona, and the larvæ are locally common on it there. Towards the end of July, 1906, I found twenty-seven larvæ in two days, as recorded in the 'Entomologist,' xl. p. 77.—W. G. SHELDON.

NOTE ON AMMOPHILA CAMPESTRIS?—On the intensely hot afternoon of July 11th I was watching a sandy hillside, on West Knighton Heath, for Aculeates. My attention was directed to an insect (almost certainly *Ammophila campestris*, which is even commoner than *A. sabulosa* here, but exact determination seemed of less importance than leaving the creature undisturbed) which was carrying in its mandibles a small, round white pebble. This it carefully deposited, with others, at the mouth of its burrow. It then rapidly fussed about until it had found another quite similar stone, being very eclectic, and so intent on its task that I could bend closely over it. After seeing several additions to the little heap, which at last obscured the opening, I gently withdrew. Are these last touches of maternal care protective against some parasite? Is the habit general?—F. H. HAINES, D.P.H., &c.; Winfrith, Dorset, July 12th, 1914.

DEILEPHILA (HYLES) EUPHORBIE IN CORNWALL.—While staying at St. Gennys, North Cornwall, during August, 1910, I caught a large moth, which remained unidentified in my collection until last Friday, when a friend told me that, in his opinion, it was a Spurge Hawk (*Deilephila (Hyles) euphorbie*). I took it up to the South Kensington Museum yesterday, and they told me that my friend's surmise was correct. I have a fair collection of butterflies, but know

little about moths, which accounts for the Spurge Hawk remaining unnoticed so long.—A. S. BUCKHURST; 9, Souldern Road, West Kensington, July 19th, 1914.

NOTE ON *ORGYIA ANTIQUA*.—I had larvæ of *Orgyia antiqua* this year in a breeding-cage indoors, feeding them on plum leaves. To my surprise, after the females resulting from the normal brood had laid eggs, these latter began to hatch out about July 11th. I can find no reference to this fact in the text-books. I should be much interested to know whether a second brood has occurred many times before.—A. H. LEES; University of Bristol, July 16th, 1914.

[Larvæ of *Orgyia antiqua* have been observed in August and September, and occasionally imagines have been seen in October.—R. S.]

HYMENOPTERA SUBMITTED FOR DETERMINATION.—We have received from Mr. F. Dennis, of East Liss, in Hants, a handsome female of the largest British Ichneumon fly (*Rhyssa persuasoria*, Linn.), captured upon a window there; a ligneous gall, also found there on oak, is too broken and shrivelled to determine. Mr. Geoffrey Todd, of Barnet, has sent us a bundle of Braconid cocoons from which he has bred *Apanteles ruficrus*, Hal.; these were first observed in larvæ of *Arenostola (Leucania) brevilinea*, Fenn., on June 24th, and emerged on July 10th. Goureau has given an interesting account of the earlier stages of this parasite at Soc. Ent. France, 2^e série, tom. iii. p. 355; it has already been bred from *Leucania littoralis*, Curt., and *L. pallens*, L. Neither Mr. Todd nor we can recall previous records of hymenopterous parasites upon this Noctuid moth.—CLAUDE MORLEY; July 22nd, 1914.

ABUNDANCE OF *PLUTELLA MACULIPENNIS (CRUCIFERARUM)*.—I can testify from personal experience as to the abundance of this species. During Easter it was beginning to emerge on the heaths about Sidmouth (South Devon), and was swarming in this locality by April 20th. At Whitsuntide in the neighbourhood of Chelmsford it was abundant on the wing, in the late afternoon, over every roadside patch of waste vegetation.—R. MELDOLA; 6, Brunswick Square, W.C., July 3rd, 1914.

PLUTELLA MACULIPENNIS (CRUCIFERARUM) IN NORTH CUMBERLAND.—This species is now very abundant in this district. I first noticed the moth in June; now, scarcely a field of turnips has escaped. Injury has been principally done amongst the swede turnips, and many of the fields have assumed a grey appearance. The farmers in the district say that such a plague has not been experienced for thirty years.—GEORGE B. ROUTLEDGE; Tarn Lodge, Headsnool, Carlisle, July 7th, 1914.

APPEARANCE OF *EUCHLOË CARDAMINES*.—May I add my experience of this species during the present season? I first met with it in a clearing in a wood in Kent on April 23rd, at a height of about 200 ft.; it was quite common, and females predominated. Next I found it, in an interval of sunshine, between a couple of thunderstorms, at the Villa Adriana, near Rome, probably at about a similar

elevation, on May 6th; and afterwards at Messina, Sicily (2000 ft.), May 9th; Palermo (2000 ft.), May 12th; and Mount Etna (over 3000 ft.), May 16th. During my trip into Calabria I captured specimens at Palmi (1500 ft.), May 22nd; Catanzaro (2500 ft.), May 24th; Nicotera, May 30th (1000 ft.); and Cape Spartivento (50 ft.), June 3rd. It was flying at Messina (50 ft.) on June 10th, and above and below Bérisal, Switzerland (4500 ft. to 5500 ft.), from June 17th to 22nd, and finally I left the species in excellent condition, both males and females, at Kandersteg, at an elevation of 4000 ft., on Monday, June 29th.—J. PLATT BARRETT; Westcroft, South Road, Forest Hill, S.E., July 3rd, 1914.

A DAY IN DELAMERE FOREST.—On July 11th, in Delamere Forest, and feeding on bramble blossoms, I saw a fine and fresh male *Pyrameis (Vanessa) atalanta*. Was this puzzling butterfly locally bred? did it pass the winter in the egg, larva, chrysalis, or imago state, and where did it hibernate? Or, after it had crossed the waves of the North Sea, or the waters thereto, why did it fly from the east to the very west of the country, arriving in speckless condition? With these unsolved "problems" as companions I subsequently captured a fine *Cænonympha tiphon* with lanceolated spots (subvariety *lanceolata*), and two specimens of *Acidalia stramineata* var. *circellata*. This latter insect appears to be common but local here. Possibly it escapes detection when on the wing through being taken for *Crambus margaritellus* or females of *Fidonia atomaria*. At rest, however, on the heather, &c., it cannot well be mistaken. From a female taken on the same spot in July of last year I obtained a large number of eggs. These hatched, and the larvæ went on so well that I had reason to think they would survive the winter. They fed readily on knot-grass (which I think does not grow on or near their habitat), and they began hibernation on the stems, fastening themselves by their anal claspers, and branching out at an acute angle in the form of a note of interrogation. So they remained, until I discovered at the end of last March that many had dropped from their perch. All were dead. I had succeeded in giving them food, and plenty of fresh air, but I had failed in providing the damp environment of the mosses. One of the *C. tiphon* (I only saw five or six altogether) was nearly captured by one of the larger dragonflies (*Aeschna juncea*), of which there were many about. A movement on my part scared away the dragonfly, which was only an inch or two behind the butterfly, and so the *tiphon* was saved. The mosses were unusually dry and enabled me to watch the richly-coloured males of *Leucorrhinia dubia*, in black and maroon, hovering over the pools. The females, in which the maroon colour is replaced by yellow, were not so numerous. I found the *tiphon* ground—the only Delamere haunt now, I fear, for the butterfly—guarded by two rows of high iron railings smeared with fresh tar. I thought with regret of the newspaper I had left behind in the railway carriage. Still, the obstruction did not prevent an old veteran of seventy summers clearing the rails and landing safely on the other side, untarred, excepting the hands, which were soon corrected in the dry sand of the place.—J. ARKLE; Chester.

MOTHS CAPTURED BY LIGHT-TRAP.—My friend, Mr. F. Gillett, who has a house on the North Downs, near Chevening (Kent), has sent me a list of the Moths that have been attracted by a large trap of his own design during the months of March, April, and May. I think his captures in this manner may prove of interest to readers of the 'Entomologist.' He writes:—

The following is the result of a moth-trap, made like a cupboard with three glasses herring-bone fashion in front, which exactly fits into the window; inside are three 30 c.p. electric lamps, the door at the back being fitted inside with a looking-glass, and the side with a small window covered by a shutter. The trap is on castors, to be easily movable. It is run from 10 p.m. to 3 a.m., when the light is automatically shut off by an alarum clock downstairs. In February and March it was only run for a few nights, with the result: one Chestnut (*vaccinii*) in February, and one Small Quaker (*cruda*) in March.

APRIL.—*Tæniocampa gothica*. 2nd (four); 13th (three); 14th (two); 18th (eight); 19th (two); 20th (eight); 21st (one); 23rd (three); 24th (five); 26th (two); 27th (six); 28th (two); 29th (six); 30th (six)=56.—*T. instabilis*. 3rd (one); 13th (two); 18th (one); 19th (two); 20th (one)=7.—*T. opima*. 21st (one); 26th (one); 27th (one); 29th (three)=6.—*T. gracilis*. 13th (one); 19th (one); 29th (two)=4.—*T. cruda*. 13th (two).—*T. stabilis*. 21st (one); 24th (two); 29th (one)=4.—*Anticlea badiata*. 13th (one); 18th (one); 20th (one); 29th (one)=4.—*A. nigrofasciaria*. 26th (one); 28th (one); 29th (one)=3.—*D. mendica*. 28th (one); 29th (one)=2.—*Hemerophila abruptaria*. 29th (one).—*Xanthorhoë fluctuata*. 29th (one).

MAY.—*Tæniocampa gothica*. 1st (two); 2nd (two); 4th (one); 12th (one); 14th (three); 15th (three); 18th (one); 21st (one); 22nd (one); 23rd (one); 30th (three)=19.—*T. gracilis*. 2nd (one).—*T. stabilis*. 16th (two); 20th (two)=4.—*Spilosoma menthastris*. 14th (two); 18th (two); 19th (two); 20th (eight); 21st (one); 22nd (seven); 23rd (two); 28th (three); 29th (four); 30th (ten); 31st (four)=45.—*Diaphora mendica*. 14th (one); 18th (one); 21st (one)=3.—*Tephrosia crepuscularia*. 14th (one); 22nd (one)=2.—*Coremia ferrugata*. 14th (one); 20th (four); 27th (one); 30th (one)=7.—*G. bidentata*. 14th (one); 17th (one); 20th (one); 22nd (one)=4.—*O. luteolata*. 14th (one); 20th (one); 29th (one); 30th (one)=4.—*Agrotis cinerea*. 15th (one); 17th (two); 18th (seven); 19th (one); 20th (eight); 21st (three); 22nd (one); 23rd (sixteen); 24th (three); 26th (one); 27th (five); 28th (eight); 29th (seven); 30th (thirty-one)=94.—*Dianthæcia cucubali*. 16th (one); 20th (one); 21st (one); 22nd (one); 28th (one)=5.—*X. fluctuata*. 16th (one); 19th (one); 20th (two)=4.—*Apamea basilinea*. 16th (one); 23rd (one); 28th (one); 29th (two); 30th (six)=11.—*P. dictæa*. 17th (one).—*Hipocrita jacobææ*. 18th (three); 20th (six); 21st (four); 22nd (three); 23rd (one); 28th (eight); 29th (seven); 30th (seven)=39.—*Hemerophila abruptaria*. 18th (one); 20th (one)=2.—*Mamestra dentina*. 18th (one); 20th (two); 22nd (three); 23rd (one); 27th (three); 29th (four); 30th (three); 31st (one)=18.—*M. thalassina*. 17th (one); 18th (one); 29th (three); 30th (one)=6.—*M. genistæ*. 19th (one); 21st (two); 22nd (one); 24th (one); 28th (one); 29th

(three); 30th (seven) = 16.—*Eupithecia oblongata*. 19th (two); 20th (one); 27th (one); 30th (one) = 5.—*Lophopteryx camelina*. 20th (one).—*Mesoleuca ocellata*. 20th (one); 22nd (one) = 2.—*Dianthæcia capsicola*. 20th (one); 21st (one) = 2.—*D. carpophaga*. 20th (one); 21st (one) = 2.—*Eupithecia pygmaea*. 20th (one).—*Dicranura vinula*. 21st (one).—*Grammeicia trilinea*. 21st (two); 22nd (four); 23rd (one); 28th (one); 29th (two); 30th (fourteen) = 24.—*Anaitis plagiata*. 21st (one); 28th (one) = 2.—*Rusina tenebrosa*. 21st (one); 29th (one) = 2.—*Lampropteryx suffumata*. 22nd (one).—*Cilix spinula*. 22nd (one).—*Lozogramma petraria*. 22nd (one).—*Hepialus lupulina*. 22nd (one); 28th (one) = 2.—*Eupithecia pulchellata*. 22nd (one).—*Leucania comma*. 22nd (one); 28th (three); 29th (two); 30th (one); 31st (one) = 8.—*Agrotis puta*. 23rd (one); 29th (one) = 2.—*Plusia gamma*. 26th (one); 27th (four); 28th (four); 29th (six); 30th (six); 31st (one) = 22.—*Agrotis exclamationis*. 28th (one); 30th (five); 31st (one) = 7.—*Phalena bucephala*. 30th (one).—*Xanthorhoë montanata*. 29th (one); 30th (one) = 2.—*Ligdia marginata*. 30th (one).—*Cucullia umbratica*. 30th (one).—*Manestra pisi*. 30th (one).—R. M. PRIDEAUX; Brasted Chart, Kent, June 16th, 1914.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 11th*.—Mr. B. H. Smith, B.Sc., F.E.S., President, in the chair.—Mr. Dunster exhibited a short series of blue females of *Polyommatus icarus* from Horsley.—Mr. Edwards, butterflies from Costa Rica, New Granada, and Borneo.—Mr. W. West, the various species of Coleoptera taken by himself in the New Forest in mid-May, mainly from hawthorn blossom.—Mr. Curwen, about a dozen species with various forms of *Anthroceridæ* (*Zygænidæ*) taken by him in numerous holidays on the Continent.—Mr. Turner communicated a note on the species of mite (*Acarus*) *Tetranychus lintearius* which had recently been exhibited as causing devastation among gorse-bushes.

June 25th.—Mr. E. Step, F.L.S., in the chair.—Messrs. Blair and Main, a number of interesting items collected by them during a recent holiday around Meiringen and Lugano, including (1) living larvæ of a *Crioceris* sp. on Bryony (*Tamus communis*); (2) a *Polistes gallica* (living) on its nest; (3) living fireflies (*Luciola italica*) which were "flashing"; (4) a field cricket found by Mr. Ashdown; (5) a series of *Cetonia stictica*; (6) specimens of *Gnophos glaucinaria* with ova, &c.—Mr. Coulson, a long series of many degrees of blue coloration of the females of *Polyommatus icarus* from Horsley and several *Cenonympha pamphilus*, one having a bipupillate apical spot, and another with three well-developed eye-spots on the hind wings above.

July 9th.—Mr. A. E. Gibbs, F.L.S., F.Z.S., Vice-president, in the chair.—Mr. Newman exhibited living larvæ of *Gastropacha ilicifolia* and *Celerio gallii*, with the parent imagines of the former species, together with a curiously suffused and obscure form of *Dianthæcia*

capsincola.—Mr. Newman demonstrated a method of killing Anthrocerids (Zygæuids) by immersion in petrol for a few moments, which appeared to be quite successful.—Mr. H. Moore, a living specimen of *Ægrotæra phymateus*, a large Orthopteron from the Cape.—Mr. J. Platt Barrett, living male crickets, *Gryllotalpa vulgaris*, small larvæ and ova shells of *Melanargia pherusa*, a large centipede, &c., all from Sicily.—Mr. W. West (Ashtead), the *Phylloxera* of the oak, *P. punctata*.—Mr. Step, several Hemipterous pests, including *Phyllaphis fagi* in masses under leaves of beech, and *Phyllopsis fraxini* in a similar manner under leaves of ash, with *P. fraxinicola* and *Pediopsis tilæ*.—Mr. R. Adkin, a bred series of *Celastrina* (*Cyaniris*) *argiolus*, from 1913 autumn larvæ on ivy, one or two of which were of the facies of the autumn emergence.—Mr. Hy. J. Turner, the whole of the plates of Rösels' *Insekten belustigung*, 1746 (1)–1761, with Kleemann's additional volumes of plates, and an autograph letter *re* the volume from W. Spence, 1812.—Mr. A. E. Gibbs, a drawer of species and forms of *Parnassius*, including *P. mnemosync*, *P. apollo*, *P. stubbendorffii*, *P. delphius*, *P. apollonius*, *P. imperator*, *P. hardwickii*, *P. discobolus*, *P. romanovi*, &c.—Mr. Step read a Report of the Congress of the S. E. Union of Scientific Societies, held at Bournemouth, June 10th–13th, and which he and Mr. Hy. J. Turner attended as the Society's delegates.—HY. J. TURNER, *Hon. Rep. Sec.*

RECENT LITERATURE.

Studies on the Mecoptera of Japan. By T. MIYAKE (Journal of the College of Agriculture, Imperial University of Tokyo, vol. iv, No. 6, pp. 265–400). Tokyo: December, 1913.

No Neuropterist can well afford to miss this paper, in which Mr. Miyake gives a full and interesting account of his studies in connection with the Scorpion flies and allied insects to be found in Japan. Though he gives them ordinate rank, as do some other entomologists, it is probably more usual to consider them as a subdivision of the Neuroptera. All are placed in one family, Panorpidae, which is divided into four genera:—*Panorpa* (including *Aulops*) with twenty-seven species, *Panorpodes* with four, *Leptopanorpa* with two, and *Bittacus* with six. Thus there are thirty-nine (or forty with the doubtful *Panorpa hageni*) species in all, as compared with four to be found in Britain and but twenty in either Europe or America. One species only, *Panorpa communis*, Japan shares with us. We have no example of the peculiar *Tipula*-like genus *Bittacus*, of which Japan has six but, on the other hand, Japan does not possess a *Boreus*, one species of which peculiar genus of tiny insects is found with us.

Distinctive wing-markings, prolongation of the mouth-parts into a beak, and scorpion-like extremity of the male abdomen make, *Panorpa*, *Panorpodes*, and *Leptopanorpa* very distinctive insects, while the beak and *Tipula*-like build differentiate the genus *Bittacus*. That the "beak" is a recent acquisition seems clear, for the head of the larva of *Panorpa* is of quite normal form. The beak reaches its

highest development in imagines of that genus. Morphology and anatomy are closely studied, while wing neuration and markings are discussed in even greater detail. Miyake concludes that the Japanese Panorpids may, generally speaking, be grouped in two categories as regards wing-marking:—(i.) apical dark part incompletely developed and pterostigmatic fascia rather narrow; (ii.) apical dark part completely developed and pterostigmatic fascia rather broad.

Species of *Panorpa* frequent shady places, often resting on a leaf; they are dull insects, easily captured. They live chiefly on animal matter, preferring dead or dying insects or other small animals, and probably but seldom capturing living prey. Occasionally, at any rate, they will feed on vegetable juices, &c. It seems doubtful if the weaker and less active insects, comprising the genus *Panorpodes*, are carnivorous at all. They are more mountain-loving insects, and are sometimes attracted by light. Species of *Bittacus* prefer places more shady than those affected by *Panorpa*. They suspend themselves from a branch or leaf by the legs (usually the fore ones). Generally, but not entirely, their food is living insects which they capture. A life-history given is that of *Panorpa klugi*, already noticed in 'Entomologist,' vol. xlvi. p. 271.

Miyake is inclined to reduce the number of genera and species of Japanese Mecoptera, but he describes four new species:—*Panorpa awakavae*, *Panorpa hokusansensis*, *Bittacus takaoensis*, and *B. marginatus*, and five new subspecies. Besides six figures in the text there are ten excellent plates.

W. J. LUCAS.

A Revision of the Ichneumonidæ. Based on the Collection in the British Museum (Natural History). With Descriptions of New Genera and Species. Part II.—Tribes Rhyssides, Echthromorphides, Anomalides, and Paniscides. By CLAUDE MORLEY, F.Z.S., F.E.S. Pp. i-xii and 1-140. Printed by Order of the Trustees of the British Museum. 1913.

THE two hundred and ninety-eight species here dealt with belong to the subfamilies (1) Pimplinæ and (2) Ophioninæ, each of which comprise two tribes as follows:—(1) Rhyssides, numbering six genera and seventy-two species (ten new), and Echthromorphides, two genera and thirty-two species (six new). *Pyramishyssa*, Mocs., is also mentioned in the table of genera, but is not otherwise referred to. (2) Anomalides, sixteen genera (five new), and one hundred and eighteen species (thirty-eight new); Paniscides, six genera (one new), and seventy-six species (seventeen new). *Labrorychus*, Först., and *Erigorpus*, Först., are also given in the table of genera.

In preparing this valuable revision, the author had the advantage of ready access to Museum types, without which labour of this kind would have been almost futile.

The plate, which is in colour, represents a male specimen (much enlarged) of *Certonotus geniculatus*, Morley, reproduced from a coloured drawing by Mr. Rupert Stenton, who presented it to the British Museum.

Type Species of the Genera of Ichneumon Flies. By HENRY L. VIERECK. Pp. 1-186. Washington Government Printing Office. 1914. (Smithsonian Institution, United States National Museum, Bulletin 83.)

FIXING the type of a genus is often a difficult business, but when the type of each of some two thousand genera has to be ascertained the task becomes almost herculean, and the warmest thanks of entomologists are due to those who devote their time and ability to such labours.

This catalogue, which is alphabetical in arrangement, deals with the Ichneumonidæ of the world. Genotypes are designated where this important matter had not been previously made clear by the founder of the genus, or a type selected by a later writer. A very large number of genera are monobasic, the term used to express a genus based on a single species.

Common British Beetles. By Rev. CHARLES A. HALL, F.R.M.S. Containing 28 Illustrations, viz.: 8 full-page plates in colour, 15 in black and white from photographs, 5 drawings in the text. Pp. i-viii and 1-88. London: Adam & Charles Black. 1914.

THIS is one of a series of very inexpensive volumes entitled "Peeps at Nature," published by Messrs. Black, and edited by the Rev. C. A. Hall. It is excellent in every way, and the hope expressed by the author that it "will be the means of arousing a more general interest in beetles" is one which we cordially endorse and trust will be fully realised.

The plates, both coloured and plain, are surprisingly good for this class of work, and the species selected for figuring just those that are most likely to come under the notice of the nature student. The text is admirable, the author having been careful to be not only accurate but also entertaining.

Transactions of the City of London Entomological and Natural History Society for the years 1912 and 1913. Pp. 66. Plates i.-vii. The Society, Hall 20, Salisbury House, Finsbury Circus, London, E.C. 1914.

IN addition to Reports of Field and Ordinary Meetings, there are several papers of interest in this volume, among which "Notes on *Cænonympha pamphilus*," by Mr. Harold B. Williams; "Notes on *Thera variata* (Schiff.) and *T. obeliscata* (Hb.)," by Mr. L. B. Prout; and "Some Lycænid Notes, with a Discussion of the Segmentation of the Abdomen in Lepidoptera," by Dr. Chapman, may be specially mentioned. Six of the plates representing genitalia and androconia are from photographs by Messrs. F. N. Clark and A. E. Tonge.

It may be noted here that this Society will in future be known as the London Natural History Society, with which the late North London Natural History Society is also incorporated.

The Journal of the Board of Agriculture of British Guiana. Vol. vii. No. 3. January, 1914. Demerara: "The Argosy" Company, Limited, Georgetown.

AMONG various entomological contributions published in this number the following is perhaps the most important: "The Scale Insects of British Guiana. A Preliminary List, with an Account of their Host Plants, Natural Enemies, and Controlling Agencies," by G. E. Bodkin, B.A., Dip. Agric. (Cantab.).

Proceedings of the South London Entomological and Natural History Society for 1913-14. Pp. i-xvii and 1-158. Plates i-ix. The Society, Hibernia Chambers, London Bridge. 1914.

ENTOMOLOGICAL papers, seven in number, are as follows:—
 "Tinea pallescentella, Stainton (=nigrifoldella, Gregson). Some Notes on its Life-history and its History," by Mr. Robert Adkin (pp. 1-6, plate i.); "Spring in the South Tyrol," by Mr. Ebray Sich and Mr. Alfred Sich (pp. 7-17); "One of our Common Butterflies, *Epinephela jurtina*," by Mr. Hy. J. Turner (pp. 18-25); "British Short-horned Grasshoppers," by Mr. W. J. Lucas (pp. 26-34, plates 2-4); "Mimicry in the North American Butterflies of the Genus *Limenitis*," by Prof. E. B. Poulton (pp. 35-37); "The Ithomiinæ," by Mr. W. J. Kaye (pp. 38-48, plate 5); "Entomology with a Camera in Switzerland," by Mr. Hugh Main and Mr. K. G. Blair (pp. 49-53, plates 6-8). Plates 3 and 4, showing British Grasshoppers, are reproduced from photographs by Mr. Lucas. Plates 6 and 7 exhibit the life-history of the Tiger Beetle, and plates 8 and 9 give the life-history of the ant-lion; all the figures are from photographs by Mr. Main. Plate 1, representing *Tinea pallescentella*, natural size and greatly enlarged, also details of life-history, is from drawings by Mr. Frohawk.

We have also received the following:—

Reprints from the *Proceedings of the United States National Museum*. Vol. 46 (1913); Vol. 47 (1914).

North American Spring-tails of the Subfamily Tomocerinae. By Justus W. Folsom. (Vol. 46, pp. 451-472, with plates 40-41.)

New Hymenoptera from North America. By A. B. Gahan. (Vol. 46, pp. 431-443, with Plate 39.)

Descriptions of twenty-three New Genera and thirty-one New Species of Ichneumon-flies. By Henry L. Viereck. (Vol. 46, pp. 359-386.)

New Species of Noctuid Moths from Tropical America. By William Schaus. (Vol. 47, pp. 485-549.)

A Contribution towards a Monograph of the Homopterous Insects of the Family Delphacidae of North and South America. By David L. Crawford. (Vol. 47, pp. 557-640, with plates 44-49.)

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AN EXPEDITION IN SEARCH OF RUSSIAN BUTTERFLIES.

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

So far as I am aware, out of the hundreds of expeditions British lepidopterists have made into almost every part of Europe during the last thirty years, not a single one has had this great country for its goal, though I believe one or two have incidentally collected a few specimens there on their way further east.

Foreigners travelling in Russia at present are not very numerous, and such as there are consist almost entirely of those who have business in the country; and I may say that in my journey of about two months, during which I travelled about five thousand miles, I saw only one German, and not a single American, Frenchman, or Englishman, until Moscow was reached on my return to England.

The prospect of undergoing the rigid Customs examination frightens a good many timid ones; the passport regulations are, perhaps not without reason, the cause why a good many more possible visitors do not reach Russia, and seriously this question is always an anxious and it may very easily become a disastrous one, for an individual in Russia who cannot produce a passport is looked upon by the authorities as a very suspicious person; he must stay in the town where he happens to be until they are satisfied of his bona fides, which will usually take many days, possibly some weeks, and if he is a little indiscreet he will very probably spend the time in prison. Then, apart from the fact that it is not very difficult to lose a document, a foreign passport has considerable value to those subjects of the Czar who wish to leave Holy Russia, but whom the authorities of that country do not desire to part with; consequently there are always people on the lookout to steal your passport, and they do not by any means lack opportunities. On the frontier it is taken from you, passed by an official, and then after the luggage has been examined, which will take a considerable time, another

official calls out the name on each passport of the whole train-load of waiting people, and if you do not recognize your name when it is called out, and someone else claims your precious document, it disappears, and there you are!

Immediately you have taken a room in a hotel, the proprietor demands your passport, for which he does not give a receipt. It is handed over to the police by him, and you get it back before you leave the town. At your last place of stay it pays an additional visit to the police to have stamped upon it permission to leave the country; and on your return journey it is taken from you several hours before you get to the frontier, and only returned at the last Russian station.

No, travelling in Russia is not likely to be popular with foreigners so long as the present passport regulations exist; the Russians themselves recognize this, and there is an agitation going on at the moment to get them done away with.

My thoughts had often been centred on Russian Lepidoptera, but I had fancied that it was rather too tough a problem to be tackled during a summer holiday.

There are certain parts in the west and north-west which it is quite easy to reach, but the butterflies found there are generally too western in type to be novel, and one can get nearly everything with equal facility, and under much more favourable conditions of sojourn, in eastern Germany, or in Scandinavia.

The interesting parts of the country from a lepidopterist's point of view are unquestionably those which are the most remote from England; and these are by no means easy to reach, where time is an object, and when one gets there, at the end of about a week of travel, there are various reasons, as will be seen hereafter, which make the average family man think hard before he finally decides to collect Lepidoptera in remoter Russia.

One can get very little reliable information in England respecting Russia. The ubiquitous Cook knows it not, and railway tickets from London are only issued to Moscow, St. Petersburg, and Odessa. Bradshaw, in the Continental edition, professes to give time-tables of all the trains in every part. One wonders whence they were obtained, and if such trains really ever did run, for all I tested turned out to be hopelessly inaccurate, and there is no reason to suppose they were in any way exceptional.

Baedeker, until this year, had only a somewhat ancient edition, in French or German, but within recent months a new one, in English for the first time, was issued. I was not aware of this edition until I called upon the British Consul-General at Odessa. This gentleman gave me this very useful piece of information, and further very kindly lent me a copy, which was of immense assistance.

On mentioning my project to the companion of my Spanish expedition of last year, Mr. A. H. Jones, I was very glad to find that he was able and willing to come with me once more, and we left London on the evening of April 29th, for Odessa, which was reached after a most uninteresting journey of seventy-two hours, during which, after crossing the Channel to Flushing, we did not pass through a single tunnel.

I wished before the more serious entomological work of the journey commenced to see something of the beautiful south coast of the Crimea. On the day following our arrival at Odessa we therefore got on board the Black Sea steamer, landing the following morning at the famous fortress of Sebastopol.

We spent a couple of days at Sebastopol, which were occupied in visiting scenes of the principal events of the siege of sixty years ago, not doing any actual collecting, but we saw a good number of butterflies, and the district impressed us as better ground for Lepidoptera than any we afterwards saw in the Crimea. The valley leading from Sebastopol to the English Cemetery appeared particularly promising.

On May 7th we hired a carriage and drove to beautiful Ialta, a drive that will always remain vividly impressed upon my memory for the loveliness of the scenery *en route*. Apart from the interest of the journey, we were much impressed with the manner in which the three little Tartar horses dragged the four-wheeled carriage, ourselves, our luggage, and the driver, the whole distance of sixty-one miles, without turning a hair, galloping uphill and downhill equally as on the level. The route is for the first half of the distance inland. Balaclava is passed on the way, and then one gradually mounts upwards, between woods—full of wild pæonies at the time of our visit—until a col named the “Porte de Baidar” is surmounted, then all at once the beautiful south coast bursts into view from a height of almost 2000 ft. The day was perfect, and the sea almost as blue as the Mediterranean can be; the view itself is superb, and the conditions we saw it under were the best possible. Beyond Baidar the road is entirely alongside the sea, which is never lost sight of, and vistas of surpassing loveliness continually burst into view. Just before Ialta is reached, the Imperial Palace and Park of Livadia are passed. The Czar was in residence, and the road, and in fact the whole district, was patrolled by picked Cossacks, magnificently mounted and armed. It was an impressive scene!

Ialta is in situation and surroundings very similar to Mentone, but it is even more beautiful. The vegetation is, however, not so southern; one sees plenty of cypress trees and occasional palms, and in the main street I saw several fine specimens of *Jacaranda mimosaefolia*, which just then were a gorgeous mass of purple tubular flowers; but with few exceptions

the flowers and trees of the Crimean southern coast are those commonly met with in mid-Europe.

We spent five days at Ialta, during which the weather was favourable, and we were able to explore every day for Lepidoptera. I must say I was much surprised and disappointed to find how western they all were. Scarcely a species was seen that cannot be found in the Alps. The only butterfly we noticed that was at all eastern in its distribution was *Pyrgus orbifer*, which was not uncommon. *Colias erate*, *Zegris eupheme*, and *Plcbeius zephyrus*, amongst other species, are said to occur, but we did not see any of them. A plant that is very like *Astragalus exscapus*, the food-plant of *P. zephyrus*, was, however, abundant locally by the roadside near Aloupka, some ten miles from Ialta. Most of the ground that seemed promising is enclosed, and a considerable part is vineyards, and there is very little space to collect in. Butterflies were by no means common either as individuals or species, except in one or two instances. Hibernated examples of *Libythea celtis* were pretty frequent, although we did not see any trees of *Celtis australis*.

On the evening of May 12th we once more boarded the steamer, landing the following day at Novorossisk, on the east coast of the Black Sea.

Novorossisk is a seaport of considerable size, and trades in corn, timber, and other commodities. It is situated at the base of what I suppose one might call the foothills of the Caucasus Mountains, which have an altitude here of from 1500 ft. to 2000 ft.

We stayed five days, and during that time explored the surrounding mountains and valleys as much as possible.

I was again much surprised at the western character of both vegetation and Lepidoptera. Many of the little dingles seemed very like those one meets with at home; the sides were clothed with elm and ash and oak, and many of the common English flowers grew beneath.

The only eastern butterfly we came across was *Erebia afer*, which was not uncommon some distance up the mountains. Unfortunately, we were a month too late for it, and nearly all the specimens captured were more or less *passé*.

We found some good ground amongst the hills to the north of the town, but the best was undoubtedly the valleys and mountains south of the harbour.

In planning an expedition which had for one of its objects the making acquaintance with as many eastern butterflies as possible, it seemed to me that there were three districts which were worthy of consideration.

First, there is the great range of the Caucasus Mountains, magnificent in scenery, historic in the past ages, and peopled with some of the most fascinating races in the world. All of

surpassing interest to the tourist; but when one comes to go a little closely into the question, it becomes evident that there is something to be said on the other side of the question.

There is a strip of mountainous coast extending along the eastern shores of the Black Sea from Novorossisk to Batoum—beautiful throughout and very tempting; but, says Baedeker, reeking with malaria, every bit of it! and independent testimony, including the verdict of the British Consul at Novorossisk, confirms Baedeker. Even Novorossisk itself is very malarious in certain parts of its environs.

No less scathing is Baedeker about the sanitary condition of the whole range, which he describes as malarious throughout, even in the mountains. And then the people! Brigands almost all of them, more or less! The published returns testify to many hundreds of cases of highway robbery annually, and even life is by no means safe. It might be possible to do something in one or two well-frequented places, but elsewhere, to be in safety, you must collect your specimens under the guns of an armed escort, enveloped in a mosquito net, and even Lepidoptera lose their charm when studied under such conditions!

Secondly, there are the Ural Mountains. I am not aware that the objections I have named respecting the Caucasus as a centre apply to this district; and I may say that, so far as I am aware, out of the Caucasus life and property are as safe at the present moment in Russia as in any other European country. But the Urals are situated rather too far north to produce the majority of the eastern species that affect Russia. Further, I gather that the accommodation is poor and objectionable from many points of view, and that only Russian is spoken; and I think I can go so far as to say that a sojourn there, unless one had a courier and could spend it under canvas, would be anything but enjoyable, if not impossible, from our point of view.

There remain the steppes of the south-east in the basins of the great rivers, the Ural and the Volga. This region, from all the reports I have seen, contains the greatest number of desirable Lepidoptera of any district in Russia, and to it I felt strongly drawn. The chief difficulty to be surmounted was one which applies more or less to all parts of Russia: how to avoid the uncleanliness and disease which unfortunately are only too prevalent everywhere. Even in the large towns sanitation is almost unknown; in the hotels, with the exception of a very few, the beds are verminous. Cholera, typhus, and other objectionable acquaintances are more or less endemic, and often epidemic; and, of course, in the small towns and in the villages matters are very much worse. One would have liked to settle down in some district which had never been worked, but the objections to such a course were so manifest that I felt compelled to pause.

In this dilemma an idea came into my head which seemed

to offer a feasible solution of my difficulties, and this was contained in the blessed word Sarepta. One finds it immediately the study of European butterflies is commenced enshrined in the classic pages of Kane, and described as the haunt of almost everything eastern; and Staudinger and every other authority confirm this view, and quote it on innumerable occasions.

The great blessing of Sarepta from my point of view was the fact, known to me, that its population consisted chiefly of Germans; and surely one could obtain with them clean accommodation and wholesome food, and, further, the risk of sickness to be apprehended elsewhere would be avoided, or very much lessened, in their town.

About one hundred and fifty years ago that extraordinary woman the Empress Catharine the Second, who then ruled the fortunes of Russia, was desirous of colonising the country around the Volga, and her own people not being then sufficiently civilised to form suitable colonists, she induced great numbers of Germans to settle there, granting them great tracts of free land and freedom from military service, and conferring other important privileges upon them. At the present day there are dozens of these colonies, the inhabitants of which are still largely of German extraction, and Sarepta is the most southern of them. It is situated on the right bank of the Volga some three hundred miles from its mouth.

I do not know who discovered Sarepta entomologically, but Edward Eversmann in his 'Fauna Lepidopterologica Volgo-Uralensis,' published in 1844, and still the standard work on the Lepidoptera of Eastern Russia, was well acquainted with it. In his preface he speaks of two brothers of the name of Kindermann spending the summers of 1838 and 1839 collecting Lepidoptera there. He also mentions that an entomologist named Zwick had still earlier collected Coleoptera and Lepidoptera in the same place. Since the days of Eversmann the best known investigator has been a German resident, H. Christoph, who collected insects for Staudinger, and from whom most of the numerous specimens in our National Collection at South Kensington, which are labelled Sarepta, came. Christoph undertook several expeditions into the Caucasus and other parts of Asiatic Russia, and resided at Sarepta until about twenty-five years ago; his son still lives there; most of his specimens in the National Collection date back about fifty years from the present time. Another German resident of Sarepta, a botanist of the name of Becker, seems to have studied Lepidoptera as well as botany, and I am informed he made an extensive collection of the former, which is still in the district.

The town seems from time to time to have been visited by entomologists from Germany, but I have been unable to find any results of their investigations in print, though there may be some in the magazines of that country.

The left bank of the Volga almost along its whole length is flat, but the right bank on which Sarepta, as before mentioned, is situated, is an almost continuous range of hills, in some places attaining a height of over 1000 ft.; at Sarepta they are from 200 ft. to 300 ft. in altitude. These hills have apparently been formed in the long distant past by the prevailing wind from the east blowing the sand formed in the river bed into dunes; these dunes being in the process of time converted into solid earth by the growth of plants, the roots of which have bound the soil together. The tops and sides are generally covered with a growth of low plants; in the folds and cross ravines, however, there are woods and bushy slopes full of life of all kinds, insect and otherwise.

The Volga, which above Sarepta flows for several hundred miles in a south-west direction, skirting for the whole distance the base of the hills, has within comparatively recent times carved out for itself a new course which commences immediately north of the town; this course leaves the hills and strikes out across the steppe in a south-easterly direction. At Sarepta the distance from the river to the hills is about two miles, and the town lies on the level plain midway between the two.

Having decided to make a stay of several weeks at Sarepta, we left Novorossisk on the evening of May 18th, bound thither. The distance is about 500 miles, across the steppe the whole distance, in traversing which we did not see a hill or even an undulation; it was a weary journey, which the train is timed to do in twenty-four hours, and which it actually accomplished in twenty-seven hours. This journey we did on bread, cheese, and beer, for we were warned at the last moment at Novorossisk, too late to take a supply of food with us, that the more solid eatables to be had on route were bad, and that it was dangerous to partake of them.

At Sarepta I had obtained through a German correspondent the address of a person who kept an inn, the only one there, and on arrival, to our great relief, we found airy rooms, clean beds, and wholesome, if rough, food, and in Herr Georg Enke a most obliging, intelligent, and helpful host.

I must confess that it was with a feeling of keen disappointment that I surveyed my surroundings on the morning after our arrival. I had expected to find Sarepta, which contains some six thousand people, a model town. I had pictured the steppe, by some well-thought out scheme of irrigation, made to blossom like the rose, and the whole district converted into vineyards, fruit orchards, and gardens. There is some spasmodic irrigation, but not by any means sufficient to transform the arid plain into fertility, only just enough to water a few gardens. There is no evidence of want of prosperity of a kind, with plenty of good houses, for Russia, even some fruitful and

shady gardens; but the whole is hardly what one expected from a German population; it was Germany of the eighteenth century, modified and not improved by the sojourn of its inhabitants for one hundred and fifty years in Russia. The streets are unpaved, except for one or two short lengths of cobbles, so rough that when we drove over them we wished they too had not been paved; undrained, and unscavenged, full of hollows, in which the water stands in great pools after every storm; and the sandy surface everywhere churns up into seas of mud almost knee deep during wet weather.

One of the first things I noticed at Sarepta was that the window openings, outside the glass, had wire gauze shutters to exclude insect pests; I inquired if there was any malaria in the town; the reply I got was somewhat evasive, and later on I was told that it was not so bad as in the surrounding country. We were both provided with mosquito curtains, which we slept under, and avoided as much as possible going near swamps; probably in consequence of these precautions we did not suffer any inconvenience; but mosquitoes were not infrequent in our rooms, and one captured on my curtain has been identified at the British Museum as the malaria-conveying species, *Anopheles maculipennis*. It appears, therefore, that future visitors should take precautions against this pest. I suspect that malaria is pretty universal throughout Eastern Russia.

The flora of the steppe did not come up to the expectations I had formed of it. I had looked to find a sward of brilliant flowers, but the growth is almost entirely *Artemesia*, grey and fragrant, of several species, and low growing, some six inches high; oxen and horses seem fond of it, camels devour it greedily, and the entire steppe smells of it.

In places on the slopes of the hills there is a good deal of a fine dry wiry grass, the food of *Melanargia* var. *suwarovius*, and here and there one comes across a certain number of flowering plants; a brilliant purple sage is one of them, a bright pink *Helichrysum* another, there is a blue *Linum*, and several species of *Phlomis*, but the whole are not in sufficient numbers to produce any broad effect.

The railway passes along the base of the hills, and upon its banks we found excellent collecting ground; there was here a luxuriant growth of many species of leguminous and other plants, and amongst them could be found such desirable butterflies as *Colias erate*, *Glaucopsyche caelestina*, *Scolitantides pylaon*, *Zegris eupheme*, and many others.

The glory of Sarepta is, however, the "Tschapurnik Wald," a large wood, the property of the community, and used by it for picnics and other kinds of recreation; it occupies a hollow in the hills some four miles to the south-west of the town. This wood and the adjacent bushy slopes have glades which are

carpeted with a very luxurious growth of flowers, and it is one of the most prolific localities for butterflies I have ever seen; the nearest approach to it I know is the famous wood at Pészer, near Budapest, to which it is very similar in many respects. Amongst the brilliant and interesting flowers growing here were fine bushes of the common garden plant *Gypsophila paniculata*, and the almost equally well known *Thalictrum flavum*; these two plants were especially attractive to the Thecladæ, four species of which I, on one occasion, saw on a plant of *G. paniculata*. In the glades, too, *Melitæa trivialis* swarmed, and a little earlier *Cænonympha leander* and *Parnassius mnemosyne* were equally abundant. In this wood *Pararge clymene*, so rare in Central Europe, was an abundant butterfly; and many others, the names of which alone would make the mouth of a lepidopterist water, were to be found in profusion.

Perhaps more striking even than the Lepidoptera in this wood, and in fact in the whole district, were the birds. Golden orioles fluted in every tree; brilliant bee-eaters hovered overhead; still more brilliant rollers performed their curious aerial antics; hoopoes in dozens, unmistakable in plumage and in note, were there; amongst the Raptores, particularly noticeable were the buzzards, many scores of pairs of which were breeding in the "Tschapurnik Wald"; one small oak copse, crowning an eminence, which had been defoliated by the larvæ of *Tortrix viridana*, had the appearance of a rookery, so thickly were the trees crowded with the old and new nests of this species. Hobbies, kestrels, goshawks, and at least three species of day-flying owls swarmed everywhere. The whole formed the most extraordinary assemblage of bird life I have ever seen, and one which it would be difficult to equal anywhere.

Other excellent ground was a series of cross valleys, in the main face of the range of hills, some few miles to the north-west of Sarepta, and in the direction of the large town of Tsaritsyn, which is some twenty miles distant.

These cross valleys had on their lower slopes a good deal of wood, with which the bottoms were generally filled, and in them were found much the same species as in the "Tschapurnik Wald," in addition to which they were the headquarters in the district of *Neptis lucilla*, *Melanargia* var. *suwarovius*, *Hesperia tessellum*, *Lycaena arion*, and *Polyommatus amandus*.

There are cross valleys in the hills opposite Sarepta also, but these are much inferior in flora and fauna to those above-mentioned, and we found them hardly worth investigating.

The magnificent hornet-like parasitic hymenopteron, *Scolia flavifrons*, was abundant everywhere on flowers.

Lepidoptera were distinctly local, and it entailed a great deal of hard work in prospecting to get a fair idea of the district fauna; probably this was the reason why we did not see certain

butterflies that have been reported from Sarepta, and which we expected to come across. The most notable of these was *Pontia chloridice*, which we were much disappointed not to find anywhere, although a sharp look-out was kept for it, and every swift-winged white that there was the slightest suspicion of was diligently netted, when this was possible. Other species that we expected to see, but did not, included *Satyrus autonæ*, *S. hippolyte*, *Oeneis tarpeia*, *Triphysa phryne*, and *Scolitantides bavius*; probably we left too early for the first two species, and arrived too late for the third and fourth; with respect to the last-named butterfly, it is, I believe, always rare in Russia, and possibly it occurred further afield than we were able to work.

We were at Sarepta from May 19th until June 23rd, between which dates the weather was almost perfect; bright sun from morning until evening on almost every day was our fortunate lot; and there was always a cool and most invigorating breeze to temper its rays.

On June 23rd we started on the return journey, travelling up the Volga as far as Nijni Novgorod, a distance of about 1200 miles, which took the steamer six days to accomplish. The Volga boats are excellent, well fitted up, and the cuisine arrangements exceedingly good; the voyage, apart from being a little monotonous, is interesting, and after our hard work was very restful and enjoyable.

I was struck with Nijni Novgorod and its district as an entomological centre; it is in the neighbourhood of what looks like a great deal of promising country, which should repay investigation. From Nijni to Moscow is only ten hours by rail; after staying a few days at the latter city I came straight to England, parting from Mr. Jones at Warsaw, en route for the Tyrol.

AUSTRALIAN HALICTINE BEES.

By T. D. A. COCKERELL.

Parasphcodes atronitens, sp. n.

♀. Length about $9\frac{1}{2}$ mm.; entirely black, the flagellum obscure brown beneath; clypeus shining, strongly but not densely punctured, and with a short median sulcus; front appearing granular, more or less glistening, especially at sides; hair of face and front very scanty, fuscous, but at sides of face appearing pale and glistening in some lights; cheeks with shining white hair; mesothorax dull, extremely densely punctured, the punctures clearly visible under a lens; scutellum dullish, densely very minutely punctate, with a depressed median line or sulcus; area of metathorax minutely and obscurely subplicate basally, and with a raised median line, but otherwise without sculpture; tubercles with a dense fringe of greyish white hair;

mesothorax and scutellum with scanty fuscous hair; tegulae piceous, shining dark reddish posteriorly; wings dusky hyaline, stigma and nervures sepia, outer nervures weakened; first r. n. joining second s. m. at extreme apex; middle and hind tibiae and tarsi with fuscous hair on outer side; first two abdominal segments shining, finely punctured, the others dull, and without distinct punctures, except the piliferous ones; venter with silvery white hair, on the apical segments with fuscous.

Hab. Calsundra, Queensland, October 30th, 1912 (H. Hacker; Queensland Museum, 88). Closely related to *P. plorator*, Ckll., but the wings are not so dark, and the punctured first two abdominal segments are highly distinctive. *P. fumidicauda*, Ckll., is larger, and has a very different metathorax.

Halictus melanopterus, sp. n.

♀. Length nearly 10 mm.; black, including the legs and antennae; head broad, with white hair, which is thin on face, conspicuous on cheeks; long pale golden hairs from a fringe below lower margin of clypeus; clypeus and supraclypeal area shining, distinctly but not densely punctured; front entirely dull except at sides, where it is somewhat glistening; thorax with thin white hair, quite abundant on pleura, mesothorax and scutellum with inconspicuous fuscous hair; tubercles (as seen from in front) ending in a point; mesothorax and scutellum shining, very finely and quite closely punctured; scutellum sulcate in middle; area of metathorax large, bulging at sides, very finely roughened, without distinct sculpture; posterior truncation shining; tegulae rufopiceous; wings strongly stained with blackish, stigma rufopiceous, nervures sepia; outer r. n. and t. c. weakened; second s. m. broad, receiving first r. n. a short distance before end; hind legs with dark fuscous hair over knees; abdomen shining, very finely punctured; long-triangular patches of dull white tomentum at basal sides of segments 2 to 4; apex with dark fuscous hair; no ventral scopa.

Hab. Yallingup, near Cape Naturaliste, S.-W. Australia, September 14th–October 31st, 1913 (R. E. Turner). British Museum. *H. melanopterus* is very near *H. instabilis*, Ckll., but larger, with darker wings and darker stigma, and the abdominal bands not entire. The abdomen is much like that of *H. circumdatus*, Ckll., but the metathorax is quite different. It is much larger than *H. chapmani*, Ckll., and is readily known from *H. convexus*, Sm., by its dark wings.

Halictus disclusus, sp. n.

♂. Length about 6 mm.; black, with the first three abdominal segments bright chestnut-red, but the first dark basally and with a large dusky median cloud, second and third segments with a dark spot at each laterobasal corner; knees, tibiae and tarsi ferruginous, the tibiae (the first slightly, the last most) stained with blackish; head broad, eyes strongly converging below; clypeus prominent, with a broad pale yellow apical band; labrum black; mandibles whitish

in middle, red apically; face and front with dull white hair; antennæ long (reaching to end of thorax), entirely black; flagellum crenulate beneath; mesothorax and scutellum dull, the surface microscopically tessellate, the very minute punctures not clearly visible under a lens; area of metathorax finely and weakly plicatulate, the sculpture fading toward the apex; hair of thorax thin, dull white, with a faintly yellowish tint on scutellum; tegulæ black; wings dusky hyaline, stigma and nervures reddish sepia; second s. m. very narrow; abdomen shining.

Hab. Eaglehawk Neck, S.-E. Tasmania, February 12th-March 3rd, 1913 (R. E. Turner). British Museum. Resembles *H. tasmanica* (Ckll.), but easily known by the dull mesothorax. The black antennæ and absence of metallic colour separate it from *H. hedleyi*, Ckll.

A SUCCESSFUL HUNT FOR SOME OF OUR LOCAL CRAMBI.

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

THE following notes are put together mainly with a view to the possible usefulness to others of our experience gained in collecting certain Crambi, which, if plentiful in their restricted haunts, are not only very local but may easily be missed owing to their retiring habits. Incidentally a few other local species will be mentioned, which are not commonly taken in such numbers as we were fortunate enough to meet with. My companions on this expedition, which lasted from July 13th to 31st, were the Revs. W. G. Whittingham and J. E. Tarbat, and it is well to mention at once that the weather was as adverse throughout the whole time as it well could be—wet, cold, and windy, a fact which made our subsequent success the more noteworthy.

Our first halting place was a very happily situated boarding house in the middle of the well-known Deal sandhills. If the accommodation it afforded was not palatial, the position was all that the collector could desire. During the ten days we spent there we were pleased to see *Lithosia lutarella* var. *pygmæola* in profusion; indeed, whatever the weather was like it appeared on the wing or sitting on the marram in great numbers. By day *M. lineata*, *H. cespitalis*, *C. angustalis*, and *S. ictericana* were common, but *A. ochrata* was practically over. However, our special object of desire was *C. contaminellus*, and the stirring of an occasional specimen by day from the marram gave us the cheering assurance that it was about. Yet not till we discovered that at night it loves to sit an inch or two above the ground, on the patches bare of marram, did we secure it in any numbers. From this discovery onwards we took it in plenty, together

with some beautiful varieties, notably a few very dark, almost black, with pale nervures, a striking form. Many were taken paired and in perfect condition. Its first flight is just after dark, when it keeps close to the ground, and is therefore easily missed; while it is again on the wing late at night, when it flies higher.

Thanks to a chance discovery two other local insects, of very secretive habits, were taken in profusion. On a cold afternoon with a strong wind blowing we were searching unavailingly the lower leaves of *Echium vulgare* for pupæ of *O. dentalis*. As we in this way disturbed the collection of dead leaves and grasses at the roots of the *Echium*, first a specimen of *N. achatinella* crawled out, and then, to our delight, one of *M. bipunctanus* (*anellus*). Further search produced a good many more of each species, together with some commoner things, the insects having evidently retired to the roots for shelter after feeding by night at the blossoms. This gave us the hint we needed, and the next night, which was pitch dark and very warm, we visited the plants with our lanterns. The result was truly amazing! *N. achatinella* was about in profusion flying over or sitting upon the *Echium*, while far surpassing them in numbers was *M. bipunctanus*. Of this strange-looking and not often seen insect only the males appeared to fly at all, and these but little, both sexes, many paired, sitting on the *Echium* and neighbouring grasses. The males at rest had a curious intermittent vibration of the wings, resting quiet for a few seconds, then a sudden dithering of the wings, and then quiet again. Whether the movement was intended to attract the females or not we failed to discover. The night was evidently a field one with *bipunctanus*, as on no subsequent occasion did we see it in anything like such numbers, indeed, I question whether the like ever has been seen. The fact that so sluggish an insect was found so abundantly, one or two actually in process of expanding their wings, in the middle of the more settled part of the sandhills, seems to point to the roots of the marram, or of some other grass, as the food of the larva rather than to the generally accepted suggestion that the larva lives in the nests of wasps.

The same night a single insect, not yet identified, was taken. It is evidently allied to *E. cribrum*, but has the fore wings pure white with much fewer markings, and the hind wings considerably darker. It will probably prove to be a wanderer from the Continent; at any rate, it does not appear to belong to any species usually recognised as British. Before leaving Deal a trip to St. Margaret's Bay produced a number of Tortrices, the most interesting of which were *C. fulvana*, *G. nigromaculana*, *C. dilucidana*, and *P. aspersana*, whilst from gathered heads of *Centaurea scabiosa* a number of fine *C. gigantana* (*alternana*) subsequently emerged. *A. baliodactyla* and *M. phæodactylus*

were on the wing, but *A. gilvaria* and *E. ochroleuca* were only just appearing.

Mr. Tarbat having to leave us, Mr. Whittingham and I next journeyed to the Norfolk coast. Our first object of ambition was *Crambus fascelinellus*, which I had found fairly plentiful two years ago. In the distressingly cold atmosphere not a specimen could be induced to fly in the daytime, and not more than two or three were found at rest in the sandpits. Our hopes were accordingly fixed on what could be done at night, and at first they seemed doomed to be disappointed. Careful searching, however, revealed the fact that *C. fascelinellus* was about. It was found sitting, like *C. contaminellus*, an inch or two above the ground, but only on the spots, at the back of the sandhills, where a few scattered blades of grass struggled up through the sand. It seldom sat on the marram or on other grasses where these latter grew thickly, the surface of the sand had to be well in evidence, and in such spots we took a fine series. There was a very short and partial flight at dusk, which would probably have been larger and more general in warmer weather, and the insect again flew after ten o'clock.

The best part of a day, spent in water up to our knees and with frequent storms beating down upon our heads, produced two dozen larvæ or pupæ of *N. cannae*, and they were well earned.

Finding that *C. fascelinellus* was beginning to get wasted we next directed our attention to *C. alpinellus*, which Mr. Whittingham had turned up two years previously. Our experience was most interesting. Still dogged by hostile elements our expectations were not great, and when, at our first essay, ten o'clock struck without a sign of the Crambid we began to despair. It was bitterly cold, but we knew that it must be hiding somewhere. Then the happy thought struck us of placing our lamps on the ground, shining straight into the tangled roots of the marram. Almost instantly a little moth began jumping out towards the light, and then another, and our pleasure was great when we found that *alpinellus* had been moved at last. Later on the weather improved, and with it the tale of our captures of this species. On a fine afternoon there is a very general flight between six and seven o'clock, the Crambid being then not only on the wing on its own account, but also easily induced to fly by tapping the fir trees where it evidently shelters as frequently as in the marram. On one such afternoon we must have captured fully seventy specimens in an hour and a half. The delicate fringes of the hind wings soon get worn, but many of the captures were freshly emerged and in splendid order.

One other insect seems worthy of note. This is the recently discovered *Retinia purdeyi*, which flew round the branches of the Austrian pines (at least such we took the trees to be) in the late afternoon. Difficult to capture in a wind, it occurred in

great plenty if the sun shone, and on a calm day it was quite possible to get five or six in the net at once. *C. pinetellus* and *C. inquinatellus* also sheltered in the fir trees, whilst a few *S. coniferana* and *E. atricapitana* were to be had, the latter having evidently flown up from the ragwort beneath. Altogether we brought back some six or seven hundred good insects apiece, which was excellent work for three weeks of thoroughly bad weather.

KAKOTHRIPS, N. GEN., A DIVISION OF THE GENUS
FRANKLINIELLA (THYSANOPTERA).

BY C. B. WILLIAMS, B.A., F.E.S.

DURING the past two years I have been investigating the life-history of a species of Thysanoptera which does considerable damage to peas and beans in this country, with a view to finding

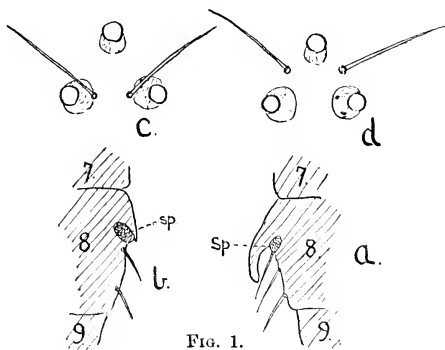


FIG. 1.

some method of control; and a full account will be published shortly (Annals of Applied Biology). The species has been known up to the present by many different names:—*Thrips pisivora*, *Physopus robusta*, *Euthrips robusta*, and *Frankliniella robusta*, the latter being at present the most correct terminology. The species has never been properly described, Uzel's original description ("*Physopus robusta*," Monographie der Ordnung Thysanoptera, 1895, p. 104) being insufficient for modern demands. In making a careful examination of a number of specimens for a proper technical description (which will appear in the above-mentioned paper) I found that this species differs in several respects from all other known species of the genus *Frankliniella*. Uzel (*l.c.*) had already noted that the male of this species has a pair of processes on the abdomen, one on

each side of the eighth segment (fig. 1, *a*). I find that there are also distinct vestiges of these processes present in the female (fig. 1, *b*). They are, in both sexes, immediately in front of the spiracle of the eighth segment. No such organs occur, so far as I know, in any other species of the suborder Terebrantia, but something similar is found in some genera of the Tubulifera. Thus in *Megathrips nobilis* (Bagnall, Ent. Mon. Mag. xx. 1909, p. 131) there are lateral processes on the sixth and eighth abdominal segments. This feature would alone almost justify the separation of *robusta* from the genus, but I find further that in this species the two long ocellar spines are between the two posterior ocelli (fig. 1, *c*), whereas in all the other species of *Frankliniella* which I have been able to see, or in the descriptions of which these spines are mentioned or figured, they are between the posterior and anterior ocelli (fig. 1, *d*).*

Further, the larva of *robusta* has the last two abdominal segments dark-coloured, a feature more characteristic of the larvæ of the Tubulifera, and which does not occur in the larvæ of any of the species of *Frankliniella* that I have observed.

On the above grounds I am removing *robusta* from the genus *Frankliniella*, and propose the name *Kakothrips* for a new genus to contain it, characterised as follows:—

KAKOTHrips, new genus.

= *Physopus*, Uzel (*l. c.*), in part.

= *Frankliniella*, Karny (Mitt. Nat. Ver. Univ. Wien, viii. 1910, p. 45), in part.

Antennæ eight segmented. One long spine at each front angle, and two at each hind angle of the prothorax. *Ocellar spines between the two posterior ocelli.* Maxillary palps three jointed, labial palps two jointed. Fore vein of the upper wing set regularly throughout its whole length with short spines. *Lateral processes on each side of the eighth abdominal segment in the male curving backwards and upwards, in the female rudimentary but distinguishable.* Larva with ninth and tenth abdominal segments dark.

Type (and at present only species), *K. robustus*.

The characters in italics distinguish it from *Frankliniella*.

Fuller particulars of the species itself will be given as mentioned above.

* They are certainly in this position in the following species:—*intonsa* (Trybom) (= *vulgatissimus*, Uzel); *tenuicornis* (Uzel); *melanommata*, Williams; *fusca* (Hinds); *stylosa* (Hood); *tritici* (Pergande); *insularis* (Franklin); *helianthi* (Moulton); *occidentalis* (Pergande, teste Hinds); *cephalica* (Crawford); *nervosus* (Uzel, teste Hinds); *floridensis* (Morgan); *runneri* (Morgan); *gossypii* (Morgan). But *sulphurea*, Schmutz, would appear from the description to be possibly like *robusta*, and in *minuta* (Moulton) they are small or absent.

PHYTODECTA VIMINALIS, A VIVIPAROUS
BRITISH BEETLE.

BY C. B. WILLIAMS, B.A., F.E.S.

ON May 11th, 1913, adults and larvæ of *Phytodecta* (*Gonioctena*) *viminalis* were found in numbers on some willow bushes in the New Forest. A close search was made for eggs but none were found, although quite young larvæ, apparently just hatched, were common. A female was then found which seemed to be ovipositing, but on the leaf were only a group of very small orange larvæ, nor was there any trace of egg-shells, though it was indicated from the uneaten condition of the leaf that they had only just hatched. The latter observation in particular suggested so strongly the possibility of viviparity that numbers of the adults were brought back for closer examination. It was then found that the surmise was correct, and females were watched in captivity and were seen to lay small orange-coloured larvæ quite free of any shell or enveloping membrane. Further, on dissection of females about to lay, many similar young larvæ were found quite free of any shell in the lower part of the ovary and oviduct.

Viviparity has been recorded in the allied genus *Orina* by various writers; in *O. vittigera*, *O. cacaliæ*, and *O. gloriosa* by Chapman and Champion (Trans. Ent. Soc. 1901, p. 1-7), in *O. superba* and *O. speciosa* by Perroud (Ann. Soc. Linn. de Lyon, 1855, p. 402-8), and in *O. speciosa* var. *venusta* by Bleuze (Petites Nouvelles Entomol. October 1st, 1874, and Ent. Mo. Mag. xi. 1874, p. 136), but so far as I am aware it has not been recorded in the genus *Phytodecta* or in any British beetle. According to Perroud *O. superba* only lays one larva at a time at intervals of about twelve hours, so that this species differs slightly from the one under consideration.

The only account of the life-history of *Phytodecta viminalis* is by Cornelius in 1857 (Stett. Ent. Zeit. xviii. p. 165). In the specimens he observed, however, eggs were laid which hatched on the first day. He describes the eggs as reddish in colour and cylindrical, slightly pointed at the ends. It would appear, then, that the same species can, under different conditions, be either viviparous or oviparous.

The life-history of the beetle is as follows:—

The adults emerge from hibernation towards the end of April (three were found on April 19th, 1914). Both sexes are very active in the sunshine, and in the early part of May pair many times. They have a habit of sitting at the base of a leaf with the head pressed right into the axil; this has also been observed in the allied South European species *P. variabilis* by Bateson (Proc. Zool. Soc. Lond. 1895, p. 850). They fall to the ground if disturbed. They eat readily the leaves of the rough

broad-leaved willows (*Salix caprea*, *cinerea*, &c.), on the upper side of which they lay their young, but I could get neither the adults nor the larvæ to feed on the willows with long and smooth leaves (*S. alba*, &c.).* The young all appear to mature at the same time, and are laid, if the female is not disturbed, in one batch. The number in one family varies from twenty-eight to forty. With one doubtful exception, none of the thirty females from which I obtained young laid a second batch, as occurs, for example, in the Coccinellidæ.

The young larvæ when first laid are orange yellow, but they rapidly darken and become quite black. The larva, at least when older, has a pair of dorsal, protrusible vesicles close together between the seventh and eighth abdominal segments. They are pink in colour and can be extended about one-twelfth of an inch when the larva is disturbed. The larva is full-fed in about fifteen days, when it descends to the ground and becomes quiescent; it is not till four to six days later that the bright orange pupal stage is assumed. The sexes of the pupæ can be easily distinguished both by the size and by the form of the ventral surface of the last two abdominal segments. Shortly before emergence the legs and head, the centre of the prothorax and the scutellum become quite dark, and the wings darken slightly.

The adults emerge after about twelve days, the total time from the laying of the young larva being about thirty-three days. Actual dates are as follows:—Larvæ laid, May 15th; full-fed, June 2nd; pupated, June 8th; emerged, June 20th. The adults then remain for the whole of the rest of the year on the willows without producing a second brood; hibernate, probably among the dead leaves, &c., on the surface of the ground, and emerge again in the following spring, when they pair and lay the young of the next generation.

The original parents, having laid their young in May, continue feeding and survive for the rest of the year, so that from the end of June onwards there are adults of two generations together on the plants. Several females which laid young in May, 1913, and which therefore emerged from the pupa in June, 1912, were still alive in November, 1913, giving an adult life of at least eighteen months. All, however, perished during the winter.

I hope next year to study the life-history in more detail, and also recommend to anyone the observation of the method of reproduction of allied species. I should be much indebted to any reader who could let me have living adults of *P. rufipes* in the spring.

* Cornelius (*l. c.*) makes the interesting remark that larvæ which he found on *Salix aurita* refused to eat *S. caprea*, although other larvæ laid on the latter took it quite readily.

NOTES AND OBSERVATIONS.

LYMANTRIA MONACHA, ab.—I have been crossing and breeding a strain of *Lymantria monacha* for the past two or three years, with the object of obtaining dark and banded forms, in which I am meeting with some success. This year one brood produced several specimens with the crimson bands on the body replaced with yellow, a change which is of course most striking in the female, making it look almost a different moth. None of my entomological friends hereabouts have ever seen such a variety before, and I cannot find any mention of yellow bodied *L. monacha* in any of the books I possess. I may mention that the strain I am dealing with shows no sign of deterioration as yet, the imagines I have bred this year being for the most part much larger than those captured wild, while the fertility of the ova and the proportion of larvæ to feed up were very high.—C. RIPPON, F.E.S.; Springfield House, Abingdon-on-Thames, August 10th, 1914.

VARIETIES OF LYCÆNA CORYDON, *L. ICARUS*, &c.—I had the pleasure of taking in Bucks a very remarkable specimen of *Lycæna corydon* var. *striata*, the spots on the under side being replaced by beautiful streaks. A very similar form of *L. icarus* likewise fell to my net in Oxon. In May I captured two fine specimens of the unicolorous form of *Ematurga (Fidonia) atomaria* (var. *unicolorata*). They were taken within a few yards of the place where I obtained two similar forms in 1890, and recorded in the 'Entomologist' for January, 1891.—A. J. SPILLER; Chinnor, Oxon.

EARLY EMERGENCE OF SMERINTHUS OCELLATUS × AMORPHA POPULI (HYBRIDUS, Steph.).—I think it may be of interest to record the emergence yesterday (August 18th) of a fine specimen of the above-mentioned hybrid. The larva went down on July 17th—only a month and a day before the appearance of the imago. I should much like to know if this is a record for this hybrid. No forcing was attempted. I might add that from a pairing that I obtained (by assembling for wild *ocellatus* males, in preference to using bred males, and then caging with *populi* female) on May 30th of this year, eighty-one ova resulted, forty-seven hatched, and of these thirty-seven successfully pupated between July 15th and August 10th.—SYDNEY WHICHER; Westmead, Liss, Hants.

EUCHLOË CARDAMINES IN EAST CUMBERLAND.—The orange tip is not a common insect in this part of the country. It may therefore be of interest to note that on June 15th, 1914, I saw two males upon the wing together on the banks of the Tyne close to Alston. The food-plant (*Cardamine pratensis*) is common all over the district, and, incidentally, it may be remarked that the double-flowered form of it is fairly numerous in the district.—GEORGE BOLAM; Alston, Cumberland.

AMMOPHILA SABULOSA, Linn., AND DASYPODA HIRTIPES, Latr., IN WORCESTERSHIRE.—I think it may be worth while placing on permanent record that I have taken this summer these two species of Aculeate Hymenoptera in Worcestershire; the former on August

8th, on Hartlebury Common, and the latter—a male—on July 27th, when sweeping a field adjoining the same sandy waste. Saunders ('Hymenoptera Aculeata of the British Islands,' 1896, pp. 88 and 273) of the first states that, saving Lancashire, he has "no other northern or midland localities for it," and concerning the second that "it is recorded from very few inland localities."—J. W. WILLIAMS; M.R.C.S., Stourport, Worcestershire.

Since forwarding the above note I have been fortunate enough to find a large colony of *D. hirtipes* on Hartlebury Common. The bank on which this colony is situated faces 23° E. of S., and slopes at an angle of 20°. It is interesting to notice that *Nomada solidaginis*, Pz., is visiting these burrows. I also saw one *N. sexfasciata*, Pz., enter a burrow on August 14th (a somewhat late date for this "cuckoo") and extracted the intruder. The common fossor, *Cerceris arenaria*, Linn., inhabits the same site.—J. W. WILLIAMS.

CHRYSOPHANUS PHLEAS IN PICCADILLY.—On July 30th last I saw a perfectly fresh specimen of *Chrysophanus phleas* on the window sill of the front room of my flat looking out on Piccadilly, near Burlington House. The butterfly had apparently only just emerged. May it have been bred in the Park near by?—HAROLD HODGE; 54, Piccadilly, W., August 16th, 1914.

EGGS OF PRIONUS CORIARIUS (COLEOPTERA).—Recently in the New Forest I found a fine female of this Longicorn beetle on a piece of fallen beech, where apparently it was ovipositing. After killing the beetle I eviscerated it and removed from the abdomen a large number of eggs (some two hundred perhaps). Each egg was about 4.5 mm. in length, and about 1.6 mm. in greatest width; it was granulated in appearance, but with no definite markings; in shape it was a very slightly curved cylinder with rounded ends, one being much more pointed than the other. They were creamy white in colour, and some put in spirit remained so; but others exposed to the air became yellowish. A very large centipede (*Lithobius*) taken from the same tree had a number of the eggs given it, and it fed on them readily. The object of this note is to record the fact, for no doubt it would eat them in a state of Nature, presuming it could find them; and the centipede has its home in the decaying wood in which apparently the eggs are laid.—W. J. LUCAS; Kingston-on-Thames.

WICKEN FEN.—So few people have any real knowledge of the Fen Lepidoptera and their life-histories that a word of warning is necessary. As to *Acronycta strigosa*, Wicken Fen was never the locality where these were beaten, and I should say there were few hawthorn bushes in the Fen. I have beaten the larvæ with the late Mr. Albert Haughton (father of the present collector), but it is much scarcer now. The Fen itself wants very careful handling, and it is possible to do a good deal of mischief in a short time. For instance, we were told last June that a piece of the Fen owned by the National Trust, which contains particular species of its own, was to be cut. I believe Mr. Edelston took steps to prevent this, but if it had been carried out much harm would have been done. In parts of the Fen the willow bushes want a great deal of thinning out, but discrimination is necessary, and the Fen growth cannot be treated as jungle to be

demolished. The National Trust should appoint an expert Committee to deal with the matter, and at least one member should be familiar, from actual field work, with the life-histories of the principal Fen Lepidoptera, such as *Papilio machaon*, *Meliana flammea*, *Nonagria arundineta*, *N. arundinis*, *Cidaria sagittata*, &c. It is probable that a uniform treatment of the Fen is undesirable, and that while some portions are never cut (with the exception of thinning out willow bushes, &c.), others should be cut periodically.—A. ROBINSON; Bretanely, Chislehurst, August 26th, 1914.

MOTHS CAPTURED BY LIGHT-TRAP (continued from p. 228):—

JUNE.—*Spilosoma lubricipeda*. 2nd (one).—*Phalera bucephala*. 5th (one); 11th (one); 13th (one)=3.—*Opisthograpta luteolata*. 5th (two); 10th (one); 11th (one)=4.—*Eusina tenebrosa*. 5th (one); 12th (five); 16th (one)=7.—*Dianthæcia cucubali*. 2nd (two); 5th (one); 10th (two); 12th (one); 16th (one)=7.—*Hipocrita jacobææ*. 2nd (one); 11th (one)=2.—*Cidaria truncata*. 2nd (one).—*Cabera pusaria*. 2nd (one); 11th (one); 16th (one)=3.—*Thera variata*. 2nd (one); 11th (one)=2.—*Neuria reticulata*. 2nd (three); 5th (one); 9th (one); 11th (one); 13th (one); 15th (one); 17th (two); 18th (two)=12.—*Agrotis exclamationis*. 1st (one); 2nd (two); 3rd (two); 5th (eight); 6th (one); 8th (two); 9th (four); 10th (fourteen); 11th (sixty-two); 12th (thirty-two); 13th (thirty-two); 14th (fifteen); 15th (twenty-seven); 16th (forty-three); 17th (seventeen); 18th (nine)=271.—*Hama sordida*. 6th (one); 9th (two); 10th (four); 11th (two); 12th (four); 13th (four); 14th (two); 15th (three); 16th (one); 17th (one); 18th (one)=25.—*Agrotis cinerea*. 2nd (four); 5th (five); 18th (one)=10.—*Eupithecia oblongata*. 2nd (two).—*Dianthæcia capsicola*. 2nd (one); 13th (one); 14th (one)=3.—*Caradrina morpheus*. 5th (one); 11th (five); 12th (one); 15th (two); 16th (five); 17th (nine); 18th (five)=28.—*Eupithecia venosata*. 5th (one).—*Apamea basilinea*. 2nd (five); 5th (four); 6th (two); 9th (two); 10th (one); 11th (two); 12th (two); 13th (one); 14th (four); 15th (one); 16th (one); 17th (four); 18th (two)=31.—*Noctua rubi*. 6th (one).—*Mamestra dentina*. 2nd (nine); 3rd (one); 5th (six); 9th (one); 10th (three); 11th (eleven); 12th (seven); 13th (one); 14th (six); 15th (three); 16th (three); 17th (four); 18th (four)=59.—*Leucania comma*. 5th (six); 6th (one); 9th (two); 11th (six); 12th (ten); 13th (four); 14th (three); 15th (five); 16th (three); 17th (six); 18th (five)=51.—*Xanthorhoë montanata*. 6th (one).—*Plusia gamma*. 3rd (one); 5th (four); 6th (one); 10th (one); 11th (twelve); 12th (seventeen); 13th (six); 14th (three); 16th (two); 17th (two)=49.—*Abrostola tripartita*. 2nd (one).—*Dianthæcia carpophaga*. 2nd (two); 5th (one)=3.—*Anaitis plagiata*. 3rd (one); 16th (one)=2.—*Grammesia trigrammica*. 2nd (three); 5th (one); 10th (one); 11th (four); 12th (two); 14th (one)=12.—*Agrotis segetum*. 9th (one); 11th (one); 13th (one); 14th (two); 17th (one)=6.—*Spilosoma menthastri*. 2nd (seven); 5th (three); 8th (one); 9th (two); 10th (two); 11th (five); 12th (seven); 13th (two); 14th (eleven); 15th (two); 16th (sixteen); 17th (five); 18th (two)=65.—*Xanthorhoë fluctuata*. 10th (one); 17th (one); 18th (one)=3.—*Smerinthus ocellatus*. 11th (one).—*Acidalia immutata*. 11th (one).—*Mamestra*

thalassina.—11th (three); 12th (one); 16th (two)=6.—*Pachys betularia*. 11th (two); 13th (one)=3.—*Mesoleuca ocellata*. 11th (one); 13th (one); 16th (one); 17th (one); 18th (two)=6.—*Eustroma silaceata*. 11th (one).—*Triphæna pronuba*. 11th (one).—*Agrotis putris*. 11th (one); 15th (one)=2.—*Leucania pallens*. 12th (one); 13th (two); 17th (one); 18th (two)=6.—*Cucullia umbratica*. 12th (one); 15th (one)=2.—*Trigonophora (Phlogophora) meticulosa*. 13th (one).—*Mamestra oleracea*. 13th (one).—*Smerinthus populi*. 13th (one).—*Plusia chrysitis*. 15th (one); 17th (one)=2.—*Agrotis puta*. 15th (one).—*Phibalapteryx vitalbata*. 16th (one).—*Plusia pulchrina*. 17th (one).—*Noctua primulæ*. 17th (one).—*Acontia luctuosa*. 18th (one).—*Agrotis corticea*. 18th (three).—*Timandra amataria*. 18th (one).

JULY. — *Geometra vernaria*. 7th (one). — *Caradrina morpheus*. 7th (two); 8th (one); 16th (one); 17th (one); 19th (three); 20th (eight); 21st (ten); 22nd (three); 26th (one); 27th (three); 28th (three); 29th (one); 30th (one); 31st (one)=39. — *Leucania conigera*. 8th (one); 16th (one); 17th (one); 19th (two); 22nd (one); 31st (one)=7. — *L. pallens*. 8th (one); 16th (two)=3. — *Agrotis exclamationis*. 8th (two); 16th (one); 17th (one); 19th (three); 27th (one)=8. — *Dianthæcia capsineola*. 8th (one). — *Caradrina taraxaci*. 8th (one). — *Agrotis strigula*. 8th (one). — *Plusia chrysitis*. 16th (one). — *Ematurga atomaria*. 16th (one). — *Apamea secalis*. 16th (two); 17th (one); 18th (one); 20th (four); 21st (two); 22nd (three); 27th (three); 28th (four); 30th (one)=21. — *Triphæna pronuba*. 16th (one); 22nd (one); 28th (one)=3. — *Xylophasia lithoxylea*. 16th (one). — *Plusia gamma*. 16th (one); 19th (one); 20th (six); 24th (one); 26th (one); 27th (two); 30th (one)=13. — *Agrotis segetum*. 16th (one). — *Malacosoma neustria*. 17th (one). — *Boarmia gemmaria*. 17th (one). — *Xylophasia monoglypha*. 18th (one); 20th (one); 21st (one); 27th (one); 28th (one); 30th (one)=6. — *X. sublustriis*. 18th (one). — *Cidaria pyraliata*. 19th (one). — *Hecatera serena*. 19th (one); 20th (one)=2. — *Lithosia lurideola*. 19th (one); 21st (one); 25th (one)=3. — *Leucania impura*. 19th (one); 20th (one); 28th (two); 30th (two)=6. — *Hydræcia nictitans*. 19th (one); 21st (three); 27th (two); 28th (one); 29th (one); 30th (three)=11. — *Pachys betularia*. 19th (one). — *Mesoleuca ocellata*. 19th (one). — *Ortholitha limitata*. 19th (one). — *Opisthograptis luteolata*. 20th (one); 28th (one)=2. — *Dianthæcia cucubali*. 20th (two); 27th (one); 28th (one)=4. — *Cilix glaucata*. 20th (two). — *Leucania lithargyria*. 20th (one). — *Ligdia marginata*. 20th (one); 27th (one)=2. — *Selenia bilunaria*. 20th (one); 27th (one); 31st (one)=3. — *Zeuzera pyrina*. 20th (one). — *Perizoma alchemillata*. 20th (one); 27th (one)=2. — *Cerigo matura*. 20th (two); 27th (one); 29th (one); 30th (one); 31st (one)=6. — *Campyogramma bilineata*. 20th (one). — *Mamestra oleracea*. 21st (one). — *Cabera pusaria*. 21st (one). — *Noctua brunnea*. 21st (one). — *Acidalia dimidiata*. 21st (one). — *Bombycia viminalis*. 27th (one). — *Coremia ferrugata*. 28th (one); 29th (one)=2. — *Crocallis elinguaris*. 28th (one). — *Triphosa dubitata*. 28th (one). — *Amphipyra tragopogonis*. 29th (one); 31st (one)=2. — *Caradrina quadripunctata*. 30th (one). — *Hydriomena furcata*. 31st (one). — R. M. PRIDEAUX; Brasted Chart, Kent, June 16th, 1914.

RECENT LITERATURE.

A Monograph of the Jumping Plant-lice or Psyllidæ of the New World. By DAVID L. CRAWFORD. Pp. 182; plates 30. Smithsonian Institution, United States National Museum. Bulletin 85. Washington. 1914.

THE author finding that classification of the Psyllidæ on wing venation alone was unsatisfactory, placing as it does closely related species in different genera and even subfamilies, presents a new system based largely on a study of structural characters other than venation.

The one hundred and seventy-five species in twenty-nine genera here enumerated and described are arranged under six subfamily headings, in the following sequence:—

Subfamily Liviinæ.

Tribe Liviini 1 genus (*Livia*), 5 species.

„ Aphalarini ... 2 genera, 22 species.

Subfamily Pauropsyllinæ 3 genera, 15 species.

„ Carsidarinæ 4 genera, 13 species.

„ Ceriacreminæ 1 genus, 2 species.

„ Triozinæ... .. 8 genera, 44 species.

„ Psyllinæ.

Tribe Pachypsyllini... 3 genera, 9 species.

„ Euphyllurini ... 2 genera, 6 species.

„ Arytainini ... 3 genera, 18 species.

„ Psyllini 2 genera, 41 species.

Among other matters of interest treated in the introductory pages (1-18), morphology is discussed in considerable detail.

An extensive bibliography is given.

Pond Problems. By E. E. UNWIN, M.Sc. Pp. xvi + 119. (Cambridge Nature Study Series.) Cambridge: University Press. 1914.

THIS book supplies a series of lessons on Pond Life, intended for the lower forms of Secondary Schools and upper standards of Elementary Schools. It is above the average of such books, and we venture to think that much of the work would be suitable for higher forms in the Secondary Schools (if time could be found for it), and that any entomologist, especially one who is given overmuch to collecting simply, might study it with advantage. The aim of the series of practical lessons and demonstrations is really to give some ideas from actual contact with Nature "about environment, natural selection, and evolution." After showing how material should be obtained, and making quite clear what an insect is, our author states that "insects are really land animals," even though now in a comparatively few cases they may pass part of their life in the water. The main object of the remaining lessons is, by practical observation and experiment, to show how the adaptation to their new surroundings is managed. The work concludes with useful appendices on material, apparatus, the microscope and the making of microscope-slides, and a short bibliography. The book, which is well got up, is illustrated by forty-seven good figures, all, except two, from the author's draw-

ings or photographs. We might say that to us it appears better to use the term nymph, instead of larva, or larva and nymph, for the whole of the early stages of insects with incomplete metamorphosis (hemimetabolic).

W. J. L.

We have also received the following Reprints from *Proceedings of the United States National Museum*. Vol. 47 (1914):—

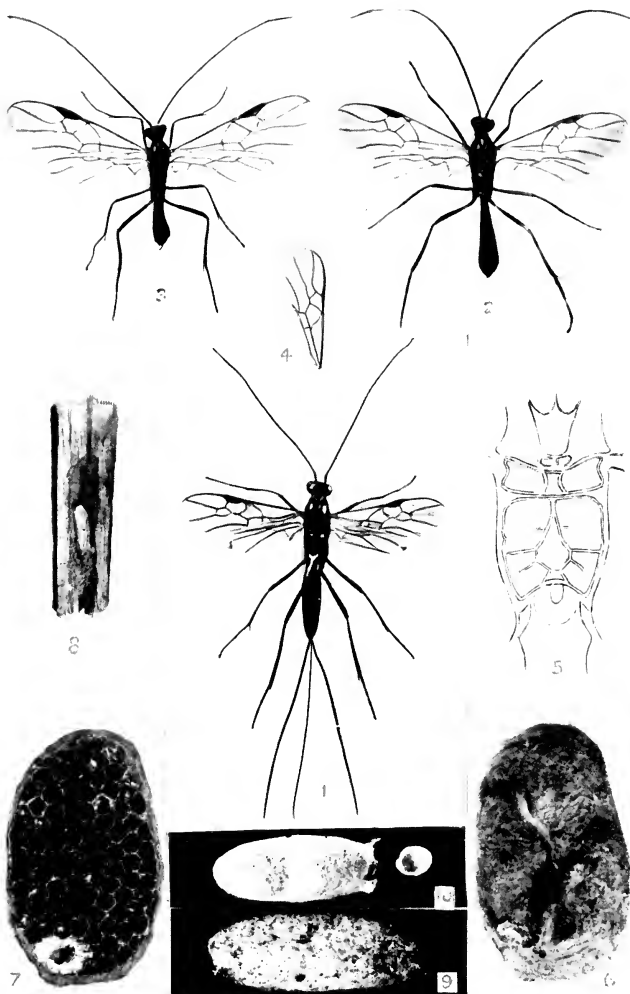
- No. 2045. Names applied to the North American Bees of the Genera *Lithurgus*, *Anthidium*, and Allies. By T. D. A. Cockerell. Pp. 87-94. (May 7th.)
- No. 2048. Hymenoptera, Superfamilies Apoidea and Chalcidoidea, of the Yale-Dominican Expedition of 1913. By J. C. Crawford. Pp. 131-134. (April 30th.)
- No. 2046. The Noctuid Moths of the Genera *Palindia* and *Dyomyx*. By Harrison Dyar. Pp. 95-116. (May 7th.)
- No. 2050. Report on the Lepidoptera of the Smithsonian Biological Survey of the Panama Canal Zone. By Harrison C. Dyar. Pp. 139-350. (May 20th.)
- No. 2043. New Genera and Species of Micro-Lepidoptera from Panama. By August Busck. Pp. 1-67. (April 30th.)

OBITUARY.

H. T. DOBSON.

ALL who knew him will regret to hear that a genial member of the entomological fraternity has passed away in the person of Mr. H. T. Dobson, of New Malden. A somewhat exacting business in London, municipal work in Malden and Southwark, as well as affairs connected with his local Congregational Church, of which he was a deacon, made large calls on his time; but Mr. Dobson was a keen lover of Nature, and this fourth form of activity received its due share of attention. In his younger days he was a keen fisherman, and he was also much interested in gardening, but birds and insects were his chief delight. For more than forty years he had been an entomologist. Since 1884 he had been a member of the South London Entomological and Natural History Society. In 1895 he was elected a Fellow of the Entomological Society of London. Though notes from his pen have appeared occasionally in entomological periodicals, he did not add much to the literature of his subject. For some years he had been in poor health, and as time went on he was able to do an ever decreasing amount of field work, but he never lost interest and went on collecting in the limited space afforded by his garden at New Malden. As he retained full use of his arms when walking became impossible, he was able to go on adding to his collections, and preparing the specimens so kindly sent him for his valuable and well-kept cases of birds. He finally retired from business in January last, and died on June 27th at the age of sixty-one, leaving a widow and three sons to mourn his loss. We understand that he left directions for his collection to be sold.

W. J. LUCAS.



Photos G. T. Lyle.

1. *Macrocentrus marginator*, female, $\times 3$.
2. *Zele infumator*, female, $\times 2\frac{1}{2}$.
3. *Zele discolor*, female, $\times 2\frac{1}{2}$.
4. Upper wing *Zele testaceator*, $\times 2$.
5. Metathorax of *Zele infumator*.
6. Ball of cocoons of *Macrocentrus equalis*, $\times 2$.
7. Section of the same.
8. Cocoon of *Macrocentrus marginator* in burrow of *Sesia culiciformis*, nat. size.
9. Cocoon of *Zele infumator*, $\times 3$.
10. Cocoon of *Zele discolor*, $\times 3$.

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[No. 617

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ. No. 2.—MACROCENTRIDÆ,
WITH DESCRIPTIONS OF TWO NEW SPECIES.

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

(PLATE VI.)

THE insects of this small family were first separated from *Rhogas* by Curtis in 1832 and 1833,* when he brought forward the genera *Macrocentrus* and *Zelee*. Förster proposed two additional genera, the one, *Amicroplus*, a division of *Macrocentrus*, and the other, *Homolobus*, a dismemberment of *Zelee*.† Ashmead has raised the genera of Curtis to the dignity of tribes,‡ which is quite necessary if Förster's genera be accepted, for a glance will show that *Amicroplus* and *Homolobus* cannot rank equally with *Macrocentrus* and *Zelee*; indeed, Marshall considered that Förster's genera were founded on characters purely specific.§ Our few British species may, for convenience, be treated under the two original genera:—

Abdomen elongate, sessile; fore wings with three cubital areolets, radial areolet elongate.

- (1) Spurs of hind tibiæ very considerably shorter than half the metatarsi; first abdominal segment not or scarcely longer than the second; terebra at least as long as the abdomen MACROCENTRUS.
- (2) Spurs of hind tibiæ as long as half the metatarsi, first abdominal segment much longer than the second; terebra short ZELEE.

I must again express my thanks to various entomologists who have presented me with specimens, to Dr. D. Sharp and Mr. H. F. Bailey for the loan of books, to Mr. Claude Morley, who, with his usual kindness, has sent me for inspection several insects from his collection, to Col. Nurse for a similar courtesy,

* Ent. Mag., vol. 1.

† Synop. der Fam. und Gatt. der Braconen. 1862.

‡ "Classification of Ichneumon Flies," Proc. U.S. Nat. Mus., vol. xxiii. p. 118.

§ 'Species des Hym. d'Europe et d'Algerie,' vol. 5, p. 228.

to Mr. R. South for confirming the names of hosts, and to Mr. B. S. Harwood, of Colchester, who has sent me for examination a considerable number of specimens, most of which have come to him from the collection of the late E. A. Fitch. Although the main part of the Fitch collection is now in the Essex Museum at Stratford, it would seem that the insects which are at present in the possession of Mr. Harwood were put on one side in store-boxes, some as duplicates and others as being unnamed, or to await naming, and have so remained for the past twenty years or more.

In the following notes, unless otherwise stated, the records are my own, and the insects mentioned have been captured or bred in the New Forest.

MACROCENTRUS, Curtis.*

Gregarious or solitary parasites of larvæ of Lepidoptera. Ratzeburg records one species as having been bred from the coleopteron *Anobium pertinax*, but this has never been confirmed. The general colour of these insects is black with rufous or testaceous markings. In the few cases where I have noticed the larvæ, they have been elongate and whitish without any very noticeable markings. It is possible that in all the species the larvæ may be partially external parasites, for with *M. abdominalis* and *M. equalis* I have found that, although internal feeders when small, the larvæ feed for three or four days as external parasites after emerging from their host, during which time they rapidly increase in size.

- | | | |
|------|--|-------------------------------|
| (8) | 1. Antennæ with forty-five or more joints. | |
| (3) | 2. Third abdominal segment (like the two preceding) entirely striolate | 1. <i>abdominalis</i> (Fab.). |
| (2) | 3. Third abdominal segment smooth, or striolate at base only. | |
| (7) | 4. Body entirely black. | |
| (6) | 5. Stout species, wings clouded | 2. <i>marginator</i> (Nees). |
| (5) | 6. Slender species, wings hyaline | 3. <i>nitidus</i> (Wesm.). |
| (4) | 7. Thorax rufous | 4. <i>thoracicus</i> (Nees). |
| (1) | 8. Antennæ with forty or less joints. | |
| (12) | 9. Second abscissa of radius as long as the first intercubital nervure. | |
| (11) | 10. Body entirely black, terebra longer than body | 5. <i>infirmus</i> (Nees). |
| (10) | 11. Thorax partly rufo-testaceous, terebra not longer than the abdomen | 6. <i>equalis</i> (sp. nov.). |
| (9) | 12. Second abscissa of radius much shorter than first intercubital nervure | 7. <i>collaris</i> (Spin.). |

M. abdominalis, Fab.†—Without doubt the commonest species in the genus, having now been recorded as bred from nearly

* Ent. Mag., vol. i., p. 187.

† Ent. Systematica, 2, 183.

thirty different species of Lepidoptera. A gregarious parasite, generally of the larvæ of Tortricina or Tineina. This is the *Rogas linearis* of Wesmæl,* from whose description and that of Marshall † I have identified my specimens, not having seen the original description of Fabricius. Marshall describes four distinct varieties, and although the numerous broods that I have reared in the New Forest have all been typical, I have captured the var. *pallipes*. It is recorded that Van Vallenhoven bred this variety mixed with typical specimens from the same victim, which is quite contrary to my own experience, nor is it borne out by the many broods from the Fitch collection which I have examined. It has often been stated that the broods invariably consist of one sex only, and so I had always found them until July, 1914, when, from a larva of *Tortrix ribeana*, I obtained a brood composed of a single male and eighteen females; the male appeared some thirty-six hours before any of the females.

In some specimens I find that the striolation at the base of the third abdominal segment is very faint. As a rule, the second cubital areolet is open outwardly, that is, the second cubital nervure is obsolete. I have a specimen of the var. *pallipes*, however, which has the second cubital areolet distinctly closed.

The cocoons are brown, thin, shining and enveloped in a thin whitish web; they are usually found in bunches between the leaves which have been "rolled" by the hosts. A period of from three to four weeks elapses between the emergence of the parasite larvæ from their host and the appearance of the perfect insects. I have noticed that, after emerging from their host, the larvæ feed as external parasites for two or three days; in fact, until the edible parts of the host are entirely consumed.

Bred from *Tortrix ribeana*, June 23rd, 1911 (eight females), July 3rd, 1912 (twelve females), July 4th, 1912 (thirteen males); from *T. licheana* (ten females); from *T. viridana*, July 14th, 1912 (six females); from *Depressaria alstromeriella*, July 10th, 1912 (four females). Harwood has two specimens (var. *pallipes*) labelled "ex caja, W. Sherston." In Fitch's boxes are broods obtained by Elisha from *Depressaria nanatella* and *Gelechia mouffetella* (both broods var. *pallipes*); from *Depressaria alstromeriella*; *Gracilaria elongella*, July 14th, 1885; *Cerostoma xylostella*, July 31st, 1882, and *Ebulea crocealis*; also broods from *Ennychia octomaculalis*, September 22nd, 1881, bred by W. R. Jeffery; and from *Botys verticalis*, bred by G. T. Porritt. ‡

M. marginator, Nees. (Fig. 1.)—This is the enemy of the Sesidiæ, having been bred as a solitary parasite from the larvæ of many members of the family. It is the largest and stoutest

* Nouv. Mém. Ac. Brux., p. 173.

† Trans. Entom. Soc. 1888, p. 193.

‡ Some of these broods were recorded by Fitch, Entom. xiv. 143, and xvi. 68.

species of the genus to be found in Britain, measuring sometimes as much as 16 mm. across the expanded wings; the size, however, varies, specimens often expanding no more than 12 mm.

It would seem that the female is much more frequently met with than the male; for instance, in February, 1914, L. W. Newman sent me twenty-two living specimens which he had bred (forced, of course) from larvæ of various *Sesidæ*, and all were females, and Col. Nurse, who has bred the species commonly, has obtained females only. My own experience is that the females outnumber the males by ten to one.

The cocoon is brown, thin, and shining, larger, but not so elongate, nor so dark in colour as that of *M. thoracicus*. It is always constructed within the burrow of the host (fig. 8). I have specimens bred by Newman from larvæ of *Sesia respiformis* and *S. culiciformis*, taken at Bexley; others bred by Tonge from *S. culiciformis*, July 17th to 24th, 1911; from *S. chrysidiformis*, May 22nd, 1911; and from *S. formiciformis*, May 11th, 1912; all the hosts taken near Reigate. Harwood has found it commonly at Colchester, and Nurse in West Suffolk. I have frequently bred it from New Forest larvæ of *S. respiformis* in May, and have found the cocoons in burrows of *S. tipuliformis* at Burgess Hill, Sussex, and Sherborne, Dorset.

M. thoracicus, Nees.—A well-marked species, easily distinguished by the rufous thorax; always a solitary parasite. In the New Forest it appears to be fairly plentiful, and I have several times bred it in July and August from larvæ of *Phibalocera quercana*, also once from larva of *Chimabacche fagella*, August, 1913. I have captured it in May.

Among Fitch's insects are three males, bred from *Phyeis betulella* by H. Bartlett, June 29th, 1880, and June 30th, 1882; also a specimen labelled "Darenth Wood."

The cocoon is dark brown, narrow, elongate, and constructed between the leaves, which are spun together by the host. When bred from *P. quercana*, the cocoon is found under the flat web which the larva of the lepidopteron constructs beneath a leaf.

Marshall states* that Bignell bred it from *Noctua triangulum* and *Xylina ornithopus*; these seem rather unlikely hosts, and it is strange that Bignell makes no mention of them in his South Devon list, but merely states that he bred the species from "larvæ feeding on sallows."

This insect is sometimes confused in collections with *Eubadizon extensor*, L., to which it bears a superficial resemblance.

M. nitidus (Wesm.).—On May 5th, 1910, I captured a female, and on May 15th, 1914, a male which I have no hesitation in referring to this species, not before recorded as British. My

* Trans. Entom. Soc., 1888, p. 196.

specimens agree with Wesmael's description, except that the head, thorax, and stigma are dark fuscous instead of black. Very similar in shape and size to *M. thoracicus*, but differing in that the thorax and stigma are black or blackish, the antennæ 46-jointed, and the second abscissa of the radius not longer than the first intercubital nervure. From *M. infirmus* it differs in size, in the length and number of joints of the antennæ, and in many other ways; from *M. marginator* in size, in the wings being hyaline and not clouded, and also in the first abscissa of the radius being considerably shorter than the first intercubital nervure.

M. infirmus (Nees).—Somewhat similar to *M. collaris*, but differing in having stouter legs, a much longer terebra, and in the second abscissa of the radius being as long as the first intercubital nervure.

In Fitch's boxes are four, one male and three females; these were probably once in Marshall's collection, one card being marked "St. A." (St. Albans) in his writing.*

M. equalis (sp. nov.).

Fuscous, disc of mesothorax rufo-testaceous, third segment of the abdomen fusco-testaceous; palpi pale testaceous in both sexes, mandibles testaceous with fuscous tips; head fuscous except the clypeus which is testaceous; antennæ fuscous, basally testaceous, elongate, 39–40-jointed in both sexes, longer than the body; meta-thorax shagreened; wings hyaline, stigma and nervures testaceous, the former with a darker spot of varying size. *Second abscissa of the radius as long as the first intercubital nervure*; legs testaceous, claws dark: abdominal segments one and two distinctly striolated, first segment scarcely narrowed from the apex to the tubercles; terebra almost as long as the abdomen.

Described from four males and two females.

A gregarious parasite, the cocoons being enclosed in a felt-like oblong ball which assumes the proportions of the pupal chamber of the host. Both males and females in the same brood. This species somewhat resembles *M. collaris*, but is most certainly not the *M. collaris* described by Marshall in Trans. Entom. Soc. 1888, p. 197, and Species des Hym. vol. 5, p. 238; it agrees more closely with Wesmael's description,† but as Marshall was acquainted with Wesmael's insects, no doubt he was right in the synonymy of his *M. collaris* with *Bracon collaris* of Wesmael; unfortunately, the latter's description lacks any mention of the length of the first abscissa of the radius or number of joints of the antennæ.

Among Fitch's insects is a card bearing six and a ball of cocoons to which is attached a label marked "G. C. Bignell,"

* Mr. Harwood also considers this to be Marshall's writing.

† Nouv. Mém. Ac. Brux. 1835, p. 179.

beneath the card is the number 155. (Figs. 6 & 7.) As Bignell's collections and MSS. are now in the Municipal Museum, Plymouth, I wrote to the Curator, who very kindly supplied me with a copy of the following note which Bignell had placed against the number 155 in his diary: "*M. collaris*, bred from *Noctua triangulum*, July 19th, 1881 (80), from G. F. Mathew." No doubt these are the insects recorded by Bignell as *M. collaris* in his list of the Braconidæ of S. Devon,* and by Fitch (Entom. xvi. p. 69).

It seems probable that Bignell, suspecting his specimens to be distinct from *M. collaris*, sent them to Fitch for advice, and that for some reason or other they were never returned.

In June, 1908, the larva of an Agrotid was brought to me, which immediately burrowed on being placed in a tin box with an inch or two of earth; this depth of soil was evidently insufficient, for a day or two afterwards I found that the caterpillar had come to the surface again, where it was lying in an apparently comatose state, and a large number of parasite larvæ were feeding upon it. These parasites were arranged in two irregular rows, one on either side of the unfortunate caterpillar. The host had already shrunk in size, and three days later had entirely disappeared, with the exception of the skin and the chitinous parts of the head. By this time the parasite larvæ, to the number of seventy or eighty, had more than doubled in size and commenced spinning an ochreous web round themselves, but being in an unnatural position were not successful in forming the usual ball. Probably owing to this many died, but a few succeeded in making their cocoons, and duly emerged. Unfortunately I have not these few specimens before me now, but I have little hesitation in referring them to this species.

I may mention that during the past few years I have reared a very considerable number of the larvæ of *Noctua triangulum*, but have not obtained this parasite.

The types are now in the collection of Mr. B. S. Harwood, of Colchester.

(To be continued.)

NOTES ON *PODAGRION PACHYMERUM*, A CHALCID PARASITE OF MANTIS EGGS.

By C. B. WILLIAMS, B.A., F.E.S.

ON May 17th, 1913, an ootheca of *Mantis religiosa* was kindly sent to me by Mr. Hugh Main from Lugano, Italy. Towards the end of May and the beginning of June a number

* Trans. Dev. Ass. for Adv. Science, 1901, xxxiii. pp. 657-692.

of both sexes of a Chalcid parasite emerged by boring holes direct to the exterior.

These were identified by Dr. Perkins as a species of *Podagrion* (Chalcidoidea. Fam. Torymidæ). An examination of the collection of the British Museum showed the specimens to be identical with the type of Walker's *Prioneris pachymerum* (Ent. Mag. i. 1883, p. 118, figured in 'Entomologist,' i., 1840-42, plate F.). This is considered as the same as Westwood's *Palmon religiosus* (Trans. Ent. Soc. iv., 1847, p. 249, plate x., recorded from *Mantis religiosa*), but now belongs to the genus *Podagrion* (Spinola), and should therefore be known as *Podagrion pachymerum*.

The two genera *Podagrion* and *Pachytomus* (Walker) have, up to the present, been separated on the following characters:—

- a. Radius very short; tarsal joints 2-5 not short;
8 teeth on the hind femora *PODAGRION*.
- b. Radius longer; first tarsal joint long, the others
shorter; 4 teeth on hind femora *PACHYTOMUS*.

In the specimens which emerged as above, however, all the females had the characters given above for *Podagrion*, and the males those of *Pachytomus*. The latter genus has therefore been separated on purely sexual characters, and the single species, *P. klugianus*, is almost certainly a male of some species of *Podagrion*. The name *Pachytomus* must be considered as a synonym of *Podagrion*.

Fig. 1. shows the hind tarsi of both sexes, and also the arrangement of the teeth in the hind femora of the male and two forms found in the female. The number and arrangement of the teeth vary slightly, and the two forms figured for the female were the right and left femora of a single specimen. The relative lengths of the tarsal joints has been much used as a systematic character in the Chalcidæ, the above result, however, shows that some care is required in its application. Males of other species of the genus *Podagrion* do not necessarily differ from the female as in the above case.

The parasites were allowed to remain in the box with the ootheca from which they had emerged. No pairing was seen, but on June 2nd a female was observed ovipositing. The material of the ootheca was pierced quite easily by the long and slender ovipositor. The abdomen was first raised, then the ovipositor and its sheath were curled underneath till they touched the surface of the egg-mass at a point beneath the middle of the abdomen and, finally, the abdomen was slowly depressed, the stylets of the ovipositor entering the ootheca, while the double sheath bent out behind. A rough sketch of the female, with the ovipositor almost completely buried, is shown in Fig. 2. A pulsating movement was observed in the semi-transparent base of the abdomen when, presumably, the egg

was laid; the ovipositor was then partly withdrawn by raising the abdomen, then inserted fully again and another egg was laid. Several eggs were laid before the ovipositor was withdrawn completely. During this process the sheath was usually released, springing straight out behind, before the stylets were free.

It is hoped that the above will serve to correct a prevailing impression that *Podagrion* is unable to pierce with its ovipositor the hard mature ootheca of the Mantis. Xamheu (Bull. Soc. Ent. France, ser. 5, vol. vii. 1877, p. lxxix.) records finding two specimens of this parasite under the hind wings of a Mantis,

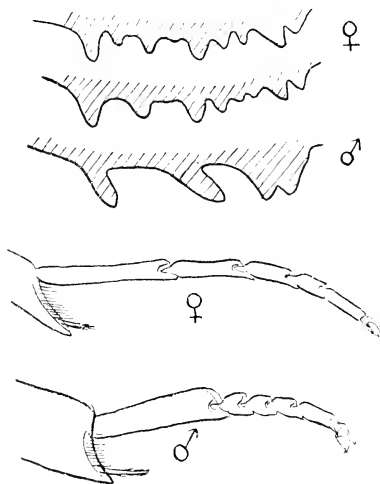


Fig. 1.

and assumed that they took up this position in order to lay their eggs in those of the Mantis during the construction of the ootheca. Giardina (Giorn. della Soc. di Sc. Nat. ed Econ. Palermo, xxii. 1899, p. 316) suggests that the female parasites cling to the edge of the wings of the Mantis by means of their toothed hind femora during the formation of the ootheca, and are thereby brought into a convenient position for attacking the Mantis eggs.* Leigh (Trans. Manchester Ent. Soc. 1912, p. 30) also assumes that *Podagrion* is unable to pierce the

* I hope at a later date to publish some observations on the construction of the ootheca, which do not support this author's views as to the use of the wings during the process.

mature ootheca. I am not in a position to confirm or contradict Xamheu's observations on the finding of the parasites under the Mantis wings (though there is some doubt as to the identity of his species; see Bull. Ent. Soc. France, ser. 5, vol. viii. 1878, p. clxiii.), but the explanations given are, at least, unnecessary and improbable.*

Giardina (*l. c.* p. 317) also states that this parasite usually infests only one side of the ootheca, and that frequently the eggs on one side are all parasitized, while those on the other side were not attacked. In the specimens which I have examined there were individual parasites on both sides; sometimes only one or two in a compartment, but more usually all the eggs in one compartment were attacked. I can, however, confirm this author's interesting observation that the pupæ of the *Podagrion*

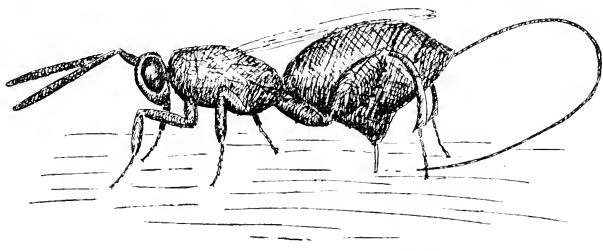


Fig. 2.—*Podagrion pachymerum* laying eggs in Mantis ootheca, $\times 18$.

in the Mantis eggs have their head directed to the tail end of the egg. It is possibly for this reason that they do not make use of the exit passages already prepared for the use of the young Mantids, but instead bore their way through the walls of the ootheca to the exterior.

On June 13th the Mantid larvæ began to hatch in numbers, all emerging in two or three days. Between July 13th and 20th about a dozen more *Podagrion* emerged, all of which were females. These would appear to be from eggs laid by the first brood six weeks before. The fact that they were all one sex may have been due to pairing not having taken place in captivity, and the eggs having developed parthenogenetically into females, as is the case with many other insects.

Specimens of *Podagrion pachymerum* were also bred by P. A. Buxton from ootheca of *Mantis religiosa* found in Algeria and

* Since writing the above, I find that A. Girault has (*Ent. News*, Philadelphia, 1907, xviii., p. 107) described shortly the egg-laying of *Podagrion mantis*, a parasite of the American *Stagomantis carolina*. He also found that the parasite had no difficulty in piercing the ootheca with its ovipositor.

Tunis. From a much larger Mantis ootheca, name and locality at present unknown, I have bred four species of chalcids, three of which, possibly hyper-parasites, are very small and have no long ovipositor. The way in which these are able to get to the eggs in the middle of the ootheca is a problem well worth the attention of anyone who may have the opportunity of observing it.

The John Innes Horticultural Institution,
Merton, Surrey: August, 1914.

SOME NEW SPECIES OF LEPIDOPTERA FROM FORMOSA.

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

NOCTUIDÆ.

Rirula pallida, sp. n.

Head and palpi white-brown, the latter ochreous below; thorax white-brown mixed with darker brown. Fore wings white-brown powdered with darker brown chiefly on dorsal portion of basal two-thirds; antemedial line represented by three black dots—one on costa, one below cell, and one on the dorsum; postmedial line dusky, double, black dotted; reniform stigma faintly purplish, brownish outlined, enclosing two black dots; termen and fringes brownish; terminal dots black, the upper ones white-centred. Hind wings whitish, brownish-tinged towards margins. Under side of fore wings brownish with blackish spot at end of the cell representing the reniform stigma of upper side; hind wings white-brown, discoidal lunule dusky.

Expanse, 22 millim.

Collection number, 1367.

One male from Arizan (7350 ft.), August 6th, 1908.

Closely allied to *R. sericealis*, Schiff.

NOTODONTIDÆ.

Pydna virgata, sp. n.

♂. Antennæ ciliated; head and thorax pale brown mixed with darker; abdomen pale brown marked with darker on the back of each segment. Fore wings pale brown longitudinally streaked with rufous brown, rather broadly below the cell and narrowly above the cell; the dorsum is clouded with darker brown; postmedial line represented by black points on the veins, almost parallel with the termen which is unusually oblique; terminal dots black. Hind wings dark brown, fringes pale brown. Under side pale brown, all wings suffused with fuscous on the disc.

Expanse, 50 millim.

A male specimen from Kanshirei.

The type of this species is in the British Museum Collection.

Pydna sordida, sp. n.

Antennæ fasciculate; head pale brown, crown darker; thorax pale brown mixed with darker; abdomen brown. Fore wings pale brown inclining to whitish on costal area; a longitudinal brownish streak from base passing through cell almost to termen, its outer extremity expanded and united with a brownish streak from apex of the wing; dorsum also brownish; postmedial line represented by a slightly curved series of black points on the nervules; a terminal series of black dots between the nervules. Hind wings pale brown, suffused with fuscous on the disc. Under side pale brown, rather silky.

Expanse, 46-50 millim.

Collection number, 1228 A.

Two male specimens from Rantaizan, May 11th and 13th, 1909.

Allied to *P. pallida*, Butl.

Pydna nebulosa, sp. n.

Antennæ fasciculate; head and thorax whitish, the latter mixed with brownish in front; abdomen brown, edges of segments and the under side whitish. Fore wings whitish brown, suffused with ochreous brown and clouded with darker brown on the disc; subbasal and antemedial lines indicated by black dots; postmedial line represented by black dots on the veins, preceded by less distinct black dots between the veins; a brown dash from middle of the base of the wing extending to a black spot placed just beyond antemedial dots; three inwardly oblique brown streaks on terminal area, the upper one extending from apex of the wing to postmedial dots; a series of black dots on termen. Hind wings dark fuscous, costal area and fringes whitish brown. Under sides whitish brown, clouded with dark fuscous.

Expanse, 40-43 millim.

Collection number, 1229.

Two male specimens from Arizan (7300 ft.), August 10th and 15th, 1908.

Allied to *P. frugalis*, Leech.

Pydna inconspicua, sp. n.

Antennæ bipectinate; head, thorax, and abdomen whitish brown, the latter rather darker above. Fore wings whitish with faint ochreous tinge, dorsal area clouded with brownish and a longitudinal dash of the same colour below the cell; subbasal and antemedial lines indicated by black dots; postmedial line fuscous, wavy, dotted with black on the veins; black dots on the termen. Hind wings whitish with traces of a dusky postmedial line on dorsal area. Under side of fore wings fuscous, costa and fringes pale buff; hind wings whitish.

Expanse, 40 millim.

Collection number, 1228.

A male specimen from Arizan (7300 ft.), August 10th, 1908.

There is a male of this species, from Formosa, in the British Museum Collection. It is labelled "Kaegi Dist., 7-10,000 ft., July."

Allied to *P. straminea*, Moore.

CYMATOPHORIDÆ.

Thyatira pennata, sp. n.

♂. Head grey-brown, thorax blackish variegated with white; abdomen greyish white, tufts blackish. Fore wings grey-brown, clouded with white about middle of costal area and below apex; a black-edged whitish wing-shaped mark at base, a white sharply angled line from outer tip of the mark; a small upright black spot, inwardly edged with white, on dorsum below the mark; antemedial line black, sinuous; postmedial black, wavy, outwardly edged with white, almost parallel with termen, commencing in a blackish mark on the costa, indented at vein 2, whence a white streak runs to tornus; subterminal line white, wavy, commencing in whitish apical cloud, terminating at vein 2; orbicular and reniform stigmata whitish, outlined in blackish, reniform enclosing a grey-brown line; terminal lunules black outwardly edged with white; fringes grey-brown, pale at the base. Hind wings whitish, fuscous-tinged. Under side whitish tinged with fuscous; fore wings clouded with blackish and marked with white at the base and on the costa, postmedial line white only distinct on costal area.

Expanse, 37 millim.

Collection number, 928.

A male specimen from Arizan (7500 ft.), September 26th, 1906.

Comes near *T. opalescens*, Alph.

DREPANIDÆ.

Albara griseotincta, sp. n.

Head, thorax, and abdomen grey. Fore wings dark grey thickly powdered with pale violet grey, costa and fringes purplish brown mixed with ochreous; two dusky dots, set obliquely, at end of cell; postmedial line brown, oblique, united with the interrupted subterminal brown line below the apex. Hind wings agree with the fore wings in colour, medial line brown; fringes purplish brown mixed with ochreous. Under side grey, without markings.

Expanse, 32 millim.

Collection number, 1257.

A male specimen from Kanshirei, May 20th, 1908.

Comes near *A. opalescens*, Warr., but the tips of the fore wings are less produced, and there are no ochreous marks on the disc.

AN EXPEDITION IN SEARCH OF RUSSIAN BUTTERFLIES.

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

(Continued from p. 242.)

THE season at Sarepta was about a fortnight later than the average, and this fact must be considered in connection with the dates given below.

I have to thank Mr. A. L. Rayward, who has most kindly made preparations of the genitalia of all species, the identity of which I was in doubt.

The number of species of Rhopalocera we saw in the Crimea was twenty-seven, at Novorossisk twenty-three, and at Sarepta seventy-six; and the total number in all three districts combined was eighty-six species, as follows:—

Papilio podalirius.—A rather small, weakly-marked race was not uncommon at Ialta and Novorossisk; and one or two examples, exceedingly worn, were seen at Sarepta during the first few days we were there.

P. machaon.—A few specimens were seen at all three localities, but it was only common at the tops of the mountains at Novorossisk; I saw, but did not capture, an example of ab. *aurantiaca* there.

Parnassius mnemosyne.—This species swarmed at Sarepta, in the "Tschapurnik Wald" on May 22nd, and later we found it almost equally abundant in the valleys towards Tsaritsyn. The form is a large one, with the black markings not so suffused, and bolder than is the case in specimens from the Alps. They are very like some I have from Herculesbad, except that the black spots are larger. Both these localities are at low levels, Sarepta being actually below sea-level, and Herculesbad only about 150 ft. above it.

Aporia crataegi.—Generally distributed in woods, but not abundant: the specimens are large and the veins very pronounced. The females, when newly emerged, have the yellow shading on the under side much stronger than in Central European examples. This species was first noticed on May 22nd.

Pieris brassicae.—Only seen at Sarepta; a few examples amongst gardens.

P. rapae.—Common at Ialta and Novorossisk.

P. manni.—Specimens of a Pierid which I feel sure is this species were taken at Sarepta.

P. napi.—I saw a few examples only of this species at Ialta and Sarepta. The only one I brought home is a very ordinary female from the first-named locality. In all probability our visit occurred between the period of the first and second broods.

Pontia daplidice.—Frequent at Novorossisk, and there was the tail end of a brood flying at Sarepta at the time of our arrival. These were var. *bellidice* of a very extreme form, with darker under sides to the hind wings than is the case in Southern French specimens, accounted for no doubt by the amount of cold the pupæ had

been subjected to. A second brood was abundant during the last few days of May; I should call these intermediate between the type and var. *bellidice*.

Anthocharis belia.—A very pretty form with light grey tips to the superiors was not infrequent at Ialta; the second brood became plentiful at Sarepta by June 7th; the upper sides of these are similar to South European var. *ausonia*, but the under sides are much darker, and closely resemble var. *simplonia*. I suppose they should be called var. *walensis*, Bartel, but they do not seem quite to agree with his description of this variety.

Euchlōe cardamines.—A remarkable race was abundant in the "Tschapurnik Wald" at the end of May; they are much larger than any I have seen from elsewhere, expanding up to 56 mm. The average expanse of British and European specimens I make to be about 42 mm., and Mr. Wheeler, in his 'Butterflies of Switzerland,' gives the same expanse. It will thus be seen how large this steppe form is. The discoidal spot on the superiors is smaller than in the type, and the under sides of the inferiors have very much less green. I propose for this local race the name of var. *volgensis*, n. var. Typical specimens were not infrequent at Ialta, and in the woods between there and Sebastopol; it was also seen at Novorossisk.

Zegris eupheme.—Not uncommon on the railway banks at Sarepta during the first day or two we were there; but, as happens in the case of the Spanish race, it disappeared all at once, and not a specimen was seen afterwards.

Leptosis sinapis.—Frequent at Ialta, also at Novorissisk, and one or two were seen in the "Tschapurnik Wald," at Sarepta. The examples I brought home are very typical first-brood forms.

Colias hyale.—Fairly numerous at Sebastopol; abundant at Novorissisk, and common at Sarepta at the date of our arrival, and a second brood was flying there in the middle of June.

C. erate.—This beautiful eastern species was abundant at Sarepta at the date of our arrival, and from its condition then it had evidently been flying some time. There was a series of emergences during the whole time of our sojourn, and it was particularly abundant during our last few days. The male is a particularly vigorous creature, flying at a tremendous pace, and very difficult to capture, unless one can intercept it in its course. The female is much less active, and frequently settles to suck at flowers. The white form of the female, var. *pallida*, was almost as abundant as the type. At Sarepta *C. erate* frequented chiefly the railway banks and cuttings, no doubt being influenced largely in its choice of locality by the luxuriant growth of leguminous plants on which the larva feeds, which are to be found there; the male was, however, to be seen at intervals, wildly scurrying along, all over the surrounding country. I was successful in breeding an imago from an ova obtained from a captive female.

C. edusa.—Common in the Crimea and at Novorossisk. At Sarepta I saw one or two worn examples on May 21st, and there was a second brood which I saw first on June 9th; these were not by any means abundant.

Colias hybrids.—It has long been noted that, when two or more of certain species of this group are found on common ground, inter-

mediate forms occur, and it is beyond reasonable doubt that these are hybrids. It is known that a number of Asiatic species produce these intermediate forms or natural hybrids; and there are certain species occurring in Europe which there is good reason to suppose hybridize also; for instance, in the only locality in which the two Arctic species *C. hecla* and *C. verdaudi* are known to frequent the same ground, an intermediate form, ab. *christiienssoni*, Lampa, has been taken, apparently in numbers, judging from the series of it that we have in the National Collection. At Sarepta intermediate forms between *C. erate* and *C. hyale* and between *C. erate* and *C. edusa* are well known, and there are examples of both these forms in the National Collection. The first-named cross is known as *C. hyale* var. *sareptensis*, Stgr., and the second *C. erate* var. *chrysozona*, Boisd. Seitz has muddled the nomenclature of the former hybrid in his work; he first, in the description of the different forms of *C. hyale*, calls it var. *sareptensis*, and then, amongst the forms of *C. erate*, gives it the new name of var. *diana*. Obviously, hybrid forms between two species cannot have more than one name and, therefore, Staudinger's *hyale* var. *sareptensis* must stand. Seitz figures both hybrids. It seems probable that the vigorous male of *C. erate* is responsible for these abnormal pairings, which in the case of *erate* × *hyale* produced offspring at Sarepta more numerous than the typical *C. hyale*. The hybrid *erate* × *edusa* was not abundant; I only saw some half dozen of it in all; these were very constant and without variation; but of the *erate* × *hyale* hybrid there is every form, from almost typical *C. erate* to almost typical *C. hyale*. One wonders if these hybrids are not fertile *inter se*, or with one or both of the parent species. One possible reason why the *Colias* species hybridize freely is that the genitalia of many of them are so similar there seems no physical obstacle to their doing so. The similarity in these organs prevents them being used as factors to identify the various hybrids.

Gonepteryx rhamni.—Hibernated specimens were seen at Ialta and Sarepta, and in the latter locality freshly emerged examples were frequent from June 16th; they are rather smaller than those I have from Britain and Central Europe; the males are a little more richly yellow, and the females rather whiter.

Thecla w-album.—Common in clearings in the "Tschapurnik Wald" from June 16th; they were very partial to the flowers of *Gypsophila paniculata* and other plants.

T. ilicis.—In the same locality as the last, apparently not abundant; the only example I brought away is a typical female. First seen on June 16th.

T. spini.—Abundant and generally distributed from June 12th onwards; they were the type form without any approach to ab. *lynceus*.

T. pruni.—I saw three or four fresh specimens in the "Tschapurnik Wald" on May 22nd, flying over blackthorn bushes, but did not come across it afterwards; the only one captured, a male, does not differ from those I have from Central Europe.

T. acaciae.—First seen on June 4th; not uncommon, and generally distributed amongst blackthorn. The only difference I can

see in the Russian specimens from those I have from Hungary is, that on the under sides of the former the ground colour is grey, and of the latter grey-brown.

Callophrys rubi.—The most remarkable race of this species that I have seen was common at Novorossisk. It is a small form with an average wing expanse of 30 mm.; the under side is typical, but the upper sides of the wings in both sexes are black, without the slightest tinge of brown, and the whole surface has a grey-blue sheen, similar to that which is found in male examples of *Zephyrus quercus*, but of course the sheen is not the same colour as in that species. I propose for this remarkable race, which so far as I am aware is confined to the Caucasus, the name of var. *schanzyl* n. var. I saw, but did not capture, a few examples of *C. rubi* at Ialta; these, as far as I could see, were very typical. A few examples were seen at Sarepta on the outskirts of the "Tschapurnik Wald"; they are rather darker brown in colour than the type, and have an expanse of about 34 mm.

Chrysophanus phlaeas.—A few very typical cold-form examples were seen at Ialta and Novorossisk.

C. dorilis.—A very typical male was taken by me at Sarepta on May 22nd.

C. thersamon.—Abundant at Sarepta, but somewhat local, chiefly frequenting the railway banks and the adjacent slopes; a bright form, especially on the under side, on which the grey ground colour of the hind wings is much lighter, and the copper ground of the fore wings much brighter than in Hungarian examples. I suppose they would all come under Klug's var. *omphale*, but it is difficult to know where the type ends and this variety commences. The chief distinction that Klug makes is that his var. *omphale* has tails on the inferiors; and he figures the males and females with tails approximately 2 mm. and 4 mm. long, respectively; but all *C. thersamon* that I have seen have tails in both sexes, if only rudimentary ones. My Sarepta specimens have tails, in the males about three quarters of a millimetre in length, and in the females 2 mm. in length, whereas Hungarian first brood examples, which I understand to be the type, have only very rudimentary tails, of not more than a quarter of a millimetre in length. Individuals were continually emerging at Sarepta during the whole period of our stay.

C. dispar var. *rutilus*.—I was much delighted to see this grand species once more. Years ago I formed the opinion that it was the most beautiful European butterfly when seen on the wing; and now that I have observed all the European species, with the exception of about sixty, I can fully confirm this opinion. One can imagine what our British type, the finest form of all, must have looked like. I first saw var. *rutilus* at Sarepta in a small swamp in the railway cutting, a mile or so to the south-east of the town, on May 26th. Afterwards we found that it was generally distributed in the small swamps that are to be found in certain valleys which lie towards Tsaritsyn; it was not very common there, but I expect it was abundant in the large marshes between the arms of the Volga, had one cared to work them, which I did not. The form is a very similar one to that found near Budapest, and quite as large.

Everes alcetas.—A large form of this species, expanding about 33 mm., was not uncommon on the outskirts of the "Tschapurnik Wald," and also on the railway banks, from May 20th.

Scolitantides baton.—Common at Ialta, less so at Novorossisk, and widely distributed at Sarepta; in all cases the examples are the type form, without any approach to var. *panoptes*.

S. pylaon.—This Eastern species was fairly common on the banks and in the cuttings of the railway, but at first I experienced considerable difficulty in distinguishing it, especially on the wing, from the much more abundant *Plebeius argyrognomon*, with which it flew. It had probably been out a week or ten days before we arrived at Sarepta; after the first two days it got rare, and the examples seen were all more or less defective, although odd ones were picked up whenever we collected in its localities until May 27th. In the series I obtained there is not any noticeable variation in the females, but there is a good deal in the males. *S. pylaon* was first described by Fischer de Waldheim (the female only). Herrich-Schäffer, who next dealt with it in 'Schmetterlinge von Europa,' figures both sexes; of the male, fig. 333 illustrates a form without black spots on the hind margins of the inferiors, upper side, but with two red lunules at the anal angle of each; this form, therefore, which was not uncommon at Sarepta, it would appear, in accordance with the law of priority, is the type. The other forms obtained include one figured by Herrich-Schäffer (fig. 339), which shows a row of black spots on the upper side of the inferiors on the outer margin; this form I propose to call ab. *nigro-puncta*, n. ab. The other form I obtained is entirely without black spots or red lunules on the upper side of the inferiors, for this I propose the name of ab. *immaculata*, n. ab.

Plebeius argyrognomon.—Abundant at Sarepta and in good condition at the date of our arrival. An interesting form; the males of a deeper blue than the Western specimens which I possess; both sexes have the orange bands on the under side very prominent, in this respect resembling the Hungarian form; the species continued in good condition for several days.

P. argus (ægon).—The most abundant Lycænid seen at Sarepta—swarming everywhere. The first examples which were flying at the date of our arrival were small and dull-coloured, but those that emerged in June were much larger, with whiter under sides.

Polyommatus astrarche.—Only seen at Novorossisk where I captured a few very typical specimens of the southern low level race.

P. icarus.—Common everywhere we collected, especially at Sarepta. A large form; the females entirely without blue on the upper side. I kept a very careful look-out for *P. thersites*, without success, and I am convinced that this recently recognised species does not occur in any locality in which we collected, although its food-plant, sainfoin, grows freely at Sarepta.

P. eroides.—One example, a very fresh male of this beautiful species, or form of *P. eros*, was taken by me on June 12th at the top of a cross valley in the hills which are opposite to Sarepta. It was a very windy day, and I feel sure that the butterfly had been blown

from its true locality, but a long and wide search for further specimens was fruitless.

P. bellargus.—Only seen at Ialta; the males which were just coming out were large examples of ab. *puncta*.

P. amandus var. *lydia*.—This form of *P. amandus* was not uncommon on bushy slopes, both at the "Tschapurnik Wald" and in the valleys in the direction of Tsaritsyn. The first specimens were seen on May 23rd, and the species continued in good condition for about a month, after which it became worn.

Cupido sebrus.—A short series was taken at an altitude of about 1000 ft. at Ialta, where the species frequented flowery clearings in the pine-covered slopes of the mountains. The males are of a deeper and purer blue than the type; the females are remarkable in that nearly the whole of the superiors and the bases of the inferiors are suffused with grey-blue scales. I propose for this form the name of ab. *caerulea-grisea* n. ab.

Glaucopsyche caelestina.—This Eastern species had evidently been common a short time previous to our arrival at Sarepta; but the examples we took were almost all worn to shreds, and it took my best efforts to obtain half-a-dozen fair specimens, which were picked up singly wherever there was a considerable growth of leguminous plants.

(To be continued.)

A FORTNIGHT IN SHETLAND.

By PERCY C. REID.

At 9 a.m. on July 14th, my friends Messrs. J. Peed and G. D. Hancock and myself left Aberdeen on the s.s. 'St. Sunniva,' bound for Baltasound in the Island of Unst. After a calm passage we found ourselves when we awoke next morning at Lerwick, where we changed on to the s.s. 'Zetland,' and reached Baltasound that night at 10 p.m., some three hours behind time, owing to fog. We had engaged rooms at the Queen's Hotel, which lies about a mile from the landing stage, so that it was not far from midnight before we had had some supper and were settled in. The next day was spent in surveying the country and deciding on our plans.

The Island of Unst lies practically due north and south, and is some twelve miles long by about five miles wide, with Baltasound at the head of a deep inlet just about halfway up the east coast. The island is composed of round-topped hills, covered with grass and short heather, with the highest hills, Saxaford and Hermaness, at the northern end, and is traversed longitudinally by a deep depression, which from the latitude of Baltasound is occupied northwards, first by Loch of Cliffe, a fresh-water loch, and then, separated from it only by a sand bar, by a sea loch called Burrafirth.

Our main object was of course the capture of *Crymodes exulis*, and for this we were told the high ground between Loch of Cliffe and the western coast was the best locality.

There is not a tree nor even a bush on the island except a few planted in gardens, so we were fortunate in finding several wire fences with wooden posts, which ran east and west right across the *exulis* ground. Two of these fences were about on a level with Baltasound, near the head of Loch of Cliffe, while two more were at the far end of that loch. The former were within a mile or so of the hotel—to get to the latter necessitated a bicycle ride of at least five miles, as a long detour *viâ* Haroldswick had to be made. Eventually we fixed on the most northerly fence of all, which started from where the lighthouse keepers lived, at a place called Fiskna Wick on the west side of Burrafirth, and to this fence we practically confined our sugaring work.

Night after night we visited it, with more or less success, but with never a blank, and in the end found we all three had a full complement of *C. exulis*, with some to spare for our friends. Although on the whole in excellent condition, we took several, even on the first night, which were somewhat torn and chipped, and no doubt we might have done even better had we been a week earlier.

From the same fence we took plenty of *Mamestra furva*, *Agrotis porphyrea* (dark), and swarms of *Noctua festiva* var. *conflua* [*thulei*, Staud.] in endless variety. One or two *H. adusta*, one *Eurois occulta*, one *Phlogophora meticulosa*, one *Dianthæcia conspersa*, and several *Triphæna pronuba* completed the bag at sugar. But *M. montanata* and *L. cæsiata* (both in the Shetland form) were common all over the hills. At the date of our arrival there was practically no real night, and indeed it was not dusk enough till about 10.45 p.m. to be worth going round the sugar. But this state of things soon altered, and during our fortnight's stay the days had drawn in by certainly half an hour. Just as a week earlier would perhaps have been better for *C. exulis*, so it would certainly have suited better for *Hepialus humuli*, *Dianthæcia conspersa*, *Emmelesia albulata* and *Coremia munitata*. Of *H. humuli* I saw but three, all females, which were on the wing at 10 p.m. on July 19th, close to Haroldswick. Of *D. conspersa* I took only one worn specimen on the same evening, but by searching *Silene maritima* persistently we were able to make a fair bag of larvæ, which were still very small.

Silene maritima occurs sparsely round Baltasound inlet and at a few other spots, but at Haroldswick, chiefly on the south side and at the head of the bay, it grows in immense profusion. Here we found the larvæ of *Eupithecia venosata* in swarms—indeed, so plentiful were they that often every seed-head of the *Silene* was cleared out, and it looked as if the larvæ of *D. conspersa* would

be hard put to it to find food when they became larger. The *E. venosata* larvæ had nearly all pupated by August 1st, and the *D. conspersa* larvæ pupated after my arrival home, about August 25th.

I only saw one specimen of *H. velleda*, although it is said sometimes to be very common. As there is practically no brake fern, so far as I could see, it is evident that in Unst the larvæ must use some other food—probably dock, which is very common round the walled-in fields.

Coremia munitata we found in fair numbers only. As always with this insect the females were hard to find, and all I secured were taken at rest on rushes which grew in the sand between Loch of Cliffe and Burrafirth. Males, however, I took not uncommonly at Haroldswick and in the marshy meadows that line the burn which flows into the top end of Loch of Cliffe. *E. albulata* occurred almost everywhere with its food-plant. Both it and *C. munitata* were, of course, of the Shetland form, and very different from those found further south.

We had intended to stay in Shetland for a month, but unfortunately the outbreak of the war robbed us of half our stay. When we left, *Charæas graminis* was just beginning to come out, but it was still too early for *Noctua glareosa* or *Celæna haworthii*, both of which insects we wanted.

The worst of Shetland is the long journey there. Once arrived, the Queen's Hotel affords very good accommodation, the insects are most interesting—with hard work a good bag is practically a certainty—while to anyone fond of ornithology, the wealth of bird life is something entrancing. Even now I can hear in fancy the wild cry of the Richardson's Skuas, and of the Great Skuas who were our nightly companions on our sugaring rounds.

Feeringbury, Kelvedon: September 13th, 1914.

NOTES AND OBSERVATIONS.

ABUNDANCE OF *CYANIRIS ARGIOLUS* IN SOUTH-EAST SUSSEX.—I was staying in Winchelsea during the latter part of August and the first part of September, and during my walks in the neighbourhood I noticed that larvæ of *Cyaniris argiolus* were especially abundant. There is much ivy in the hedges along most of the roads there, and the blossoms are particularly luxuriant this year; and scarcely a patch of any size could be found which did not contain many larvæ. *Pyrameis atalanta* was also present in considerable numbers, and in places *P. cardui* was to be found; but I did not see a single specimen of *Vanessa io*, and very few *V. urticae*. It is also worth recording that, during the whole five weeks of my stay, there was only one wet day.—F. A. OLDAKER; The Red House, Haslemere, September 15th, 1914.

VARIETY OF CHRYSOPHANUS PHLEAS NEAR ASHBY-DE-LA-ZOUCH.—A friend has just brought to me a recently caught specimen of *C. phleas schmidtii*. It is the first I have seen taken in this district, where *C. phleas* is somewhat common. Both hind wings are slightly damaged, otherwise it is in good condition—pearly white, as distinct from the cream-tinted variety.—FRANK BROWN; Bath Street, Ashby-de-la-Zouch, September 17th, 1914.

GYNANDROUS *P. ICARUS*.—Whilst on the look-out for female vars. of *P. icarus* here on the 4th inst., I took a fine example of the gynandrous form, in which the left pair of wings are male and the other pair female. The latter have only a few blue scales, although at this spot most females are of the lovely ab. *caerulea* form. Excepting the upper male wing, the under sides have the usual female coloration.—MARTIN J. HARDING; Oakdene, Church Stretton, September 21st, 1914.

LEUCANIA FAVICOLOR IN HANTS.—I should like to record the capture at sugar on our local marram-grass, of three specimens of *L. favicolor*—two on June 29th (one fair and one good), and one on July 4th (poor).—A. L. BURRAS; 3, Connaught Road, North End, Portsmouth.

CERURA BIFIDA IN AUGUST.—A larva of *C. bifida* pupated July 17th, 1914, and the moth emerged to-day, August 13th.—H. C. JEDDERE-FISHER; Apsleytown, East Grinstead.

NOTE ON HECATERA DYSODEA.—I shall be glad if any of your readers will say if they ever come across *H. dysodea* now. A few years ago the larvæ were to be found regularly every year about here, in greater or lesser numbers. But since, I think, the year 1905 I have never been able to find a larva, and I believe the same thing has been noticed at Wicken, where also they used to be common. Has this insect unaccountably become extinct?—PERCY C. REID; Feeringbury, Kelvedon, September 10th, 1914.

EUVANESSA ANTIOPA IN NORFOLK.—I think it will interest you to know that on Tuesday morning last my little girl of six years captured a specimen of *E. antiopa* in Gaywood. She has a net, but on that occasion she did not have it, so she got a big-necked bottle from a friend's house and put it over the butterfly which was sitting upon some wood. I am afraid it got a bit mauled, because she transferred it to other receptacles once or twice; but Mr. Atmore, to whom I showed it, says it is a fine big specimen.—C. G. BARRETT; Pleasant House, Gaywood, near King's Lynn, September 17th, 1914.

LARVÆ OF ACHERONTIA ATROPOS NEAR NORWICH.—During the last two weeks of August larvæ of *Acherontia atropos* have been found, not infrequently, in this district; and I have heard of at least three other specimens from the neighbourhood of Wymondham, which brings the number I have come across up to ten examples. They were apparently all found on rather large fields of potatoes, and I have heard of none from small patches of the food-plant. The Norfolk yokel is usually terrified of anything out of the ordinary, and immediately destroys it, and one larva was cut in half by the

spade of the man who found it. Those I saw were all full fed or nearly so. One was found walking across a large tennis lawn. I have seen no *Colias edusa* here this year, but during the hot days a fortnight ago *Pyrameis cardui* was rather in evidence in the clover fields and also in gardens, where it was attracted by standard heliotropes; all those I saw appeared to be rather worn. *P. atalanta* has been unusually abundant, and is still (September 23rd) in beautiful condition; it is always a common species in gardens here during the first weeks of September, and is also often plentiful nearer the coast. Last week we had three or four extremely cold days, and I found many torpid *Atalanta* sitting on the dahlia flowers, always choosing the red, or red and orange blossoms. Perfectly fresh *Polygonmatus icarus* were seen when out partridge driving on the 19th.—GERARD H. GURNEY; Keswick Hall, Norwich.

DRAGONFLIES BRED IN 1914.—This year I have bred *Brachytron pratense* (one female) from a nymph found early in June, 1913, in the Ouse, near St. Ives, Huntingdon. The dragonfly emerged on (or about) May 12th. *Aeschna grandis*, from nymphs taken in the canal at Byfleet last year, and from one taken in the canal, near Purton, Wiltshire, early this summer; *Libellula quadrimaculata*, from nymph taken at Byfleet this summer; *Sympetrum striolatum*, from nymphs taken in canal near Purton; *Calopteryx virgo* (Oberwater stream, New Forest); *Lestes sponsa*, male (Byfleet Canal); *Enallagma cyathigerum*; *Agrion puella*; *Pyrrosoma nymphula*. I found imagines of *P. nymphula* in one of my aquaria (they are fitted with a kind of gauze case) on my return to town after a week-end away in the last week of April. They were not from nymphs collected this year, for at that time I had not yet been out for nymphs this season, and I was not aware that I had put any *P. nymphula* in that aquarium last year. But I had put in a good many Zygopterid nymphs (mainly *Erythronma naidis* and *Ichnura elegans*) in early summer, 1913. Some of them must have been only partly grown *P. nymphula*; I have found the same thing happen before with this species, but with no other Zygopterid; the nymphs of every other Zygopterid dragonfly I have ever taken have always emerged in the year in which they were taken (in May or June). Only *P. nymphula* have remained in the nymph stage over the following winter. None of the nymphs could have been hatched in the year that I took them (mostly in May); for that year's nymphs would either not have been hatched at all by then or would be very small. They must presumably all have been already nearly a year in the nymph stage; when taken, so that the *P. nymphula* that came out in the summer after must have been about two years in that stage. There seems to be great uncertainty as to the average duration of that phase of a dragonfly's life. With *Cordulegaster annulatus* it is a long stage; I doubt if it is ever less than two years. I have a nymph of that species now, taken in May last. The egg can hardly have been laid later than August, 1913; and the imago will not emerge until June, 1915. This would be a little under two years. But from the size of the nymph when taken, it may well have been hatched early in July, 1913, and even not in 1913 at all, but in 1912. I should like to ask if others have found *Calopteryx virgo* as difficult

to breed as I have. The nymphs mostly thrive until the time comes for emergence, then, after several days' waiting for the great event, they disappear. They die, of course, but I can seldom, in fact hardly ever, find the dead bodies. Do they descend into the mud bottom and die there? I have got a few of these most beautiful of all British insects to come out; but only a very small percentage of the nymphs I have taken. So much so that I begin to doubt whether it is justifiable to take the nymphs. It seems idle to take them if they are only going to die in the nymph stage. One point occurs. I have taken these nymphs only in running water. Is it possible that they can live but with difficulty in still water?—HAROLD HODGE; 9, Highbury Place, London, N., August 16th, 1914.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 23rd.—The President in the chair.—Mr. Newman exhibited larvæ of *Celerio gallii* reared from ova, and a larva of *Jocheæra alni*.—Mr. West, a weevil found in papers from South Africa.—Mr. Curwen, a dwarf *Polyommatus icarus* measuring 20 mm. in expanse, from Piggott's Hole.—Mr. Morford, a bred series of *Syntomis phegea* from ova laid by a female taken at Iselle.—Mr. Main, small Psychid larvæ, in their little cases, which had emerged from a large case (cocoon) from Lugano, with some larvæ of the fire-fly *Luciola italica*.—Mr. Blair, bred specimens of the beetles *Crioceris lili* (*merdigera*, F.) and of *C. merdigera* (*brunnea*, F.), the larvæ of the former on lilies, of the latter on black bryony.—Mr. Priske, living larvæ and pupæ of the beetle *Melasoma populi*.—Mr. Morford, the large Saturniids *Philosamia cynthia* and *Antheræa perneyi*.—Mr. Step, on behalf of Mr. West (Greenwich), a large mass of aberrant growth of twigs of willow, apparently caused by a species of gall.

August 13th.—The President in the chair.—Mr. Edwards, the large Saturniids *Antheræa paphia*, *Automeris illustris*, *Citheronia magnifica*, *Samia angulifera*, *S. promethea*, the Sphingids *Oxyambulyx substrigilis* and *Psilogramma menephron*, and *Eribomorpha fulgurita*.—Mr. Newman, the pink form of *Neuria reticulata* from the coast of County Cork, and two forms of the pupa of *Selenia lunaria*, the chocolate-coloured hibernating one and the bright green second brood one.—Mr. A. E. Gibbs, a large Psychid larva, which fed on sea grape and sweet lemon.—Mr. Curwen, fine series of *Apatura iris*, *A. ilia* with ab. *clytie*, ab. *iliades*, ab. *pallescens*, &c., from Samoussy, near Laon.—Mr. C. B. Williams, living larvæ of *Saturnia pyri* from Syria, and reported finding a mite, *Eriophyes*, in the willow galls exhibited at the last meeting.—Mr. Main, a living pupa of *S. pyri* from Lugano, and eggs of *Ascalaphus* from South France.—Mr. Dennis, *Centaurea solstitialis*, a rare alien plant from Cobham, Kent.—Dr. Chapman, the cases of a Psychid, *Oreopsyche pyrenælla*, from Gavarnie, Pyrenees, and gave notes on the life-history of the species. The male moults twice at pupation, the female only once.

August 27th.—Mr. A. E. Gibbs, Vice-President, in the chair.—Mr. F. W. Hall, aberrations of *Polyommatus icarus* from Hertford

and Folkestone, including radiated under side, dwarf, brilliant blue female, bleached male, &c., specimens.—Dr. Chapman, imagines and parasites of *Oreopsyche pyrenælla*, with examples of the larval skins moulted at pupation.—Mr. Main, insects found in baskets of cane sugar from Java, including Coleoptera, Blattidæ, a cricket, &c.—Mr. Neave, blue female aberrations of *Polyommatus icarus* from Otford first brood, and Chipstead second brood.—Mr. Edwards, examples of the genera of Rhopalocera, *Delias*, *Metaporis*, and *Dismorphia*.—A discussion took place as to the habit of some species of Lepidoptera to return again and again to the same spot, *Mania maura*, *Gonepteryx rhamni*, *Amphipyra pyramidea*, &c., being instanced.—HY. J. TURNER, *Hon. Report. Sec.*

RECENT LITERATURE.

Memorias do Instituto Oswaldo Cruz. Vol. v. and vol. vi., pt. i.
Rio de Janeiro-Manguinhos. 1913, 1914.

The following are titles of some of the papers in volume v.:—

Sobre o ciclo evolutivo de *Schizocystis spinigeri*, n. sp. Gregarina do intestino de uma especie de Spiniger, por Astrogildo Machado. (Pp. 1-15; plates 1-3.)

Notas sobre um caso de Milase humana ocasionada por larvas de *Sarcophaga pyophila*, n. sp., pelo Drs. Arthur Neiva e Gomes de Faria. (Pp. 16-23.)

Informações sobre a biologia da Vinchuca, *Triatoma infestans*, Klug, pelo Dr. Arthur Neira. (Pp. 24-31.)

Citologia ciclo evolutivo da Chagasella alydi. Novo coccidio pasazito dum hemiptero do genero "Alydus," pelo Dr. Astrogildo Machado. (Pp. 32-44; plates 4, 5.)

Contribuição para o estudo das Ceratopogoninas hematofagas do Brasil, pelo Dr. Adolpho Lutz, Parte Sistemática. Segunda Memoria. (Pp. 45-73; plates 6-8.)

Notas hemipterológicas, pelo Dr. A. Neiva. (Pp. 74-77.)

Contribuição para a biologia das megarinias com descrições de duas especies novas, pelo Drs. Adolpho Lutz e Arthur Neiva. (Pp. 129-141.)

Tabanidas do Brazil e de alguns Estados vizinhos, pelo Dr. Adolpho Lutz. (Pp. 142-191; plates 12, 13.)

Titles of papers in vol. vi., part i. (1914):—

Contribuição para o estudo da biologia dos Culicideos. Observações sobre a respiração nas larvas, pelo Dr. A. da Costa Lima. (Pp. 18-34; plate 4.)

Contribuição para o estudo dos redúvidas hematofagos, pelo Dr. Arthur Neiva. 1. Notas sobre os redúvidas hematofagos da Bahia com a descrição da nova especie. (Pp. 35-39.)

Notas dipterológicas, pelo Dr. Adolpho Lutz. Contribuição para o conhecimento dos primeiros estados de tabanideos brasileiros. (Pp. 43-49.)

1. Contribuição para o estudo das Megarhininae. 11. Do *Megarhinus hæmorrhoidalis*, Fabricius, 1794 (Pp. 50-57; plates 5, 6.)

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THREE WEEKS IN DAUPHINY.

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

(i.) *La Grave.*

WHEN I left London on a blazing July day, the promise of a successful entomological tour in the mountains south of Grenoble seemed assured. Letters from French correspondents beginning in the spring had prepared me for a great butterfly year: an absence of late frosts, prevalence of sunny skies, and only just the requisite rainfall to encourage the crops from north to south. The factors of success were established—at least, I thought so; and when I stepped into the P. L. M. motor outside Grenoble station on the morning of the 11th, there was not a cloud even the size of a man's hand in the sky of the Midi or on the visible political horizon. In April, when I had had the privilege of addressing the Entomological Society of France at their annual banquet, and at a moment when Paris was celebrating the visit of our King and Queen, I ventured to suggest, "heureusement pour nous autres, les chevaliers de la Nature, la politique n'existe pas." I little thought how soon and in how sudden fashion the welter of European politics was to engulf the comity of nations, and how the waves of a great war were to sweep over the quiet haunts where in former years I had wandered in search of butterflies. To-day, after three months of storm and stress, the calm Alpine valleys, thick with corn; the mountain pastures, a wonder of flowers; the restful villages—all are as a dream to the reality of which the little harvest of my cabinets alone may testify.

This part of the Dauphiny Alps has been worked for many years by English lepidopterists; less systematically by the French, though, needless to say, the indefatigable M. Charles Oberthür has taken toll of the district; while it was one of Dr. Reverdin's observations (*in litt.*) on the occurrence of *Erebia scipio* at Monétier-les-Bains, on the southern side of the Col de Lauteret, which tempted me to include a week there in my programme. In the 'Entomologist's Record' (vol. viii. 1896; ix. 1897) the late Mr. Tutt gives an exhaustive account of a visit to Le Lauteret and La Grave during the first weeks of August.

To later volumes the Rev. F. E. Lowe (*loc. cit.* xxii. 1910), Mr. A. S. Tetley, and Mr. Douglas Pearson contribute their experiences of that charming country. For this paper, therefore, my only excuse is that hitherto nothing has been written on the subject in the 'Entomologist,' and that I visited one locality at least to which most of these authorities paid but slight attention. To Dr. Chapman's suggestive note on the local "grass" *Erebia*s (Proc. Ent. Soc. 1913, cvii.-cx.) I shall refer later on.

There are two hotels at La Grave equally comfortable and well kept—the Hotel des Alpes and the Hotel de la Meije. I stayed at the former for ten days. And here I should like to point out how helpful it is when lepidopterists, who have visited foreign localities and write about them, give others following their footsteps the benefit of their hotel experience. Personally, I find the Touring Club of France guide invaluable for the purpose of selection. May the next issue reintroduce us to the hospitality of Alsace and Lorraine!

Arriving in time for a late *déjeuner* after a drive of surpassing loveliness, I spent the afternoon prospecting in the deep meadows that lead up to the Meije glacier. Facing the Meije, La Grave stands boldly up from the torrent of the Romanche. Across the mule-path leading on this side to the river a muddy trickle attracts the "Whites" and "Blues" in cheerful abundance; *Aporia crataegi*, fresh males, but small; *Parnassius apollo*; on the yellow crucifers *Anthocharis simplonia*, at this level (5000 ft.) already rather worn; and among smaller fry, *Plebeius argus* (*ægon*), *Polyommatus hylas*, and *Nomiades semiargus*. I did not observe *Papilio podalirius*, but it was not uncommon lower down towards Bourg d'Oisans. *P. machaon* occurred singly in the village itself. But undoubtedly the best collecting ground hereabouts is on the left bank of the river, and up to the Meije glacier. The first four days of unclouded sunshine, from the 12th to the 15th, were fully occupied. In the lower pastures *Erebia pharte* males were flying in profusion, the females as yet hardly emerged; *E. epiphron* var. *cassiope*, decidedly rare; *E. ceto*, a dwarf race compared with that of the Swiss Alps, less so; and, of course, *E. stygne*; though by far the commonest of the genus was *E. euryle*, constant and typical in form, and often assembling by the score at the runnels, or starting up from every branch and flower in the fir woods.

Pushing on to the moraine of the Meije glacier, I had not been long on the look-out when the first glossy *E. alecto* flew across the path, and later I was fortunate to bag one or two perfectly fresh females. One such rose from my feet as I was struggling with the loose shifting scree. She had evidently been disturbed in the act of oviposition; and, as the only plant at this particular spot was a sort of tuft grass, I have not much doubt that this plant—afterwards identified in the Alpine garden

at Le Lauteret as *Festuca pumilosa*—is the pabulum of the species. This same female obliged with several eggs in the pill-box to which she was consigned—a rather unusual occurrence in my experience of this butterfly, and of the whole *Erebias*, though I have known single eggs expressed from the body in the killing-bottle. As at Larche, the La Grave *alecto* are without exception of the form which M. Oberthür has named *duponcheli*, and hardly to be distinguished from the familiar var. et ab. *pluto* of the Central Alps. I am sure this insect is possessed of abnormal hearing power; when approaching, the displacement of the smallest stone causes it to get up. Its method of flight is also peculiar. I watched many males in their apparently aimless and inconsequent zigzag flight over the moraine—like that of *Orgyia antiqua* in a London square—suddenly flopping on a stone, very seldom on a flower, and immediately orienting to the sun with wide outspread wings. The females do not indulge in these eccentricities. They keep low above the surface when on the wing, and are naturally sluggish and slower than the males. When the sun is overcast both sexes at once slip for shelter under a stone, or into the crevices of rock, and neither, as with some other *Erebias*, can be got to move when the sky is cloudy.

It is perhaps worth remark also that, if the tendency of the grass *Erebias* is towards diminutive size at La Grave and Le Lauteret, the ubiquitous *stygne* is rather larger than otherwise. Where they present local variation, I make a point each year of netting a few, but the aberration captured in the gorge below the vacherie on the Meije path, about an hour's easy walking from the village, came as a great surprise, and is the most remarkable form of this common butterfly I have ever encountered. It is an absolutely fresh male. The bands on both wings appear to be better developed than usual, but this, I think, is more apparent than real, and due to the entire absence of the black spots in which ordinarily the white pupils are set. The pupils themselves are reduced to mere metallic pin-points. Unless already distinguished with a name, I propose to call it *abannulata*, new ab., and it would be interesting to hear whether any of the many lepidopterists who have collected *E. stygne* in France or elsewhere have met with a similar form. Favre's ab. *aboculata* female is described by Mr. Wheeler ('Butterflies of Switzerland,' p. 132) as "without spots fore wing, upper and under side; hind wing, with two black dots in place of eye-spots." In M. Oberthür's figures of his var. *gavarnica*, male ('Lépid. Comparée,' plate xxv., fasc. iii.), the rusty bands on the upper side of the fore wings are much narrower than in the type, the pupilled spots tiny (under side one small apical spot only), and much closer to the outer margin; the female showing the same peculiarities.

And here I should like to draw attention to some further remarks by M. Oberthür on the variation of a form of *E. stygne* from Switzerland. Describing an aberrant male taken by the late M. Wullschlegel, near Martigny, he speaks of it as "larger and much darker than the norm; the wings suggest the deep black with the beautiful reflections of *E. lefebvrei*; on the upper side of the fore wings are five black ocellated spots, pupilled white, and in the same way on the hind wings. Rusty band reduced to several feeble blotches on the internal side of the ocellations and on the fore wings only. Under side deep black but matt; the rusty band, however, always limited to the inner side of the ocellations, is better developed than on the upper side. This fine butterfly was taken in 1907 perfectly fresh and intact; it is without doubt the var. *valesiaca*, Elwes."

Turning again to Mr. Wheeler's account (*loc. cit.*), we find under *E. stygne*:—"Directions of Var. (a) tendency to obsolescence of mahogany patches containing the eye-spots, f. w. and h. w., culminating in:—

"Var. *valesiaca*, Elwes, in which they (the patches) are very slight, the eye-spots also, but not the pupils, being smaller."

I have several examples of this form in my collection taken by me on the Thusis-Andeer road just by the beautiful bridge in the narrow gorge above the first-mentioned village. They are certainly darker than typical *stygne*, but M. Oberthür does not mention any reduction of the size of the ocellated spots, which I take it is a distinguishing feature of this particular variety, and I suspect, therefore, that the Martigny example is rather an aberration of *valesiaca* than the form itself.

In the case of *E. tyndarus*, excessively common later on, it was hardly out at La Grave; all examined were of the form *cassioides*, von Hohenw. (= *dromus*, F.). On the detritus of the Meije moraine a few *E. gorge* males accompanied the larger *E. alecto* var., but I do not remember to have met with *E. mnestra* at this point, where, however, it was strange to find newly emerged *Pyrameis atalanta*—a butterfly seldom, I should imagine, associated in the same locality with *E. alecto*, though its congener *P. cardui*, also observed, attains almost as great altitudes in the Alps as *Aglais urticae*.

Until the hailstorm in the evening of the 15th wrecked their beauty, the pastures above and to the left of the herd hut suggested the Elysian Fields and the borrowed simile of the Church hymnal—

"The daylight is serene;
The pastures of the Blessed
Are decked in glorious sheen";

and the comparison was inevitable of these thousand white perfumed Mary lilies with the "asphodelos leimōn" of the Greeks. Here and there they would be broken up by little bushes of

rose-flushed rhododendron, and in delicate contrast the hollows would be alight with the delicate late lilac of the cranesbill, or with golden arnica daisies, deep purple asters, and blue campanulas. The cranesbills were especially attractive to males and females alike of *C. hippothoë* var. *eurybia*, and of course to *Polyommatus eumedon*. Hesperiidæ were few and far between—*Hesperia alveus*, *H. serratulæ*, and *Pyrgus sao*. The Coliadæ were represented by *C. phicomone*, which was more common throughout La Grave than *E. stygne*.

My other excursions were all on this side of the river. The most interesting and productive was unquestionably that to the Evariste-Chancel hut (7875 ft.), and the woods and pastures on the way to the open treeless grass slopes which constitute the approaches to the neighbourhood of Lac Noir. The walk-up on July 15th was made under a tropical sun, which unfortunately withdrew altogether towards noon when I was on the rocks that encircle the grim lakelet, where, even thus late in the season, the ice was only now breaking up. Added to a cloudy sky, a furious wind began to blow, precursor of the evening's terrific thunderstorm. In the meadows on the outskirts of the lower woods *Brenthis ino* occurred in some numbers, and it was at a streamlet here that I surprised a dozen freshly emerged male *Argynnis aqlaia* crowded on a patch of sand not larger than my hand. Everywhere from La Grave to the limit of the forest region *Parasemia plantaginis* was also in great force, but at first I failed to spot the variety *hospita*, common from about 6500 ft., and even more so at Le Lauteret. From the grass I netted several worn *H. malvoides*—the first record of this species hereabouts; and, as soon as I had quitted the larch belt, *H. cacaliæ* put in an appearance. The bare mountain-side yielded only occasional ragged females of *Pontia callidice*, *E. gorge*, and more abundant *E. lappona*. *B. pales* was extremely rare, but the later part of the day was against collecting. I was more fortunate on the 18th when I returned to the same ground below the rocks, and though the wind, which marred all collecting for the next week, never dropped, butterflies were not un plentiful in sheltered places.

The presence of *H. cacaliæ*, of which this day I saw many examples, but could capture few good specimens, had inspired me with hopes of the rare *H. andromedæ*. I had evidently overlooked it on the 15th, for directly I passed the tree line to where a spring of excellent water crosses the path, I encountered several. The males were not worth boxing, being in poor plight; of the females I took three perfect examples, and missed as many more, liberating at least half-a-dozen of both sexes. Some doubt apparently having existed as to the specific identity of these two skippers, I may state that in Dauphiny, at any rate, their habits are quite unlike. *Andromedæ* prefers to

settle on a sun-warmed rock, *cacaliæ* on flowers and grasses; *Andromedæ* is a much stronger and more active butterfly, while *cacaliæ* appeared to be generally on the wane when the latter was fresh of both sexes. I am not sure whether the food-plant of *Andromedæ* is known, but I dislodged one female evidently ovipositing on *Dryas octopetala*, which is common at these altitudes. *Andromedæ* begins to show at about the lowest flight of *Erebia lappona* (6500-7000 ft.), as I found it about Eaux-Bonnes in the western Pyrenees (Entom. xlv. p. 337), of which locality, with its sparse flora, ranunculus, myosotis, and accidental rhododendron, the Dauphiny habitat is decidedly reminiscent (Lépid. Comparée, fasc. v. pte. 2, pp. 108-9).

The morning of the 19th was devoted to the lower part of this walk, chiefly under the torrent of the Meije, where there is plenty of good collecting ground. The sunny path with occasional dripping water attracts swarms of insects of all Orders. *Hesperia carlinæ* males were in perfect condition, and among the Lycænids I spotted, on the wing, like a silvery *P. eros*, which species was swarming at the time, a solitary and perfect male *P. donzelii*. It was a welcome visitor; I had not seen this loveliest of Alpine "Blues" alive since I was at Trafoi and Cortina fourteen years ago; nor was I destined to see it again this year. Two or three fine female *E. pharte* were selected from the many on the wing; *E. curyale* was now commoner than ever, both here and along the river-bed where I sought refuge from the prevailing hurricane on the 16th, and on the finer 14th. The flora consists almost wholly of leguminous plants. As might be expected, therefore, there was abundance of Lycænids, chiefly *P. hylas* and *P. escheri*. Of the former I managed to box a female with the basal and median area of all the wings on the upper side suffused with blue (= *ab. cærulescens*, Obthr.). It is the only blue female in my collection, for there is apparently in western Europe a far less pronounced tendency in the sex of this species to assume the male coloration than in the majority of the group possessing andromorphic females. Other Lycænids of the river-bed were *P. damon*, hardly out; and *P. thersites*, one or two males.

The Anthrocerids (Zygænidaë) observed at La Grave are not many—*A. transalpina*, *A. purpuralis*, *A. loniceræ* and *A. exulans*. Unfortunately I had omitted to provide myself with a *résumé* of Mr. Lowe's captures, and thus overlooked the locality, a mile below the village, where, in conjunction with Mr. A. H. Jones, he discovered *Melitea deione*. On the 21st I left for Le Lauteret.

(To be continued.)

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE
BRITISH BRACONIDÆ. No. 2.—MACROCENTRIDÆ,
WITH DESCRIPTIONS OF TWO NEW SPECIES.

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

(Concluded from p. 262.)

M. collaris (Spin.).*—Appears to be fairly common and generally distributed. Is easily distinguished from its near relatives by the second abscissa of the radius being much shorter than the first intercubital nervure. The terebra is the length of the abdomen. In eight females which I have examined I find the antennæ to have 32–33 joints, and two males have each 37 joints.

I have not seen the original description, having identified my specimens from the writings of Wesmæl and Marshall.

ZELE (Curtis).

Large insects; in fact, *Z. testaceator* is probably our largest British braconid. Solitary parasites of the larvæ of Lepidoptera.

The testaceous species bear a superficial resemblance to insects of the genera *Ophion* and *Paniscus* among the Ichneumonids, and also to some of the *Meteori*; from the latter they may easily be distinguished by the sessile abdomen and by the neuration of the fore wings (see Entom. xlvii. 76, plate I. fig. 1).

These parasites leave their hosts when the latter are full-fed, so that in all the instances recorded their cocoons have been found underground within the cocoons or pupal chambers of the hosts.

When emerging from the cocoon the imago removes a cap from one end, but not so neatly as with the *Meteori*.

- | | | | |
|-----|----|--|----------------------------------|
| (6) | 1. | Radial areolet of the hind wings not geminated by a transverse nervure. | |
| (5) | 2. | Large species expanding 17–22 mm. | |
| (4) | 3. | Wings hyaline or yellowish hyaline, terebra surpassing the apex of the abdomen | 1. <i>testaceator</i> , Curtis. |
| (3) | 4. | Wings somewhat clouded, terebra not surpassing the apex of the abdomen | 2. <i>infumator</i> , sp. nov. |
| (2) | 5. | Smaller species expanding 12–14 mm. | |
| | | | 3. <i>chlorophthalma</i> , Nees. |
| (1) | 6. | Radial areolet of hind wings geminated | |
| | | | (<i>Homolobus</i> , Forster). |
| (8) | 7. | Colour rufo-testaceous | 4. <i>geminator</i> , nom. nov. |
| (7) | 8. | Colour nigrescent | 5. <i>discolor</i> , Wesm. |

Z. testaceator (Curtis).—Four records only can I find of the breeding of this species, and in every case from the larva of a *Noctua*. I have never bred or captured it myself, the only

* Spinola, Ins. Lig. ii. p. 140.

examples I possess being two ancient specimens which were given to me some years ago. Fortunately I have been able to inspect a fine series of nine in Morley's collection, and three in that of Col. Nurse. With one possible exception all the specimens I have examined have the costal cell rather shorter than the median, and the recurrent nervure rejected by a distance which is equal to or rather less than the length of the first abscissa of the radius (fig. 4). Wings yellowish hyaline. The upper surface of the abdomen is generally, though not always, fuscous.

The cocoon I have not seen, and the only description I know of is that of Fitch (Entom. xiv. 143), who tells us that it is *thin*, smooth, and white.

Among Morley's insects are two females bred by Cockayne from larvæ of *Tæniocampa populeti* taken in Berkshire.

Z. infumator, sp. nov. (Fig. 2.)

Thorax, abdomen, and legs, including the hind tarsi, rufotestaceous; claws black, and also a black dot above the radices. Palpi pale testaceous; mandibles fuscous at the tips; antennæ testaceous, annulated, darker towards the apices, longer than the body in both sexes. Metathorax marked with a rather elaborate raised pattern, which, though often not so symmetrical as in the case figured (fig. 5) (taken from a specimen in my collection, No. 530), is always present in a more or less perfect condition. Wings dull hyaline, *apical half somewhat infumated*, costal cell as long as or slightly longer than the median. Costa, nervures, and stigma fuscous, *recurrent nervure rejected by a distance which is greater than the length of the first abscissa of the radius*. Radial areolet of the hind wings not geminated by a transverse nervure. Abdomen smooth, terebra not surpassing the anus. Length, 9-11 mm., expands 17-22 mm.

Described from thirteen males and eleven females.

Approaches *Z. testaceator* in size, but differs therefrom in having the terebra concealed, infumated wings, and a shorter first abscissa of the radius, &c.; from *Z. chloropthalma* it differs in size and also in the infumated wings, &c.

Larva dirty cream colour, showing under magnification irregular white speckles on the last six or seven segments, attenuate towards the head, parts of the mouth not or scarcely outlined.

The cocoon is *thick*, white, somewhat rough but not woolly, attenuated similarly at both extremities, and 10½ to 13 mm. in length; when exposed to damp it turns a brownish colour (fig. 9).

Very many times bred from larvæ of *Boarmia repandata* between May 4th and June 1st, from which host Major Robertson has also bred it at Chandler's Ford. The parasite larva leaves its host when the latter is full-fed and has retired below the ground for pupation, and there spins its cocoon.

Z. chloropthalma (Nees). *Rhogas chloropthalmus*, Nees, Mon. i. 202 = *Phylax chloropthalmus*, Wesm., Nouv. Mem. Ac. Brux.,

1835, p. 162. Owing, no doubt, to an oversight this species has been confused by Marshall with another (see *Z. geminator*), and has apparently been overlooked in this country.

Wesmael says that, besides being much smaller, it differs from *Z. testaceator*:—"1. En ce que les tarses ne sont pas plus pâles que le reste des pieds; 2. le dos de l'abdomen du mâle est entièrement fauve testacé; 3. Tarière de la femelle dans l'état de repos n'est pas saillante, parce qu'elle est trop courte pour dépasser l'extrémité dorsale de l'abdomen."

Nees considered his *Rhogas chlorophthalmus* to be the *Bracon chlorophthalmus* of Spinola, but, as Marshall remarks, this cannot be proved.*

Among Fitch's insects I found a female which agrees perfectly with the descriptions of Nees and Wesmael. It was bred by G. Elisha, July 17th, 1884, from a larva of *Depressaria alstromeriana*. The specimen is 7 mm. long and 12 mm. in expanse, wings hyaline, terebra concealed, recurrent nervure rejected by a distance equal to the length of the first abscissa of the radius, and the radial areolet of the hind wing not geminated by a transverse nervure.

Z. geminator (nom. nov.) = *Z. chlorophthalmus*, Hal. Ent. Mag. iii. 142; Marsh, Trans. Entom. Soc. 1888, p. 199; Bignell, Trans. Dev. Ass. for Advan. Science, &c., 1901, p. 657; Morley, Entom. xl. p. 254.—In the Ent. Mag. for 1836 Haliday described a species under the name of *Z. chlorophthalmus*, which he considered synonymous with *Rhogas chlorophthalmus* of Nees.† He was at that time, as we know, unacquainted with the work of Wesmael, who, the year before, 1835, had described his *Phylax chlorophthalmus* ‡ also as synonymous with the Neesian species. In Wesmael's description the radial areolet of the hind wing is given as *not* geminated, while Haliday is most emphatic in saying that it is divided by a transverse nervure. Therefore, it is very evident that the synonymy of either Wesmael or Haliday must be wrong. In the description of Nees, unfortunately, no mention is made of the neuration of the hind wing, but it is extremely unlikely that so careful an observer would have omitted to note such an important character as the gemination of the radial areolet, had it occurred in the insect he described. We may, I think, take it that *Rhogas chlorophthalmus*, Nees = *Phylax chlorophthalmus*, Wesm., which necessitates the bestowal of a new name on Haliday's insect. For this well-marked species I therefore suggest the name of *Zele geminator*, and subjoin a copy of Haliday's description:—

"Fem. præcedenti similis (*Z. testaceator*) statura tota gracilior; abdomen brevius, clavatum, minus compressum; aculeo ascendente, vix apicem abdominis superante; pedes

* Trans. Entom. Soc., 1888, part 3, p. 300.

† Nees, Mon., i. 202.

‡ Nouv. Mem. Ac. Brux., p. 162.

graciliores; tarsi omnes concolores; alæ ampliores; anticarum stigma et areola radialis latiores; posticarum area radialis a branchiali remota, *et in 2 areolas partita.*"

It seems strange that Marshall, when preparing his Monograph, should not have noticed the discrepancy between the descriptions of Wesmael and Haliday. The species appears to be scarce, the only specimen I have seen being in Morley's collection, a female which was captured by the late Rev. E. M. Blomfield at Guestling in 1889. This insect expands 16 mm., and agrees in every particular with Haliday's description, the radial areolet of the hind wing being very distinctly geminated by a transverse nervure.

Z. discolor (Wesmael). (Fig. 3.)—Strange to say the male of this species is unknown. Wesmael, the original describer, saw only three females; Bignell bred the same sex only; Morley's single specimen is a female, as are also all the many specimens I have bred.

A large and graceful insect, $6\frac{1}{2}$ to 8 mm. in length, and expanding 15–20 mm. I possess a specimen which is but 5 mm. in length and expands only 12 mm.; this case, however, is quite exceptional, and may probably be attributed to malnutrition of the host. The wings are somewhat infumated, the apical halves more distinctly so, and noticeably iridescent. Marshall very correctly describes the cocoon as "elongate, oval, white, and thin, with a medial zone of a denser texture forming a white band." This medial band is scarcely visible when the cocoon is empty. The cocoon is much thinner and more shining than that of *Z. infumator*, $7\frac{1}{2}$ to $11\frac{1}{2}$ mm. in length (fig. 10). It is constructed underground.

Bred by me many times from larvæ of *Cabera pusaria* from July 27th to August 8th, and again from September 27th to October 10th; also frequently from larvæ of *Boarmia repandata* between May 5th and May 28th; and once from a larva of *Gonodontis bidentata*, August 18th, 1912.

In October, 1911, I took a small larva of *Boarmia repandata*, which, being kept in a warm cupboard, fed up, and when full grown produced a larva of this parasite on January 31st, 1912. From this I should judge that in the ordinary way the species passes the winter within the body of its host, either as an ovum or small larva.

NEW SPECIES OF GEOMETRIDÆ FROM FORMOSA.

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

Semiothisa kanshirensis, n. sp.

♀. Pale brown thickly sprinkled with dark brown and blackish; subbasal and medial lines blackish, each originating in a black spot on the costa, slightly curved, interrupted and edged with orange; post-medial line blackish, indented below costa, wavy towards dorsum,

inwardly edged with orange, followed by a greyish band on which is a blackish costal spot and two black marks just above middle; terminal area suffused with grey; terminal line black, interrupted at the veins; fringes orange marked with black. Hind wings have two blackish transverse lines, the first is edged with orange and united with a black discoidal mark, the second is inwardly edged with orange; area beyond second line suffused with grey; terminal line black, dilated between veins; fringes dark grey, orange at base and tips. Under side orange sparsely freckled with black-brown; transverse lines as on the upper side, but blacker and more distinct.

Expanse, 24 millim.

Collection number, 1642.

One female specimen from Kanshirei, September 14th, 1908.

Semiothisa dubia, n. sp.

♀. Head and front of thorax brown, rest of thorax brown-grey. Fore wings brown-grey flecked with black on costa; antemedial line brown, curved, indistinct, dotted with black; postmedial line brown, almost parallel with termen, not distinct towards the costa; subterminal line indicated by black dots and a blackish cloud, the latter on vein 5. Hind wings brown-grey flecked with black on costal area; traces of dusky medial and postmedial lines, the latter dotted with black. Fringes of all the wings brown, marked with black. Under side greyer than above; fore wings suffused with brown on the disc; markings pretty much as on upper side.

Expanse, 32 millim.

Collection number, 1887.

A female specimen from Rantaizan, May 6th, 1909.

Heterolocha olivescens, sp. n.

♂. Head whitish, palpi and pectinated antennæ brown; thorax and abdomen pale olive brown. Fore wings pale olive brown; antemedial line fuscous, curved, connected with a small fuscous cloud in cell; discoidal mark black, linear; postmedial line fuscous, outwardly edged with white, inwardly oblique from apex to vein 2, where it is elbowed, terminating on dorsum near the tornus; area beyond the postmedial line clouded with whitish. Hind wings pale olive brown; discoidal mark blackish, indistinct; postmedial line fuscous, outwardly edged with white, almost straight; terminal area clouded with whitish. Under side similar to the upper side but the postmedial line on all the wings is darker and the area within the line yellower.

Expanse, 38 millim.

Collection number, 1596.

A male specimen from Arizan (7300 ft.), August 21st, 1908.

Prionia pulchra, sp. n.

♂. Head and thorax carmine, frons rather darker; abdomen carmine, yellowish between segments. Fore wings carmine with two yellow transverse lines, the first almost straight, the second curved

to apex where it unites with a large yellow blotch. Hind wings rather paler than the fore wings, a yellow transverse line, only well defined on the dorsum. Under side carmine, a large yellow spot at apex of the fore wings.

Expanse, 40 millim.

Collection number, 1890.

One male specimen from Rantaizan, February 17th, 1909.

Closely allied to *P. rosearia*, Leech.

Gonanticlea subfalcata, sp. n.

♂. Fore wings, which are deeply excised below apex, pale brown with many blackish (black on costa) almost parallel transverse lines; subbasal line black, double, commencing in a black spot on the costa; postmedial line pale ochreous, obtusely serrate, indistinct, edged and partly obscured towards the costa by a black transverse streak; area beyond the postmedial line darkened. Hind wings fuscous. Under side fuscous grey; fore wings ochreous on the costa, discoidal dot black, transverse lines faintly in evidence; hind wings have a black discoidal dot and dusky medial and postmedial lines, outer edge of postmedial pale ochreous towards dorsum.

Expanse, 32 millim.

Collection number, 1881.

A male specimen from Arizan, March 23rd, 1908.

Seems to be allied to *G. aversa*, Swinhoe.

Acasis venipicta, sp. n.

♂. Fore wings pale greyish brown, venation black marked with white; medial band darker brown, the inner edge irregular, the outer edge elbowed beyond the cell, thence incurved to dorsum, marked with black towards costa; discoidal mark black, linear; fringes pale grey marked with blackish at ends of the veins. Hind wings and under side fuscous.

Expanse, 36 millim.

Collection number, 1607.

A male specimen from Rantaizan, May 4th, 1909.

Allied to *A. obscuraria*, Leech.

Dindica taiwana, sp. n.

♂. Head and thorax yellowish green mixed with black, and on mesothorax with brown, antennæ bipectinated; abdomen paler in colour, segmented divisions whitish, tufts mixed with black, an interrupted black line on each side of tufts. Fore wings yellowish green; subbasal line black, oblique, not extending to dorsum; ante-medial line black, wavy, indistinct, clouded with blackish and preceded by a blackish patch on the costa; discoidal mark blackish; postmedial line blackish, outwardly oblique from the costa to vein 4, thence curved and recurved to the dorsum, dotted with black on the veins; subapical patch blackish tinged with brown on lower edge; terminal dots black. Hind wings whitish, faintly brownish tinged on the dorsal area; subterminal band blackish, interrupted,

area beyond yellowish green clouded with blackish; terminal line black, interrupted. Under side whitish; all the wings have a blackish discoidal mark and band beyond, the discoidal mark of fore wings large and distinct.

♀. Similar, but markings of the fore wing less distinct and the outer third of the hind wings almost entirely blackish.

Expanse, ♂, 50 millim; ♀, 54 millim.

Collection number, 1859.

One example of each sex from Arizan; the male obtained March 19th, 1909, and the female July, 1908.

This species comes very near to *D. polyphænaria*, Guen., but the fore wings are somewhat broader and the hind wings are whitish.

AN EXPEDITION IN SEARCH OF RUSSIAN BUTTERFLIES.

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

(Continued from p. 274.)

Glaucopsyche cyllarus.—Not uncommon at Ialta and Novorossisk, and abundant at Sarepta, where it was seen on our first day, and fresh examples kept emerging during the whole time of our visit; evidently these were delayed emergences of the first brood and not a second brood. The specimens taken were of average size, the females entirely brown; both sexes had a maximum of blue scales on the bases of the wings underneath, and less than the average number of ocelli; the inferiors were in some cases entirely devoid of ocelli.

Lycaena arion.—This species was common at Sarepta on and after May 28th; it was local but widely distributed, and was always found in the vicinity of wild thyme. The race is a handsome one, usually the blue lowland form, but a few var. *obscura* were taken; the black spots on the upper sides are well-developed, and in many cases elongated and lanceolate in shape.

Celastrina argiolus.—Not uncommon at Ialta. First seen as a second brood at Sarepta on June 17th; the black spots on the under sides are larger than those of Western Europe examples.

Libythea celtis.—This species was not uncommon alongside the lower road from Ialta to Gourzoff. The specimens, of course, had passed the winter in hibernation.

Neptis lucilla.—It was one of the most fascinating experiences of our stay at Sarepta to see the abundance of this graceful species, usually so rare in mid-Europe. I am aware that one or two localities there, including Botzen, produce it in some numbers, but not, I think, in anything like the abundance that it is found on the Volga. Everywhere in and around woods it swarmed to such an extent that there were often ten to a dozen specimens within a yard or two of one. The only locality in which I had previously met with *N. lucilla* was Herculesbad, where it was so rare that my two dozen specimens involved something like an 18,000 ft. climb. At Sarepta any day at

the end of May or in the beginning of June I could have netted with ease a hundred specimens in a morning. It was most abundant in the small woods in the valleys of the hills some miles on the road to Tsaritsyn; but it was also exceedingly common in the "Tschapurnik Wald," and specimens were to be found in every small wood that we worked. I took the first specimen on May 22nd.

Polygonia c-album.—I only saw two examples of this species; these were taken on June 12th in a wooded valley opposite Sarepta; they have very pale under sides and are extreme forms of var. *hutchinsoni*.

Eugonia polychloros.—A single example was taken on June 20th, sunning itself on a wooden barn. One or two hibernated specimens were seen at Ialta.

Pyrameis cardui.—Common wherever we collected in Russia, and especially so at Sarepta; a succession of emergences occurred there during the whole period of our stay.

P. atalanta.—A few at Ialta. At Sarepta only seen in the "Tschapurnik Wald," where there was an abundant growth of nettle; a plant usually rare in the district.

Melitaea aurinia var. *sareptana*.—This handsome form of *M. aurinia* was seen not uncommonly, when its localities were discovered, but it was very local, haunting bushy slopes. It was first seen on May 22nd, on which day all the specimens were worn; eventually, about a week afterwards, I found a locality in which there was a small and late brood flying, and there managed to get about a dozen good specimens. It probably emerges at Sarepta about the first week in May.

M. cinxia.—One of the most abundant and widely distributed butterflies we met with. The form found at Ialta and Novorossisk is very normal, but at Sarepta all forms from the type to var. *obscurior* occurred. There was a succession of emergences during the whole time of our stay, and perfect examples were to be obtained quite at the end of it.

M. phæbe var. *aetheria*.—Common and in good condition at Sarepta during the first few days of our stay, after which it rapidly became worn.

M. aurelia var. *seminigra*.—A very remarkable form of a *melitaea*, the genitalia of which are practically identical with Hungarian *M. aurelia*, was found rarely in the "Tschapurnik Wald." This form, which has superficially many *aurelia* characteristics, is much darker than the type, both on the upper and under sides, and the female especially is darker on the upper side than *M. dictynna*. It agrees with *M. aurelia* var. *seminigra*, figured and described by Seitz from specimens taken near Lake Baikal. Only three specimens were captured, a male by myself on May 29th, and on June 6th a female by each of us. This eastern form of *M. aurelia* is considerably larger than Swiss or Hungarian examples of that species; my male and female expand respectively 44 mm. and 47 mm. as against 38 mm. and 42 mm., the average size of my Hungarian and Swiss specimens, and these again appear somewhat larger than the average, judging from the fact that Mr. Wheeler in his 'Butterflies of the Alps,' gives 32 mm. as the wing expanse of this species.

M. didyma.—Common but somewhat local at Sarepta; most abundant on the railway banks, but odd specimens were taken in various other places; a remarkably fine and variable series was secured. The Russian Steppe form is usually what is known as var. *neera*, and the majority of my specimens come near to this form, but there are numerous aberrations from it. All the examples from Sarepta are much larger than those taken in Mid-Europe; my largest example, a female, expands 60 mm. as against 50 mm., the expanse of my largest Mid-European female. In var. *neera* the colour of the male is even more fiery than the type, the females also are very red, in one or two examples quite as red as the male. The only specimen seen at Novorossisk is a male, very typical in size and markings. *M. didyma* was first seen at Sarepta on May 21st, and it continued in good condition until the end of our stay.

M. trivia.—In the greatest abundance in clearings in the "Tschapurnik Wald," and not uncommon in all localities at Sarepta in which there was any wood. The specimens are mostly var. *fascelis*; some, however, are typical; the size of all is considerably in excess of those I have from Hungary, females ranging up to 50 mm. expanse. First seen on May 21st, when it was just commencing to emerge.

Brenthis dia.—Locally common at Novorossisk.

B. daphne.—Common locally in woods at Sarepta; the form is somewhat larger, and the orange-ground colour deeper than in Central European specimens; it comes very near var. *epidaphne*, Fröhs. A larva which got into my net accidentally at the "Tschapurnik Wald" proved to be this species. I fed it upon *Spiraea filipendula*, a common plant in the Sarepta woods; this larva pupated on June 1st, and the imago emerged on June 15th. The following is a short account I made of the larva in the last stage:—Down the centre of the dorsal area is a broad white stripe; the sub-dorsal area is pale lemon yellow, with longitudinal dark lines, the spiracles are black. The pupa is light brown, with two golden pointed excrescences on each segment, the venation of the wings shows dark through the pupal skin. The pupa suspended itself from the top of the cage in which it was kept.

B. euphrosyne.—I feel pretty certain I saw this species at Novorossisk, but could not secure a specimen to make sure. At Sarepta it was rare, and, so far as I know, confined to the "Tschapurnik Wald," and nearly over at the date our visit commenced; probably it had been common earlier in the season. The form is a very striking one, with very pale under sides, and the silver markings on the margin of the inferiors are brighter and more prominent than in the type; it approaches var. *orphanus*, Fröhs., from East Siberia.

Issoria lathonia.—Novorossisk and Sarepta, not common.

Argynnis niobe.—A remarkably fine race was abundant in all the woods at Sarepta from May 22nd onwards. This form has been described and figured by Seitz as var. *kuhlmanni*; it is larger and of a much brighter red on the upper surfaces, and more variegated on the under sides than Central European *A. niobe*; the predominant form of under side is var. *eris*, but some of the females have the

amount of silver spots that obtain in the type, and some have only the outer row of spots on the hind wings silver.

Melanargia galatea.—A rather large form of var. *procida* became common in clearings in the "Tschapurnik Wald" during the last few days of our stay at Sarepta. It was first seen on June 16th; by June 20th males were common, and two days later, my last day, I took two females.

M. iapygia var. *suwarovius*.—This fine *Melanargia* was to be found wherever grass grew abundantly amongst the usual plants of the steppe on the hills at Sarepta; but this was not by any means everywhere, for the butterfly was very local. We were on the lookout for it during the first days of June, but did not actually see it until the 9th of that month. On the morning of that day I was searching the grassy hills some three or four miles to the north-west of Sarepta; about 9 a.m. I saw a large white butterfly flying some distance away, which at first I thought was *Aporia crataegi*; as it approached nearer, the variegated pattern and the grey tint of the wings became apparent, stamping it as undoubtedly *M.* var. *suwarovius*. I made a series of frantic efforts to effect a capture, but without success, for this species when alarmed goes very fast, and as its flight is very dodgy, there is not much chance of succeeding under these conditions. I only secured one specimen on that day, although I spent most of the morning in quest of the species; later I found out its headquarters and habits, and on June 13th and 15th obtained all I required.

M. var. *suwarovius* at Sarepta is to be found freely amongst the flowers which grow in its haunts, flying quietly amongst and settling upon them. In the locality I have described, on the slope facing the Volga, there are at intervals small hollows with a certain amount of low scrubby bushes growing in them; in the spaces between these bushes there is a luxuriant growth of flowers, and these are the spots where this fine butterfly is at home. A small hollow would be the haunt of from half-a-dozen to a dozen specimens. The flowers frequented included a species of *Achillea*, various *Carduus*, and a brilliant purple *Salvia*.

Erebia afer.—This species was not uncommon at Novorossisk, but the specimens were mostly in bad condition at the date we were there; probably it had then been out quite a month. The butterflies were flying over flowery slopes on the mountains south of the harbour, and within half a mile of the sea. They extended as low as 1000 ft., and above this level were found all the way up to the summits, which might attain an altitude of 1800 ft. *E. afer* has the usual slow flight of the genus, but is not easy to capture in consequence of the difficulty in traversing the steep slopes it frequents.

Satyrus circe.—So far as we saw, this species was confined to the "Tschapurnik Wald," where it was first seen on June 11th; it was locally abundant in clearings in this wood, males only, which were rather small; my largest example is 76 mm. in expanse.

S. hermione.—An exceedingly striking and aberrant form occurred in the same localities as the last species on June 20th and 22nd, males only. In this form the light band on the upper side of all the

wings has dark shading to such an extent that the whole appears to be almost black. This form is described in Seitz as var. *tetrica*, Frühs.

S. anthe.—This fine Russian species was not by any means common; it frequented the tops and sides of dry hills a little to the south-east of Sarepta, and was very shy and difficult to approach; under these conditions I was only able to secure a very short series. First seen on June 14th.

(To be continued.)

THE EMERGENCE OF *CONCHYLIS GIGANTANA* (*ALTERNANA*).

BY THE REV. W. G. WHITTINGHAM, F.E.S.

Conchylis gigantana feeds and pupates in the flower-heads of *Centaurea scabiosa*. The heads which contain the pupæ are generally small and somewhat misshapen; rather swollen on one side, for example. They have, as a rule, no trace of florets, only the chaffy scales being perceptible. The heads are sometimes so small that it seems likely that the larva has done part of its feeding in another flower-head, and having exhausted the supply of food, has crawled out to a fresh one before pupating. This is borne out by the fact that occasionally larger heads, which look like flowering, contain them.

A number of heads were obtained in the latter part of July, the imagines emerging from July 22nd to August 26th. The emergence took place, as a rule, in the morning, between 8 a.m. and 10 a.m., though occasionally they appeared later in the day, especially when the weather was cool. Two or three appeared in the afternoon. The following are the dates recorded and the number of insects emerging on them:—July 18th (one taken in the open); July 22nd (one); 23rd (two); 24th (one); 25th (three); 26th (one); 27th (two); 28th (one); 29th (three); 30th (four); 31st (two); August 2nd (five); 3rd (two); 4th (three); 5th (one); 6th (one); 7th (one); 9th (one); 10th (one); 12th (one); 13th (one); 14th (two); 15th (one); 17th (one); 22nd (one); 26th (one).

The process of the emergence was observed in several instances. The first indication was the appearance of the head of the pupa among the scales at the opening of the flower-head. When it had been noted that the insects usually appeared about breakfast time, a careful inspection at about the right time was again and again rewarded by the sudden appearance of a glint of shining brown pupal skin at the mouth of one or another seed-head. In a succession of slow rotary movements, accompanied by a faint sound as the parts of the plant gave before them, the pupa worked its way forward till more than half of it

stood out, the wing-cases being clear. There was then a pause of ten or fifteen minutes; after which the movements recommenced, the pupa perhaps pausing after a few minutes for another five or ten minutes' rest. In the course of these movements a slight crack presently appeared down the centre of the thorax. After a brief pause the crack widened slightly, and a similar very slight crack became visible transversely behind the collar, through which cracks the lighter colour of the imago was seen. This was followed by an opening down the front of the wing-cases behind the antennæ, the openings previously occurring, widening at the same time. The head was next pushed forward carrying the face, masked with the portion of the pupa-case lying over it, and the antennæ were partly withdrawn. The palpi followed, then the fore legs were extracted and the antennæ completely withdrawn. The face-mask then fell off, larger portions of the wings appeared, and the hinder legs were withdrawn, the abdomen still remaining in the pupa. The later movements followed one another very quickly; and on a sudden the imago ran out (that is the only term that describes it) and away from the pupa and settled on the side of the seed-head. All the opening movements were accompanied by a slight rotary motion, and some contraction and expansion of the rings of the abdomen, the final extrication being helped by pressure of the legs. The expansion of the wings was rapid, taking in some instances no more than from fifteen to twenty minutes. In all the cases observed the wings had been raised over the back and dropped to the sides fully expanded in from three-quarters of an hour to an hour and a half from the first appearance of the pupa at the opening of the seed-head.

Knight's Vicarage, Leicester.

NOTES AND OBSERVATIONS.

ACRONYCTA STRIGOSA IN WICKEN FEN.—The notes by Dr. Chapman and Mr. Robinson in recent numbers of 'The Entomologist' concerning *A. strigosa* are interesting. Like Mr. Robinson, I never heard of *strigosa* being taken actually *in* the Fen, although I have been told that it used to be taken not far off, together with *atriplicis* and *ocularis*. I have beaten the larvæ once from hawthorn along a certain dyke which terminates at a small village not far from Wicken, and the late Rev. Bailey used to beat it from hawthorn the Soham side of Wicken village. In the old "dyke" locality a number of the hawthorns are very old, and most of them have decaying stumps attached, where, no doubt, *strigosa* would find suitable material in which to pupate; but does—or perhaps one should now say *did*—the larva of *strigosa* invariably enter rotten wood to pupate? I had several larvæ of *Jochæra alni* this year, and I was always under the impression that they failed to pupate if they

were not supplied with rotten wood. Three out of seven larvæ spun up quite comfortably in withered hawthorn leaves, disregarding the material I had provided, and, further, all three pupated successfully. It is possible that *strigosa* may have done the same when unable to make use of rotten wood.—G. BERTRAM RENSHAW, F.E.S.; West Wickham, Kent, September 30th, 1914.

WICKEN FEN.—Anyone interested in the Fen should write to Mr. A. H. Evans, 9, Harvey Road, Cambridge, the Local Secretary of the National Trust, who is taking a great interest in the welfare of the Fen, and who, I feel sure, would be only too glad of suggestions on his return from Australia. My advice to him, as the Fen is now too overgrown, was to leave bands of the older growth across the Fen and to cut strips of, say, eight acres cleared of bushes, these to be cut every fourth year in rotation. This would provide good shelter, and at the same time give the flowers a chance of appearing again. Of course, there are many spots where special insects seem to be confined to a small area, these he has kindly consented to leave untouched. As regards the notes on *A. strigosa* in your last numbers, it certainly used to be taken in the Fen and in the lane, the latter probably is its habitat, as there are few thorn bushes in the Fen. I may add that it pupates freely in old reeds, if rotten wood is scarce. It is, I think, an interesting fact that *S. straminea* and *S. maritima* have appeared within recent years, and *B. argentula*, introduced by S. Bailey, is abundant, so we may still hope other species may appear from the preservation of the Fen.—E. B. NEVINSON; Morland, Cobham, September 5th.

A NOTE ON *ACRONYCTA STRIGOSA*.—Dr. Chapman's appeal for the preservation of all vegetation suited to *Acronycta strigosa* at Wicken Fen will doubtless be followed by further notes on the subject from those who are well acquainted with the habitat of this insect in South Cambridgeshire. While the subject is under discussion it may also be of interest to bring together the few records of *strigosa* from a district in North Cambridgeshire, since it appears that there is some misapprehension as to the type of country inhabited by the species. The district to which I refer may be roughly described as that surrounding the town of Chatteris, which is about twenty miles north-west of Wicken, close to the Huntingdonshire border of the Isle of Ely. The first specimen from this locality was taken on July 10th, 1876, by Mr. A. H. Ruston, who caught it flying at dusk along a hedge close to the town on land which is not, and never has been, of a marshy nature. It may also be of interest to record that within a few hundred yards of Mr. Ruston's locality my father formerly took *Hadena atriplicis*, a species which now seems to have practically disappeared. From 1876 to 1903 there are no records of *strigosa* at Chatteris, but in 1904 I took a single specimen at sugar early in July in a locality about five miles from the town. This locality is practically on the county boundary, and also is not of a marshy nature. The only other species of interest which occurred there was *Agrotis ravidata*, which was then quite common, but subsequently became very scarce. In 1905 I again found *A. strigosa*, obtaining two larvæ by beating towards the end of

August. These larvæ occurred on blackthorn in a very old hedge in Huntingdonshire, about two miles from the locality of the 1904 specimen. The country round is typical of the greater portion of the county, and has little in common with fenland. Species found there are *Zygæna filipendulæ*, *Procris statices*, *Cymatophora octogesima*, *Xylophasia sublustris*, *Tæniocampa opima*, *T. populeti*, and once a single specimen of *Dicycla oo*.

The following year, 1906, early in July, I also met with *strigosa*, but in a fresh locality, some four miles to the north-east of Chatteris, and therefore well in the county of Cambridge. This specimen was on a sugared bramble flower, and the circumstances of the capture are firmly fixed in my memory as the insect fell from the flower into the middle of the bramble clump, which had to be cut away piecemeal before the moth was found under a dead leaf at the bottom. In 1907 the same locality produced a further specimen, a female from which I tried in vain to obtain eggs. The locality of these last two captures differs from those previously mentioned in being of a distinctly "fenny" nature, for in it occur *Leucania obsoleta*, *L. straminea*, *Senta ulvæ*, and *Cænobia rufa*. There are, however, numerous old hawthorn bushes which doubtless form the food-plant of the *Acronycta*. Since 1907, owing to absence abroad and for other reasons, I have had no opportunities of observing *strigosa*, but I have little doubt that a systematic search for either the imago or larva would be successful. From the comparatively large area over which my captures were made, and from the fact that I never specially sought the insect, I am inclined to think that it is widely distributed and not very scarce in this section of the county. It appears, however, to be a survivor of an ancient fauna inhabiting the islands in fenland and its borders, rather than a native of the true marshes. Among the latter Wicken Fen must be included, and there is, therefore, no reason to fear that the position of the species in this country will be prejudiced in any way by the clearing of small patches of scrub within the boundaries of the fen itself.—J. C. F. FRYER, M.A., F.E.S.

FORFICULA GIGANTEA.—While staying at Southbourne, near Bournemouth, recently, I was fortunate enough to find a female *Forficula gigantea* under stones at the foot of the cliffs. Although I spent the afternoon searching, this was the only specimen seen.—R. D. GOOD; 48, High West Street, Dorchester, Dorset, October 8th, 1914.

NEMEOBIUS LUCINA EMERGING IN OCTOBER.—A female of this species emerged to-day bred from ova collected at Oxford at the end of May. There has been no artificial heat in the room where the pupæ were kept. I see it is stated in 'Butterflies of the British Isles' that this butterfly occasionally emerges in August and I have looked at my breeding-cage and cannot find any others. It was lucky that I was at home on leave from my camp.—F. W. J. JACKSON; Woodcote End House, Epsom, October 18th, 1914.

COLIAS EDUSA IN DORSETSHIRE.—During September I twice noticed *C. edusa* flying in the neighbourhood of this town.—R. D. GOOD; 48, High West Street, Dorchester.

OCCURRENCE OF *VANESSA ANTIOPA* IN 1914.—The capture of three specimens of *Vanessa antiopa* has been recorded in the 'Field' during the past autumn, from Norfolk, Surrey and Sussex, as follows:—One at Worthing on August 17th reported by Mr. H. Wells; one captured and another seen at Addlestone, Surrey, on August 18th, by Mr. J. H. Milne; one captured on September 24th at Scole, Norfolk, by the Rev. Wilson W. White; the specimen had been seen for several days previously feeding on apples partly eaten by wasps.—F. W. FROHAWK.

PAPILIO MACHAON IN KENT.—It may be of interest to note that I saw a specimen of *Papilio machaon* in a cottage garden at Hook Green, about three miles from Frant Station, on August 29th.—E. D. MORGAN; 24, Queen's Road, Tunbridge Wells, Kent, September 24th, 1914.

ENTOMOLOGICAL JOTTINGS FROM CHICHESTER.—One prominent feature of the season here has been the abundance during September of *Pyrameis cardui*. They were to be seen flying in divers places, gardens amongst others. The first brood of *Cyaniris argiolus* appeared in the last week of April, the second in August. A few *Colias edusa* were noticed in the middle of August, all the insects observed being males. Several larvæ of *Manduca atropos* were found in potatoes, the first on July 30. A fine female emerged on September 25. For one or two days before doing so the pupa frequently squeaked, as also did the imago.—JOSEPH ANDERSON.

OCCURRENCE OF *PHASGONURA VIRIDISSIMA* NEAR FELIXSTOWE.—On September 22nd a large green grasshopper was brought to me alive, having been captured in a meadow near Felixstowe, in Suffolk, two days previously. Mr. W. J. Lucas has very kindly identified it as a female of *Phasgonura viridissima*, and writes me that "it is fairly common in places."—GERARD H. GURNEY; Keswick Hall, Norfolk.

ABUNDANCE OF MIDDLESEX LEPIDOPTERA IN 1914.—To the extraordinary scarceness of almost all our commoner species of butterflies last year the season now passed has afforded a welcome contrast. Here in Middlesex the three "Whites" and *Euchloë cardamines* were plentiful in May; and from April 20th onwards *Celastrina argiolus* occurred in quite unusual numbers in our garden, the second brood being already on the wane when I returned from France the first week in August. This little Blue has now completely established itself, and I find it scattered broadcast throughout the many suburban villa gardens which have sprung up of late years in the parish of Pinner. Other butterflies appearing in some profusion have been *Pyrameis atalanta* and *P. cardui*. The latter is a very rare visitor with us, and it is many years since I observed even a stray migrant in the spring. There must have been a numerous emergence in North Middlesex this year of the offspring of these most desirable aliens. Throughout September they haunted the zinnias and michaelmas daisies in company with their congener and *Chrysophanus phlæas*, of which I noticed several of the *cæruleopunctata* form. At about the same time Heterocera were

plentiful at light, the most common species being *Anchocelis lunosa*, which some evenings positively swarmed, and rarer *Polia flavicincta* and *Eumichtis protea*. The latter insect I do not remember to have observed before in this part of the county. There is an exquisitely faithful figure of it in M. J. Culot's 'Noctuelles d'Europe,' in my opinion by far the most accurate work of the kind ever attempted, and in every way worthy of the artist who has designed for so many years the plates of M. Charles Oberthür's beautiful 'Lépidoptérologie Comparée.' — H. ROWLAND-BROWN; Harrow Weald, Middlesex.

MOTHS CAPTURED BY LIGHT-TRAP (continued from p. 254):—

AUGUST.—*Leucania couigera*. 1st (one).—*L. lithargyria*. 1st (one).—*Apamea secalis*. 1st (one); 11th (one); 12th (one); 13th (one)=4.—*Hydræcia nictitans*. 1st (three); 12th (two); 13th (one); 16th (two); 17th (two); 18th (two); 19th (three); 20th (two); 21st (one); 23rd (one)=19.—*Selenia bilunaria*. 1st (one).—*Noctua plecta*. 1st (one); 12th (one)=2.—*Mesoleuca ocellata*. 1st (two); 13th (two); 19th (one); 20th (one); 24th (one)=7.—*Coremia ferrugata*. 1st (three); 2nd (one); 11th (one); 12th (two); 19th (one); 20th (two)=10.—*Plusia gamma*. 1st (one); 11th (one); 20th (one); 25th (one); 29th (one); 30th (one)=6.—*Cerigo matura*. 1st (one); 18th (one)=2.—*Anaitis plagiata*. 1st (one); 12th (one); 13th (one); 15th (one); 16th (one); 19th (four); 20th (three); 24th (three); 31st (one)=16.—*Agrotis puta*. 10th (one); 18th (two); 19th (one); 21st (one)=5.—*Triphana pronuba*. 10th (one); 11th (one); 12th (one); 13th (one); 14th (one); 15th (one); 20th (two); 21st (one); 23rd (two); 24th (one); 27th (one); 29th (one)=14.—*Eupithecia oblongata*. 11th (one); 12th (one); 13th (one); 14th (one); 19th (one); 20th (four); 24th (one)=10.—*Xanthorhoë fluctuata*. 12th (one); 17th (one); 19th (one); 24th (one); 27th (one)=5.—*Phlogophora meticulosa*. 13th (one); 27th (two)=3.—*Luperina testacea*. 13th (one); 15th (four); 16th (four); 17th (five); 18th (ten); 19th (ten); 20th (fifteen); 21st (nine); 22nd (seven); 23rd (two); 24th (seven); 25th (one); 26th (four); 27th (seven); 28th (six); 29th (five); 30th (nine); 31st (six)=112.—*Hydræcia micacea*. 13th (two); 14th (one); 20th (one); 24th (four); 29th (one); 31st (one)=10.—*Crocalis elingvaria*. 13th (one); 14th (one); 17th (one); 24th (one)=4.—*Noctua xanthographa*. 13th (one); 19th (one); 20th (three); 23rd (one); 28th (one); 29th (four); 30th (one)=12.—*Ortholitha bipunctaria*. 14th (one); 15th (one)=2.—*Xylophasia monoglypha*. 15th (one); 24th (one); 27th (one)=3.—*Noctua rubi*. 15th (two); 16th (three); 20th (two); 23rd (two); 24th (one); 28th (one); 31st (one)=12.—*Miana bicoloria*. 17th (one).—*Timandra amata*. 18th (one).—*Phibalapteryx vitalbata*. 18th (two); 21st (one)=3.—*Lomaspilis marginata*. 20th (one).—*Leucania pallens*. 20th (one); 31st (one)=2.—*Pterostoma palpina*. 20th (one).—*Ligdia adustata*. 20th (one).—*Noctua c-nigrum*. 21st (one).—*Opisthograptis luteolata*. 22nd (one); 24th (one); 28th (one); 30th (one)=4.—*Abrostola tripartita*. 23rd (one).—*Coremia designata*. 24th (one).—*Acidalia ornata*. 24th (one).—*Bryophila perla*. 24th (one).—*Amphipyra tragopogonis*. 24th (two).—*Tholera cespitis*. 24th (one); 25th (two); 27th (one);

28th (one); 29th (one)=6.—*Epineuronia popularis*. 27th (one); 28th (one)=2.—*Triphæna comes*. 27th (one).—*Ephyra linearia*. 28th (one).—*Cidaria truncata*. 29th (one).

SEPTEMBER.—*Luperina testacea*. 2nd (one); 3rd (one); 4th (two); 8th (one); 16th (one)=6.—*Tholeras cespitis*. 2nd (one); 5th (one)=2.—*Triphæna pronuba*. 2nd (one).—*Amphipyra tragopogonis*. 2nd (one).—*Xanthorhœ fluctuata*. 3rd (one).—*Caradrina morpheus*. 4th (one).—*Phlogophora meticulosa*. 7th (one); 23rd (one); 26th (one)=3.—*Noctua xanthographa*. 7th (one).—*Thera variata*. 8th (one); 26th (one)=2.—*Omphalocelis lunosa*. 13th (one); 16th (five); 18th (six); 20th (one); 21st (two); 22nd (two); 23rd (three); 24th (one); 25th (one)=22.—*Xanthia fulvago*. 15th (one); 24th (one)=2.—*Plusia gamma*. 16th (one); 18th (one); 21st (one); 26th (one); 27th (one)=5.—*Amathes lychnidis*. 18th (two); 20th (three); 21st (one); 22nd (four); 23rd (one); 24th (three); 25th (ten); 26th (thirty-one); 27th (eighteen); 28th (seven); 29th (eight)=88.—*Aporophyla nigra*. 18th (one).—*Ochria ochracea*. 18th (one).—*Leucania impura*. 18th (one).—*Hydræcia micacea*. 23rd (one).—*Xanthia lutea (flavago)*. 27th (one).—R. M. PRIDEAUX; Brasted Chart, Kent, June 16th, 1914.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*September 10th*.—Mr. B. H. Smith, B.Sc., President, in the chair.—Mr. Ashdown exhibited Lepidoptera taken by him in June and July at Lugano and Zermatt, including *Eneis ællo*, *Anthocharis simplonia*, *Aricia eumedon*, *Albulina pherestes*, *Syntomis phegea*, &c.—Mr. H. Main, larvæ of an *Acalaphus* just hatched, sitting with open jaws for prey.—Mr. Turner, *Agriades thetis* male with very dark under side and a male *Polyommatus icarus* with much intensified submarginal dark spots on the under side.—Mr. Edwards, exotic butterflies from S. America.—Mr. B. S. Williams, a black suffused *Mamestra brassicæ*, and one with pale ground and aberrant stigmata.—Mr. Curwen, species of *Anthrocera* taken by him recently and suggested a future discussion on the genus.

September 24th.—Mr. B. H. Smith, B.Sc., President, in the chair.—Exhibition of lantern slides by Messrs. B. S. Williams and Dennis.—Mr. Newman, bred series of *Pieris napi* from Cork and Sligo, with yellow suffused and black suffused aberrations, one of the latter having a complete transverse black band on fore wings.—Mr. Brooks, varied series of *Polyommatus icarus* females from Horsley, Headley and Pickett's Hole.—Reports were made on the occurrence of *C. edusa*, *P. atalanta*, *P. cardui*, &c. Only stray specimens had been seen of *C. edusa*, while the other two species were common.—HY. J. TURNER, *Hon. Report. Sec.*

OBITUARY.—With very great regret we have to announce the death of Mr. WILLIAM WARREN, M.A., F.E.S., which occurred on October 18th last, after a short but painful illness. A further notice will appear in our next issue.

RECENT LITERATURE.

Études de Lépidoptérologie Comparée. Fasc. ix. 1^{re} et 2^e Parties.
Rennes. 1914.

THE last two published parts of M. Charles Oberthür's magnificent series of lepidopterological studies were published before the war broke out. Turning over the pages, and looking upon the plates by which they are illustrated, we may venture to hope that the Imprimerie Oberthür may find it possible to continue the work which for the past seven years has added so much to our knowledge of the lepidoptera of the world in general, and of France and Algeria in particular. For the author has opened his pages to various nationalities, having once intimated to the writer of this notice that he wished his own studies to be supplemented and enlarged by the observations of lepidopterists of all nations in the Old World and the New alike. These two parts, indeed, are chiefly concerned with the nearctic fauna, and in response to the request of American entomologists for an accurate account and determination of Boisduval's types, we are the richer by some fifty exquisitely coloured plates of North American butterflies designed from the originals, and hand-painted by M. J. Culot, of Geneva, whose work is familiar to students of the western palæarctic butterflies and moths. M. Oberthür, therefore, may also be congratulated upon having secured the assistance of that *rara avis*, an entomologist who is a first-rate artist, and an artist who is a first-rate entomologist. Part 2 further contains a *résumé* by Dr. Standfuss, of Zurich, of his breeding experiments with *Aglais tau*, L., and, by the same author, a deeply interesting notice of morphological and physiological research in connection with two races of Spingid hybrids. British entomologists, to whom their names are household words, will also survey with pleasure the portraits of the several French, German, Swiss, and British authorities included in the "first series" of a gallery ending happily with a photograph of M. Oberthür himself—apparently the only one in existence. At their head is the renowned Dr. Boisduval, whose genial features smile out upon us from the past with convincing sincerity; then comes Dr. Gottlieb Herrich-Schaeffer and the eccentric Dr. Rambur, the discoverer of the process by which to-day we differentiate by the microscopic examination of the male appendages otherwise indistinguishable species; as, for example, many of the Hesperiidæ. British science of the old school is represented by the late Frederick Moore, D.Sc.; the new school of Swiss lepidopterists, if we may be permitted the term, by a characteristic picture of Dr. Jacques Louis Reverdin, successful follower in the special field already indicated by Rambur. These volumes are not, we believe, available for purchase, but M. Oberthür has presented copies to the Natural History Museum and to the Entomological Society of London, as well as to one or two privileged English friends. In the libraries of the institutions mentioned they are open to the use and inspection of investigators and collectors, who will gladly acknowledge their deep debt of gratitude to the generous donor.



T. A. Chapman photo.

AT LE LAUTERET. A HAUNT OF *P. THERSITES*.

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[No. 619

SOME TASMANIAN BEES.

By T. D. A. COCKERELL.

I GIVE a list of the bees recently collected in Tasmania by Mr. F. M. Littler, and kindly forwarded to me by Mr. Walter W. Froggatt. Other specimens, with the same numbers, have been retained in Australia.

Paracolletes marginatus. Smith, 245 c (2331) and 244 c (2332). The scape is black in both sexes; in males from Victoria it is red. Bridport, Oct. 26th–30th, 1913.

Paracolletes launcestonensis, n. sp.

236 c. Launceston, Jan. 25th, 1914.

♀. Length about 8 mm.; head, thorax and legs black, the small joints of tarsi reddish; abdomen very dark greenish, the hind margins of first two segments appearing narrowly ferruginous, but at least at sides of first segment the colour is actually on extreme base of the one following; tegulæ and extreme base of anterior wings bright apricot colour; wings fuliginous, darkest in the costo-apical region; stigma large, black, nervures dark fuscous; flagellum wholly dark. Pubescence scanty; sides of face and cheeks with thin white hair; hair of vertex erect, pale, slightly brownish; clypeus shining, sparsely punctured; supraclypeal area duller, elevated, not punctured; front with a dull sericeous surface; anterior corners of mesothorax with a little pale ochreous hair (slight approach to condition of *humerosus* and *irroratus*); tubercles densely fringed with white hair; sides of metathorax with long white hair; mesothorax dullish, with sparse feeble punctures; postscutellum dull and rough, contrasting with the shining scutellum; area of metathorax large, bounded by an impressed line which is gently curved outward and is not beaded; scopæ of hind tibiæ white, dark fuscous above basally; b. n. meeting t. m.; first r. n. joining second s. m. a little beyond middle, second joining third s. m. at apical corner; hair at apex of abdomen fuscous, not very abundant; under side of abdomen with curled white hairs. By the dark wings, this resembles *P. obscuripennis*, Ckll., but is easily separated by the tegulæ, metathorax, &c.

Callomelitta littleri, n. sp.

242 c (2324). Launceston, Jan. 25th, 1914.

♀. Length about 9 mm.; anterior wing 7.5. Similar to *C. picta*, Sm., but smaller; mesothorax, tubercles and axillæ terracotta red,

but pleura entirely black; tegulae bright apricot colour; anterior femora and tibiae bright red, but their tarsi dark; abdomen black, wholly without blue tints; wings very dark; area of metathorax with coarse ridges.

Prosopis perhumilis, Ckll., var. *a*.

240 *c* (2333). Bridport, Oct. 26th–30th, 1913. Two.

♂. Length about $4\frac{1}{2}$ mm.; supraclypeal mark very small; at least half of hind basitarsi light.

Parasphcodes rhodopterus, n. sp.

243 *c* (2325). Launceston, Jan. 18th, 1914.

♀. Length about 8 mm.; rather robust; head, thorax, legs and antennae black, the last joint of flagellum very faintly reddish; tegulae rufotestaceous, dark at base; wings very strongly reddened, stigma and nervures dull red; abdomen chestnut-red, not very bright, first segment with a large black spot on basal middle, and a transverse very broad-triangular discal mark, segments beyond the third suffused with blackish. Clypeus with strong punctures; mesothorax and scutellum extremely densely and finely punctured; area of metathorax semilunar, with rather fine regular longitudinal ridges; posterior truncation without prominent upper corners; first r. n. joining the rather narrow second s. m. at apex; outer r. n. and t. c. thin but dark; hair on inner side of middle tarsi bright orange-ferruginous, but on inner side of hind tarsi paler; outer side of hind tibiae and basitarsi with fuscous hair; first two abdominal segments dull, with extremely fine punctures all over; third shining, with scattered irregular very fine punctures; third segment and beyond with fuscous hair, only clearly seen in side view.

Allied to *P. taluchis*, Sm., but flagellum and legs black.

Parasphcodes rufotegularis, n. sp.

235 *c* (2556). Launceston, Jan. 25th, 1914.

♂. Length 8.5 mm.; black, with the broad apical margin of first abdominal segment (extending basad at sides), and the second and third segments entirely, very bright ferruginous; labrum, mandibles and about apical half of clypeus (with an angular median projection into the black) light yellow; antennae very long, black; tegulae bright ferruginous; wings slightly dusky, nervures and stigma fuscous; knees, anterior tibiae (except a blackish mark on outer side), middle tibiae at apex, and all the tarsi, ferruginous. Head and thorax with greyish white hair; front dull; mesothorax and scutellum very finely punctured, the scutellum and posterior part of mesothorax shining; area of metathorax rather large, semilunar, glistening, with quite irregular rugae producing a subreticulate effect; first r. n. meeting second t. c.; abdomen with very fine punctures. This is too different from the last to be its male, the metathorax especially being quite different. There is some resemblance to *P. stuchila*, Sm., but that has the area of metathorax rugose-granular, and the tibiae ferruginous.

Halictus cognatus, Smith. 237 c (2323). Male. Launceston, Jan. 25th, 1914.

H. lanarius, Smith. 239 c (2335). Female. Devonport, Nov. 2nd-5th, 1913.

Halictus hæmatopus, n. sp. 238 c (2326). Launceston.

♂. Length about 6 mm.; black, with the tibiæ, tarsi and apical part of femora bright ferruginous, the middle tibiæ with a faint dusky stripe on outer side; labrum and mandibles dark, but clypeus with a broad pale yellow band, with an angular projection into the black above; antennæ black, the flagellum very long and crenulate; abdomen broad, finely punctured, without hair-bands or patches. Looks at first sight exactly like *H. sanguinipes*, Ckll., from Victoria, but differs as follows: abdomen comparatively broad at base, not claviform; tegulæ light orange-ferruginous; apical field of wings dusky. It is even closer to *H. bicingulatus*, Sm., differing by the wholly black flagellum, the large amount of black on femora, the longer stigma and the shining, more distinctly punctured abdomen. It could be regarded as an insular subspecies of *H. bicingulatus*. My male *bicingulatus* is from Brisbane; it is possible that specimens from the coast opposite Tasmania would more nearly approximate to the Tasmanian bee.

Halictus littleri, n. sp. 231 c. Launceston.

♀. Length about 8.5 mm.; black, including antennæ and tarsi; bands of greyish-white tomentum at bases of abdominal segments, reduced to a patch on each side of second; mesothorax very coarsely punctured; area of metathorax large, concave, finely striate; tegulæ piceous; wings dusky, second s. m. very large and broad. Close to *H. circumdatus*, Ckll., from Victoria, but differing thus: clypeus rough, more closely punctured, less shining; vertex and mesothorax with conspicuous black hair; middle of mesothorax more densely punctured; tegulæ much darker; wings greyer, not at all yellowish, with darker nervures; area of metathorax much duller, the striæ less regular; outer side of hind tibiæ with much black hair. The second abdominal segment is finely punctured, except the broad apical part, which is minutely lineolate, with only scattered rudimentary punctures; a useful character to separate the species from *H. gilesi*, Ckll., and *H. asperithorax*, Ckll. The front is microscopically grooved, the grooves crossed at intervals by ridges.

Nomia submærens, n. sp.

246 c (2334). Bridport, Oct. 26th-30th, 1913.

♀. Like *N. mærens*, Sm., but metathorax different, the transverse cross-striated channel much narrower in middle, its lower margin straight except at sides, where it rather abruptly bends upwards; wings shorter, nervures darker; tegulæ anteriorly with a pale marginal spot. This could be regarded as an insular subspecies of *N. mærens*.

Exoneura hamulata, Ckll., var. *a*.
234 c. Launceston, Jan. 25th, 1914.

♀. With the broad face of *E. hamulata*; clypeal mark evanescent, all but the upper part dark reddish; wings strongly reddened, stigma clear amber; hair on outer side of hind tibiæ ferruginous. If the characters are constant, this will deserve a subspecific name. A specimen from Victoria has equally red wings.

I gave a list of Tasmanian bees in Proc. Linn. Soc. N. S. Wales, xxxvii., p. 599. Since that time the list has been considerably increased, so that with the present contribution it includes *Prosopis*, seven species; *Binghamiella*, one; *Euryglossa*, three; *Paracolletes*, ten; *Callomelitta*, two; *Halictus*, sixteen; *Parasphcodes*, thirteen; *Nomia*, one; *Megachile*, three; *Exoneura*, three. This is in striking contrast to the very poor bee-fauna of New Zealand; but while it seems certain that New Zealand cannot produce nearly as many bees as Tasmania, it remains probable that careful collecting would considerably augment the present short list. The large proportion of new forms collected by Mr. Littler shows that the Tasmanian bee-fauna is still quite insufficiently known.

THREE WEEKS IN DAUPHINY.

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

(PLATE VII.)

(Concluded from p. 286.)

(ii.) *Le Lauteret.*

For three whole days, from July 21st to the 23rd, it continued to rain or snow upon the Col de Lauteret (6950 ft.), with scarcely an hour's intermission, by which time the lower valley of Oisans was under water, and half the country round Grenoble as well. The weather changed suddenly on the 24th, with a rude north wind, and though the skies above were clear, and the sun shone brightly, it was bitterly cold. Not until then was I able to collect, choosing the road up to the Col de Galibier as less exposed to the weather. The flowers, which at all events had suffered little from the severe drenching, were even more magnificent than at La Grave; and, at what seems a surprisingly late date for them, the white narcissus, *N. poeticus* var. *radiflorus*, was still in its first pride, together with the large white Anemone, *Anemone alpina*, and the handsome lofty *Orobis luteus*, which when going out of flower becomes deep orange. *A. simplonia* was now almost common. In the grass and herbage *Erebia pharte* again turned up in swarms, with tiny *E. ceto*, rare *E. epiphron* var. *cassiope*, and

rarer *E. melampus*. The late Mr. Tutt made interesting suggestions upon the specific identity of *E. pharte* and *E. melampus*, based to some extent upon the difficulty of separating the females. His remarks were published anterior to the systematic examination of the male appendages by later authorities, and though, as he says, the females of the two species are sometimes identically marked and even fly together, my experience here—and more markedly elsewhere in the Central Alps, and especially in the Tyrol—is that *pharte* is almost always *passé*, if not actually over, before *melampus* puts in an appearance.

But it seems probable that here, at all events, there is a tendency among what may be presumed the weaker species to associate with and mimic the strongest, viz. *Erebia pharte*, which at La Grave also is far and away the commonest of the small *Erebias*. Dr. Chapman, as stated (Proc. Ent. Soc. 1913, cxvii.-cix.), suspects a mimetic association at Le Lauteret; or in the alternative that climatic conditions may be responsible for this curious approximation of the three species to *pharte*. I did not take *pharte* last year at Larche; but there, too, *ceto* was of this diminutive Dauphiny form, and it flew apparently, for I was too late for the main emergence, over the ground where earlier I should have expected to meet with *pharte*, and did find *epiphron* and *melampus*. I see that Dr. Chapman hesitates to include *epiphron* in this association for want of material upon which to base his conclusions. But though rarer decidedly than the others, I find on looking through my captures that I also took the familiar "Mountain Ringlet" without realising its specific identity. Lastly, I may supplement these observations to add that the long series of *pharte* from La Grave and Le Lauteret differ *inter se*. The females are quite as brilliant in the depth of the orange fascia as examples from Brenner and the Tre Croce, Cortina. The rusty markings on the upper side of the male fore wings vary from a single small spot, towards the apical angle, to well-defined series of blotches, constituting a more or less continuous band. Of the *epiphron*, some are much nearer type than var. *cassiope*. The furious wind which never ceased to blow even when it was fine at Le Lauteret made expeditions hopeless to the higher mountains in search of butterflies. A friend who struggled up the Grand Galibier informed me that near the summit on the rocks he had seen some "all-black" butterflies battling with the tempest—and these no doubt would be *Erebia alecto*, this being the actual spot whence Boisduval, more than half a century ago, received his first (?) French examples.

Among the small fry on the Galibier route *P. eros* was the commonest of the "Blues," with *P. pheretes* males much injured by the buffeting of the past few days. Again I saw no *P. icarus*, but *P. thersites* afforded males, and a few lovely blue

females, the majority of which latter unfortunately fell victims to the *mobilisation générale*. *P. orbitulus* was hardly out. *H. alveus* and *H. serratulæ* were fairly common; *H. carlinæ* were represented by individual males.

On the 26th in the afternoon, after two sunny days, I did not see a single butterfly. At about 8000 ft. it was sleeting miserably. The day before, encouraged by a clear blue sky, and the apparent distance of the mountains dazzling with new fallen snow, I trudged off to the Club Alpine (6955 ft.) on the Lauteret side of the Col d'Arsine. The path leads up parallel for some distance with the road to La Grave through pastures of peerless beauty, knee-deep in columbines, campanulas, and white anemones, reminiscent of MacWhirter's masterpiece in the Tate Gallery, "June in the Austrian Tyrol." A fine butterfly ground in calmer weather; but, alas! to-day the wind shrilled higher than ever, effectually keeping everything level with the herbage. Out of the wind in a deep gully turning up the last of the valley of the Romanche I watched *Parnassius delius* flying over the saxifrage, and every now and again the favoured yellow crucifer would be visited by *A. simplonia*. Once over the brim of the hill they disappeared before the wind like magic. A secluded meadow near at hand afforded covert to a rather faded race of *Melitæa aurinia* var. *merope*; and here *P. argus*, *C. hippothoë* var. *eurybia*, and *P. hylas* were flitting with *Cenonympha iphis*, *P. medon*, and the usual host of small Erebias. But once beyond this shelter and on to the Refuge Hut there was nothing except an occasional *Argynnis niobe*, and swarms of *Anthrocera exulans*. Careful search for *H. andromedæ* was unrewarded, but I have little doubt than in less boisterous weather I should have repeated the successes of La Grave. Near the Hut there is an abundance of *Dryas octopetala*. On the 28th, despairing of an improvement, I left reluctantly for Monétier-les-Bains, where I found comfortable quarters and homely comforts with many agreeable French visitors at the Hotel de l'Europe, kept by M. Izoard, a famous Dauphiny guide of his day, and a veteran of "Soixante-dix."

(iii.) *Monétier-les-Bains.*

As I walked down, back to the wind, from Le Lauteret on another day, blustering and cold as March, visions of *Erebia scipio* at warmer Monétier rose before my eyes. A single specimen on the Col de Larche last year—the sum total of five separate years' hunt—had scarcely satisfied my appetite for the chase. Dr. Reverdin had informed me of its existence in quantities at Monétier; Mrs. Nicholl, that indefatigable pioneer of British collectors in Spain, in Bosnia, in the Balkans, and in Dauphiny, had advised me of its presence at Vallouise, no great distance away as the crow flies. When just a quarter of an

hour outside the village I saw a greyish-looking *erebia* tumbled over and over in the dust by the sweeping wind, my hopes were raised proportionately. The wind caught my hat and carried it well on towards Monétier, but I had the butterfly in my net and it was, as I expected, a female *E. scipio*, yet so much the worse for the escapade that I let her go at once. Then I made a valiant attempt to swarm to the little plateau whence possibly she had descended, and where I spotted two or three male *Erebias* disporting themselves. I could not get near them, so wild were they; and I never saw the species again, though three times I returned under less adverse circumstances. *Scipio*, therefore, remains on my list of *desiderata*, and, with all the world at war, I wonder whether I shall ever supplement in my cabinet the Digne examples kindly given me by M. Oberthür with those of my own capture.

The village of Monétier lies at the south end of a bleak open valley extending almost the whole way from Pont de l'Alpe—looked at from above, a grey-brown wilderness of dusty fields, the detritus of the Guisane, which river, it would seem, habitually inundates the surrounding country when the snows of Le Lauteret melt. But if the main valley is unpromising from an entomological point of view, the lateral valleys opening up consecutively on either side, but principally on the right bank, suggest fat bags for those who do not mind a certain amount of rough-and-tumble walking *en route*, made more laborious this season by the frequent rain rupture of the pathways. The tempestuous weather had also left its mark on the butterflies hereabouts. At all events, species reported as common by Mr. Tetley were hardly to be seen at all; and even where the mountain pastures were smiling with flowers and lush-green grass, I did not find that abundance of common things which is a feature of most Alpine pleasaunces. The four days of my collecting were divided between the hills and mountains on either side of Monétier. Those to the east were most productive at the lower levels; but very little was to be seen above the tree-line, and it was in the openings of the fir woods here that I first found *Anthrocerids* really plentiful, *A. achilleæ* sharing claim with *A. transalpina* and *A. loniceræ* to be commonest of their genus. The *A. carniolica* from this locality are characteristic—small in size, the spots without marginal decoration, and the colour rather pale crimson. I boxed no more than a single specimen of *A. fausta* this year, on the Lauteret road.

Where the *Burnets* were most plentiful they shared the flower heads of scabious and yellow hawkweeds with clouds of *Adopæa lineola*, *P. corydon*, *P. hylas*, and occasional *P. thersites*. *Brenthis ino* was also in great force, with a small race of *M. phæbe*. *Papilio machaon* and some *Aporia crategi*, *P. apollo*, and *C. phicomone* were fairly well represented. The *Erebias*

seen here were *E. stygne* and *E. euryale*, both *passés*; the Hesperiid *P. sao*, *H. alveus*, and, among the very few things flying on the close-grazed, wind-swept clayey tops, *H. carlinæ*. I can recall no Satyrids of the larger kind on the wing except *S. cordulea*; and this was infrequent except on the hot hillside, where I had sought *Erebia scipio* in vain. *Chrysophanus virgaureæ*, too, was not as common as usual; the females taken are intermediate in colour between the type and var. *zermattenis*. This pathway winds up to one of the well sources from which Monétier draws its thermal waters. The forester's hut marks a convenient centre for the chase, and had not the Fates ruled otherwise, I should have extended my explorations considerably in this direction.

It is a curious fact that until I wended my way towards the Col d'Arsine on July 29th I had not observed a single Theclid in France this year. The few *T. ilicis* left on the *Millefolium* had seen their last days, and it was the same with most other species on the wing—very difficult to secure good specimens. In the lower forest *B. amathusia*, *B. ino*, and *Limenitis camilla* occurred, the first-mentioned commonly; but it was disappointing to plod miles under the burning sun and find so few species besides on the wing. Even *Argynnis niobe* was rare, *A. aglaia* more so; and at the higher levels towards the summit of the Col (7874 ft.), on the steep slopes above the little Lac d'Arsine, there were surprisingly few butterflies, though the day was perfect. Mr. Tetley had bid me look for *E. scipio* here; I saw none—only *E. stygne*—and compared with the locality at Monétier it seemed a less likely spot and elevation for the species. *B. pales*, generally swarming, was represented by single individuals; *A. simplonia* rather common, but wild and wary. By the brooks *P. delius* floated temptingly, and I took one beautiful female. *E. tyndarus* and *E. lappona* were battered and broken; no sign of *H. andromedæ*, but again several exquisitely fresh *H. carlinæ* and imperfect *H. serratulæ*, all of which repeated themselves, only even more rarely, on the high valley below the Monétier Glacier, where I spent the last day of my holiday on the flowery slopes.

Sunday, August 2nd, 1914, is not likely to be forgotten by France for many years to come; it will remain indelibly fixed on my memory as long as I live. The long summer day waning to its close, a perfect peace brooding over the hills, made musical by the thousand bells of upland-pastured sheep. I had reached the hotel about 5 o'clock, and was making tea in my little bedroom when suddenly I heard the tocsin begin to ring. Thinking at once that there was a fire, I slipped on my boots again, and ran out into the little square just in time to hear the Mayor read out the fateful order for the general mobilisation of the French armies. A conflagration indeed! War! And by midnight

not an able-bodied man, not a horse, cart, or mule was left in Monétier. The tide of Destiny had swept even into this tiny haven of peace, and borne away silent and unprotesting—nay, I think, glad with a sober joy—the brave peasants who, for a second time in history, stand side by side with our people on the red battlefields of France and Belgium.

Butterflies observed at La Grave, Le Lauteret, and Monétier-les-Bains, July 11th–August 2nd, 1914 :—

HESPERIIDÆ.—*Carcharodus lavateræ* (one, La Grave), *C. althææ*; *Augiades sylvanus*, *A. comma*; *Adopæa lineola*; *Hesperia alveus*, *H. carlinæ*, *H. serratulæ*, *H. cacaliæ*, *H. andromedæ*, *H. malvoides*; *Pyrgus sao*.

LYCÆNIDÆ.—*Chrysophanus hippothoë* var. *eurybia*, *C. dorilis* var. *subalpina*, *C. virgaureæ*, *C. phlæas*; *Lycæna arion* (going over); *Nomiades semiargus*; *Cupido minimus*; *Polyommatus eumedon*, *P. donzellii* (one, La Grave), *P. damon*, *P. corydon*, *P. hylas*, *P. escheri*, *P. thersites*, *P. icarus*, *P. eros*, *P. orbitulus*, *P. medon*, *P. pheretes*; *Plebeius argus*; *Thecla ilicis* (Monétier). (Included in Dr. Chapman's list, but not met with by me, *Cupido sebrus*.)

PAPILIONIDÆ.—*Papilio machaon*, *P. podalirius* (near Bourg d'Oisans, July 11th); *Parnassius apollo*, *P. delius*.

PIERIDÆ.—*Aporia crategi*; *Pieris brassicæ*, *P. rapæ*, *P. napi* var. *bryoniæ*; *Pontia callidice*; *Anthocharis simplonia*; *Euchloë cardamines*; *Leptosia sinapis*; *Colias phicomone*, *C. hyale*, *C. edusa*; *Gonepteryx rhamni*.

NYMPHALIDÆ.—*Argynnis aglaia*, *A. niobe*, and var. *eris*; *Issoria lathonia*; *Brenthis euphrosyne*, *B. ino*, *B. amathusia* (Monétier), *B. dia*, *B. pales*; *Melitæa aurinia* var. *merope*, *M. phæbe*, *M. didyma*, *M. varia*, *M. athalia*, *M. dictynna*; *Pyrameis cardui*, *P. atalanta*; *Aglais urticæ*; *Limenitis camilla* (Monétier).

SATYRIDÆ.—*Pararge mæra*, *P. megæra*; *Epinephele jurtina*, *E. lycaon* (Monétier); *Cænonympha iphis*, *C. satyrion*, *C. panphilus*; *Erebia epiphron* var. *cassiope*, *E. melampus*, *E. pharte*, *E. mnestra* (Evariste-Chancel), *E. alecto* var. *duponcheli*, *E. ceto*, *E. stygne*, *E. scipio*, *E. euryale*, *E. goante*, *E. gorge*, *E. tyndarus*, *E. lappona*; *Melanargia galatea*; eighty-nine species in all.

Harrow Weald: October, 1914.

ACRONYCTA STRIGOSA, HADENA ATRIPLICIS, &c.,
IN CAMBRIDGESHIRE.

BY A. THURNALL.

As a native of South Cambridgeshire the various notes which have appeared in recent numbers of the "Entomologist"

naturally appeal to me, so possibly my own rather small experience with *Acronycta strigosa* nearly forty years ago may be interesting to present-day collectors. In the years 1873, 1874, 1875 I was living in the village of Whittlesford, about sixteen miles south of Wicken, and like most young entomological enthusiasts the Noctuæ were my especial favourites. In those distant days I used to sugar the trees in the garden and adjoining orchard almost all the year round and met with many species considered "real good things" at that period. The first specimen I ever took (of *strigosa*) was as far back as 1870, flying in the garden in the dusk; in 1873 two more at sugar in the same place. In the following year I took four: one at light, two at sugar in the orchard, and one at rest on the lichen-covered trunk of a small hawthorn tree growing in a hedge skirting a field in the neighbouring parish of Duxford, in the extreme south of the county. In 1875 I also took four: two at sugar and two at rest on the same small hawthorn tree above-mentioned. I left the district in that year and had very few chances of working for this moth afterwards, but on August 4th, 1879 (an unusually late date surely!), I took a female in beautiful condition in the garden at sugar, and the following month I beat a single full-fed larva from a hedge near the house: I never saw *strigosa* alive in any stage afterwards. With regard to its occurrence in Wicken Fen itself, I believe it has been taken, but very rarely. My old friend, Frederick Bond, told me he only found one (at sugar) in the Fen, but he took it in some numbers in some fields at the back of Fulbourn Asylum, and amongst them one or two "black ones." Whether this melanic form has been taken in recent times I am unable to say. Mr. Bond's captures were made, I think, in the late fifties of the last century. From the fact that it has been taken in the Chatteris, Wicken and Whittlesford districts it would seem that it is (or was) found throughout the county. Although always associated with Cambridgeshire, some of your readers will perhaps be surprised to learn that it has been taken as far away as Worcestershire. Mr. Dobree Fox, a good entomologist, in the eleventh volume of the "Entomologist" (p. 252), records the capture of two at sugar in his own garden in 1878. Another insect usually associated with the fens, *Cidaria sagittata*, has also been taken away in the West of England, in Bewdley Forest, Worcestershire. "Seven fine specimens flying over a swampy place at dusk" (W. Edwards, Entom. xvi. 211). Again, another species, the beautiful little *Commophila schreibersiana* turned up quite recently in Gloucestershire. With regard to *Hadena atriplicis* I used to take it not uncommonly, together with *Palimpsestes ocellaris*, at sugar on the trunks of some large poplars on the Waterbeach side of Upware. The latter I bred several times from pupæ found at the foot of some Lombardy poplars at Sawston, in the south of the county.

As a supplement to the above note, I may mention the fact that *H. atriplicis* was formerly quite a common moth round Wicken: one good spot was a plantation close to the village itself. Mr. Bond told me that on one occasion he had been on the Fen all the evening, returning to the well-known 'Five Miles' Inn about midnight, very tired; it being a very warm night he opened the windows, placed a light near them and went off to sleep; awaking when it was broad daylight he found *Noctuæ* sticking "all about the walls and ceiling, most of them *atriplicis*." From a female taken at sugar June 11th, 1877, I obtained three eggs and succeeded in rearing one imago which emerged on June 15th, the following year; I fed the larva on knotgrass. It was in this latter year that I last saw the long extinct *Lælia cænosa*. On August 6th I took a male and Albert Houghton another, flying, or rather "fluttering," with their characteristically soft flight up and down the glass sides of the lamp. Messrs. Porritt and Daltry took the very last (recorded) specimens, I believe, in the following year (*Entom.* xi. 229).

Wanstead: November 10th, 1914.

AN EXPEDITION IN SEARCH OF RUSSIAN BUTTERFLIES.

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

(Concluded from p. 297.)

Hipparchia semele.—First seen on June 6th, and shortly afterwards became abundant everywhere.

Pararge climene.—This species, which is not known to extend further west than the Carpathians, and which is rare in the one or two localities in which it is found in those mountains, occurs in the utmost profusion at Sarepta; I saw, but did not capture, a single example on May 31st in a cross valley in the hills some four miles north-west of the town. At the same spot, when next I visited it on June 5th, *P. climene* was flying in profusion; on this day only males were seen. The next day they were almost equally abundant in the "Tschapurnik Wald," and we afterwards found them in every spot in which there was any quantity of wood. The first females were seen on June 11th. This butterfly frequents the outskirts of woods; the male has a very *epinephele*-like flight, and on the wing closely resembles *E. jurtina*. It is continuously hovering over and searching amongst bushes for the females. These latter are not easy to find or secure; they seem, one presumes, after pairing to hide away from the males, and are to be kicked up out of small clumps of bushes some distance away from the larger woods that the males frequent. I did not see a single female flying naturally; probably they would fly late in the day, when I was never on the ground. When disturbed they would, if not netted, quickly settle again in the thickest part of a

bush. All my females, about a dozen in number, were secured in these spots, with the exception of a couple that were found *in cop.* one morning about 10 a.m. Both sexes get worn very quickly, and are only fit for cabinet specimens for a very few days after emergence.

P. macra.—I saw but did not capture this species at Novorossisk.

P. megacra.—Common at Ialta and Novorossisk, but not seen at Sarepta. The Ialta specimens are very bright and richly coloured; those from Novorossisk are not so bright as typical examples.

P. egeria var. *egerides*.—Only seen at Ialta; one or two specimens.

Epinephele lyacon.—First seen at Sarepta on May 25th; afterwards it became common generally; the form is the fine one known as var. *intermedia*, which is described and figured by Seitz.

Coenonympha leander.—This eastern species we found abundant in the "Tschapurnik Wald" on May 22nd; many of the males were on that day past their best, and the females were well out. In its appearance and habits it is very similar to its Spanish representative *C. iphoides*, except that it seems to frequent bushy slopes, whereas *C. iphoides* is usually, but not always, a marsh-loving species. Although *C. leander* was common in the "Tschapurnik Wald," we did not see it elsewhere.

C. arcania.—Very typical examples of this species were common, in the same locality as the last only, from May 22nd onwards.

C. pamphilus.—Seen in all districts worked, but not commonly; the examples are in all cases very typical.

Carcarodus alcaeae.—Not uncommon at Novorossisk and Sarepta.

Pyrgus proto.—A larva found freely on *Phlomis herba-venti*, both at Novorossisk and Sarepta, produced this species after my return to England. The specimens are less ochreous than those I have from Spain.

P. orbifer.—Not uncommon at Ialta, and one example was taken by me at Novorossisk.

Hesperia carthami var. *moeschleri*.—Common on dry hills at Sarepta at the date of our arrival.

H. armoricanus.—A few specimens of a Hesperid were taken at all three localities, which an examination of the genitalia proves to be this species. There are certain divergences from western *H. armoricanus* apparent in these organs, but Dr. Chapman, who has examined the preparations, does not consider them sufficient to indicate a distinct species.

H. cribrellum.—On May 29th I captured two examples of this species in a valley in the main range of hills, about two miles south-east of Sarepta; they were taken within a few yards of each other. On the following day I netted on the same spot a third example; but though I afterwards frequently searched both this and many other similar localities, these three specimens were the only ones we saw; they are small examples, not exceeding 36 mm. in expanse.

H. tessellum.—This fine eastern species was first seen on May 27th; afterwards it became somewhat common, but it was local and difficult to capture. Many of the specimens are large. I have it up to 46 mm. expanse. Its headquarters was undoubtedly in the valleys in the hills some miles north-west of Sarepta; it was here to be seen in some numbers, flying wildly, and being difficult to follow with the

eye in its swift flight; from time to time the butterfly would settle upon flowers, but even then a capture was difficult to effect, for it would usually fly up when one was some yards distant.

H. sidae.—Common in the same localities as the last species, and of similar habits. Some of the examples are very large; I have one that expands 45 mm., as against 39 mm., the expanse of the largest of my southern French specimens. The *Sarepta* form is also more brightly marked, both on the upper and lower surfaces; first seen on May 28th.

H. malvae.—A few specimens were seen at all localities, of what I presume is this species; unfortunately, neither Mr. Jones nor myself brought back a male, so we cannot be quite certain.

Nisoniades tages.—Not uncommon at Ialta and Novorossisk, a very typical form.

Augiades sylvanus.—Common in woods at Sarepta from May 21st.

Adopaea flava.—Common at Sarepta; a fine richly-coloured form, expanding up to 40 mm.; first seen on June 6th.

A. lineola.—Abundant in the same localities as the last species, from May 31st.

The Heterocera of Sarepta were most interesting and abundant, and it was a matter of keen regret to both Mr. Jones and myself that we were not able to work at them more thoroughly; but this would have entailed a certain amount of night collecting, and one cannot very well keep fit if both day and night work is undertaken, especially when, as in our case, you are on the wrong side of a certain age.

Perhaps the most striking moth we saw was the exquisite *Macroglossa croatica*, which although not common, was not infrequent in June; it seems probable that it can fly rapidly, but those I saw, all of which were captured, were slowly threading their way amongst the herbage; the larva is said to feed upon *Centaurea*.

Zygænidæ were very rare; a few examples of what I suppose is *Procris globulariæ* were taken at Sarepta and Novorossisk, and at the former locality *Syntomis phegea* was seen not rarely.

The larvæ of *Malacosoma castrensis* were abundant amongst *Artemisia*, sp.

The beautiful *Cucullia argentina* was not infrequent at rest on the stems of dead plants, and was exceedingly well protected by its resemblance to them. *Heliothis scutosa* swarmed everywhere, and *H. dipsaceus* was equally abundant. I bred an example of this species from a larva found feeding upon the flowers of a *Salvia*, which resembled and might be *S. pratensis*.

H. peltigera and the beautiful *H. incarnata* both occurred, and *Acontia lucida* and *A. titania* were common; a handsome larva found upon a species of *Linaria* produced *Calophasia casta*.

Micra paula was not infrequently taken; probably it was abundant, but of course its small size made it very inconspicuous. *M. parallela* and the beautiful *M. purpurina* occurred.

Amongst the Plusias I have brought away examples of *P. ni* and *P. gutta*, and the ubiquitous *P. gamma* swarmed.

Emmelia trabealis was abundant and generally distributed, and everywhere in swamps.

Erastia argentula was abundant.

The eastern species *Euclidia triquetra* flew in the sun not infrequently on the banks of the railway. Single specimens of *Agrotis ravidata*, *Xylina scripturosa*, *Cucullia xeranthemi*, and *Scotogramma stigmata* came to light in our rooms.

Amongst the Geometræ *Euchloris volgaris*, the eastern representative of *E. smaragdaria* was common; its food-plant is undoubtedly *Artemisia*, on one species of which I saw females depositing ova in the daytime. Perhaps the most striking geometer we saw was the very handsome *Aspilates mundataria*, which was abundant everywhere; equally common, but very local, and only seen on the hills towards Tsaritsyn, was the delicate *Siona nubilaria* var. *exalbata*; and with it, and superficially closely resembling it, were large numbers of *Scoria dealbata*. One of the most abundant species was *Lythria purpuraria*, which occurred in the type form, and also as var. *lutearia*; amongst the Acidalias, *A. similata*, *A. sericeata*, *A. subtilata*, and *A. marginepunctata* were taken. Other species observed included *Rhodostrophia vibicaria*, *R. iacularia*, *Boarmia consortaria*, *Ematurga atomaria*, a remarkably light form, *Phasiane glariaria*, *Eubolia arenacearia*, *Fidonia marinaria* and *Scotosia rhamnata*.

The Pyralidæ were in enormous number as examples, but apparently they consisted of but very few species. Quite the most abundant of the group was *Phlyctaenodes sticticalis*, which swarmed everywhere; other species were *P. sulphuralis*, *P. verticalis*, *P. clathralis* and *Cledeobia connectalis*.

In the above list of Heterocera it is notable that almost half of them have been reported as having been found in Britain, which is a surprising proportion, considering the distance apart that the localities are, and the difference in climate that obtains. Still more notable, however, is the fact that out of the species that are on the British list about a dozen are our most local natives, or casual visitors; and point to the fact that the reason they are rare or local with us is that our country is on the extreme verge of their areas of distribution. Amongst the Micros very little could be turned up at Sarepta. The whole terrain swarmed with them; but with the exception of two or three species of Tinæ only odd specimens could be found. Single examples of one species were all I could get amongst the Crambidæ and Pterophori: and of the great Tortrix group less than half-a-dozen individuals were seen.

The following is a list of some specimens brought home, which Mr. J. H. Durant has kindly named:—*Euxanthia hamana*, *Cydia splendana*, *Plutella maculipennis*, *Pleurota pyropella*, *Coleophora vibicigella*, *Brachodes appendiculata* and *Tinea misella*.

NEW SPECIES OF HETEROCERA FROM FORMOSA.

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

SYNTOMIDÆ.

Amata nigrifrons, sp. n.

♀. Head and thorax black, the latter spotted with orange beneath; abdomen black with five orange bands, the first (basal)

broad, the second and third narrow and near together, the fourth narrow and close to the fifth, which is broad and completely girdles the abdomen. Fore wings black with bluish sheen; hyaline spots nine in number, placed as follows: one subbasal, almost round; three median, the central one small; five postmedial, the central one minute. Hind wings black with bluish sheen; two hyaline spots each traversed by a black vein, that nearest base tinged with orange on the dorsal area. Under side agrees with the upper side, but the dorsum is more orange.

Expanse, 48 millim.

Collection number, 1867.

One female specimen from Karapin (3000 ft.), June, 1908.

Comes nearest to *A. dichotoma*, Leech.

NOCTUIDÆ.

Metæmene hamptoni, sp. n.

♂. Head, thorax, and abdomen pale brown. Fore wings pale brown; antemedial and postmedial lines indicated by series of black dots, the first inwardly oblique and the second strongly excurved; discoidal dot black; costa beyond postmedial line whitish dotted with black; fringes whitish dotted with black at apex, middle, and tornus, and preceded by a series of smaller black dots. Hind wings fuscous, dorsal area paler, a black dot at tornus; terminal dots black, fringes pale brown. Under side fuscous; fore wings without transverse series of black dots; hind wings with black discoidal dot and curved line beyond.

Expanse, ♂, 20 millim.; ♀, 28 millim.

Collection number, 679.

A male specimen from Kanshirei (1000 ft.), April 16th, 1906; and a female from Arizan (7300 ft.), August 18th, 1908.

Parallelia takaoensis, sp. n.

♀. Head brownish, thorax brownish slightly mixed with grey, abdomen brownish grey. Fore wings pale grey, violet tinged, clouded with brownish grey; subbasal line blackish, outwardly pale edged, not extending below median nervule; antemedial line blackish, slightly oblique; postmedial line blackish, outwardly oblique from costa to vein 7 where it is sharply angled, thence slightly incurved to dorsum, broadly shaded on each side with brown; subterminal line pale, bluntly serrate, on apical area somewhat obscured by a short black indented line from apex. Hind wings fuscous grey, traces of pale medial and postmedial lines. Under side grey suffused with fuscous, except on termen of all the wings; a dusky, almost straight, medial line and a pale subterminal line on fore wings; a dusky discoidal dot and two curved and wavy lines beyond, also a pale wavy subterminal line on hind wings.

Expanse, 42 millim.

Collection number, 167 A.

A female specimen from Takao, August 22nd, 1904.

In marking, this species closely approaches *P. renalis*, Hampson.

Thermesia arizanensis, sp. n.

♂. Head and collar dark brown, thorax pale brown; abdomen pale brown mixed with dark brown except at basal and anal ends. Fore wings pale brown finely sprinkled with black atoms, costa blackish towards base; two black dots in cell and a fainter one at base of the wing in line with them; antemedial line represented by a dark oblique streak from dorsum to first cell dot; postmedial line black, outwardly edged with white and inwardly dark shaded, oblique, sharply angled and incurved before costa, the dark shading continued to apex; terminal area clouded with darker brown; subterminal line pale, wavy, indistinct; terminal dots black, between veins. Hind wings pale brown; discoidal spot and medial line black, the latter, which appears to be a broad continuation of the postmedial on fore wings, is outwardly edged with white and inwardly dark shaded; terminal area traversed by two parallel dark bands; terminal dots black, between veins. Under side pale ochreous brown, finely powdered with blackish; fore wings have two black dots on the cell and two blackish oblique lines beyond; hind wings have a black discoidal spot and an interrupted sinuous band beyond.

Expanse, 40 millim.

Collection number, 1026A.

Two male specimens from Arizan (7300 ft.), August, 1908. There are two male specimens in the British Museum from Arizan (Wileman). These agree in almost every particular with the type, but in the other male retained in my collection the postmedial line of fore wings and the medial line of hind wings are broadly bordered outwardly with blackish.

Thermesia kanshirei, sp. n.

♂. Similar to *T. arizanensis*, but smaller; the antemedial line of fore wings is rather more oblique, the postmedial line is not white edged, and the subterminal line is brownish dotted with black on dorsal half. On the under side the transverse lines of fore wings are closer together; on the hind wings the medial band is less sinuous and is preceded and followed by other dusky bands.

♀. Larger, somewhat paler in colour, and the markings less distinct.

Expanse, ♂, 36 millim.; ♀, 40 millim.

Collection number, 1026.

One example of each sex from Kanshirei, June 13th, 1906 (male), April 15th, 1906 (female). There is also a female specimen from Kanshirei (Wileman) in the British Museum.

Thermesia bifasciata, sp. n.

♂. Head and thorax pale brown; abdomen pale grey, almost whitish. Fore wings pale brown lightly flecked with black; a black dot below median nervure and one above it in the cell; medial line

inwardly oblique, dark brown from the costa to cell, thence black outwardly shaded with dark brown to dorsum; postmedial line pale ochreous, narrowly edged inwardly with dark brown and outwardly bordered by a strong black line and brown shading, gently incurved from apex to dorsum near tornus; subterminal line pale brown, almost straight, traversing brown shading of postmedial line; terminal line black; fringes pale brown, marked with darker. Hind wings pale brown transversely shaded with darker on basal two-thirds; terminal third darker brown transversely divided by a streak of the ground colour; terminal dots and fringes as on the fore wings. Under side pale brown; fore wings suffused with darker brown on the disc; hind wings freckled with darker brown, especially on costal area, discoidal dot black; all the wings have a dusky postmedial line and black points on termen.

♀. Similar, but rather darker in general colour; the medial line on fore wings is brown throughout, the black outer edging of the postmedial line is very slender, and the subterminal line is indistinct.

Expanse, ♂, 42 millim.; ♀, 40 millim.

Collection number, 1025.

A male specimen from Arizan (7500 ft.), September 21st, 1906, and a female from Kanshirei, October 12th, 1908. There is one specimen from Formosa (Wileman) in the British Museum.

LASIOCAMPIDÆ.

Cosmotriche discitincta, sp. n.

♂. Head brown; thorax grey, white dotted behind, collar brown mixed; abdomen brown. Fore wings grey suffused with brown on the disc; antemedial line black, tridentate, inwardly edged with white; postmedial line black, wavy, elbowed at vein 6, terminating about middle of the dorsum where it is outwardly edged with white, black extending along the dorsum to antemedial line; discoidal spot white, dark margined; subterminal line black, undulated, not clearly defined about middle; fringes white chequered with black. Hind wings brown, discoidal mark and angled medial line dusky, fringes white chequered with black. Under side brown, area of all wings, inside the blackish angled line, suffused with dark fuscous; fringes as on upper side.

Expanse, 42 millim.

Collection number, 1796.

One male specimen from Rantaizan, May, 1909.

Allied to *C. lobulina*, Denis.

LYMANTRIIDÆ.

Euproctis purpureofasciata, sp. n.

♂. Head and thorax yellow, antennæ bipectinated. Fore wings yellow, clouded with purplish and sprinkled with black on basal area; medial fascia purplish, sprinkled with black, irregularly edged, con-

stricted below middle; subterminal line purplish, interrupted above and below middle. Hind wings white. Under side white; fore wings tinged with yellow, purplish band of upper side showing on costal area only.

Expanse, 33 millim.

Collection numbers, 1251 and 1252.

Two male specimens; one from Arizan (7300 ft.), August 21st, 1908, and the other from Rantaizan, May 12th, 1909.

Euproctis diplaga, Hampson.*

♀. Fore wings whitish powdered with dull grey, tinged with ochreous on outer area; the black apical marks are larger than in the male, and the postmedial lines more in evidence and distinctly serrate below the cell. Hind wings fuscous.

Expanse, 26 millim.

Collection number, 1411.

A female specimen from Kanshirei, June 19th, 1908.

Only the male of *E. diplaga* has been previously described.

CYMATOPHORIDÆ.

Polyploca albibasis, sp. n.

♂. Head and collar blackish grey, thorax pale grey, mixed with darker; abdomen grey. Fore wings pale smoky grey; three patches of white on costal area—one at base, one between antemedial and postmedial lines, and one at apex; subbasal line black, indented below costa; antemedial band brown tinged, outlined and traversed by black lines; postmedial band brown tinged, inwardly edged by a black sinuous line and outwardly by a bluntly serrate line; orbicular stigma white, outlined in black; subterminal and terminal lines black, wavy, approximate near apex, the subterminal with three black dots on dorsal half; fringes pale grey, basal half darker, marked with black at ends of the veins. Hind wings fuscous, paler on the dorsal and basal areas. Under side fuscous, terminal area of the wings darker beyond a pale transverse line; costa of fore wings white, marked with black on outer half.

Expanse, 38 millim.

Type in the British Museum. Arizan, March 23rd (Wileman). Allied to *P. orbicularis*, Moore.

NOTODONTIDÆ.

*Pydna kanshirei*ensis, sp. n.

♂. Head brown, antennæ fasciculate; thorax pale brown mixed with darker in front, darker brown behind; abdomen dark brown, paler below and towards anal segment above. Fore wings pale brown, clouded and streaked with darker; subbasal line indicated by two black dots, one just below costa and one under median nervure; antemedial line black, wavy, indistinct, followed by a black diffuse

* Journ. Bomb. Nat. Hist. Soc. xx. p. 113 (1910).

mark in the cell; an oblique dark streak from cell mark to the dorsum near base; a dark central shade, elbowed below costa; post-medial line brown dotted with black on the veins, preceded by a series of brown dots between the veins; terminal dots black, inwardly edged with white, placed between the veins, space between veins 3 and 4 tinged with reddish, and a short white streak projects inward from the black dot in this space. Hind wings dark fuscous, fringes whitish partly chequered with dark fuscous. Under side whitish brown; fore wings clouded with fuscous on the disc; hind wings clouded with fuscous, two curved, and somewhat wavy, dusky transverse lines.

Expanse, 48 millim.

Collection number, 1231.

Six male specimens from Kanshirei. One, September, 1907; three, May, 1908, and two, July, 1908.

One specimen, also from Kanshirei (Wileman), in the British Museum, is slightly darker in colour than either of the examples retained in my series. Very close to *P. albistriga*, Moore.

Liparopsis formosana, sp. n.

♂. Head and thorax brownish grey, collar whitish. Fore wings whitish grey, finely powdered with dark grey; basal area brownish grey mixed with black at base of the wing, limited by an oblique darker line; postmedial line indicated by black edged white dots on the veins; terminal area brownish grey except towards the costa; terminal line black. Hind wings whitish powdered with dark grey on costal area, some brownish hairs on the costal half, a black dot on costa before apex. Under side whitish, disc of fore wings suffused with fuscous.

Expanse, 36 millim.

Collection number, 744

A male specimen from Kanshirei, September, 1908.

NOTES AND OBSERVATIONS.

EUROIS OCCULTA IN ESSEX.—I am glad to be able to record the occurrence of this fine moth in Essex. Four specimens were taken at sugar on July 30th, 1914, in a wood not far from here by my friends Messrs. J. F. Johnstone and C. Cork. They are all of the dark form var. *passetii*. I am not aware of any previous record of this moth having been taken in Essex, and it does not seem to have been recorded at all recently from the southern half of England.—(Rev.) T. ALFRED STIFF; Grantham, Victor Drive, Leigh-on-Sea.

XANTHORHOË GALIATA var. UNILOBATA IN DEVON.—On July 21st of this year I took a fine female *X. galiata* of the dark-banded

unilobata form in a lane near Tavistock. South ('Moths of the British Isles,' series ii. p. 195) mentions this form as "occurring in Yorkshire, Sussex, and probably elsewhere," so that a record of its occurrence in Devonshire may prove of interest.—(REV.) ALFRED T. STIFF, M.A.

EARLY PUPATION OF *LASIOCAMPA QUERCUS*.—During late June of this year a very large female of *Lasiocampa quercus*, approaching var. *callunæ*, was brought to me in a box. It was in a very ragged condition, and had deposited a large number of ova. Larvæ from these hatched in the usual time and commenced feeding on whitethorn. As they continued to feed beyond the hibernating stage, I kept up the supply of whitethorn leaves so long as these were available. I have since kept them going on bullace and blackthorn shoots (from the root suckers), also berries and twigs of the whitethorn. They are now all about full-grown, and several have pupated, the first one on November 13th. Although I have frequently reared these larvæ, and also those of *Gastropacha quercifolia*, I have not previously seen them feed right through before. Possibly the long spell of summer weather accounts for this. In this fen and marshy district all Lasiocampidæ are much finer than those I have taken in Kent.—HERBERT WM. BAKER; 73, Limetree Place, Stowmarket, Suffolk, November 22nd, 1914.

[Normally, larvæ of *L. quercus* and of *G. quercifolia* do not pupate until after hibernation. Sometimes in confinement, however, it happens that full growth is attained, and pupation effected in the year that the larvæ hatch from the egg.—ED.]

SPHINX CONVULVULI IN NORFOLK.—Not having seen any report of the capture of *Sphinx convolvuli* in your Journal this season, I thought it might interest some of your readers to know that I had a very fine freshly emerged specimen brought me during the first week in September. The person who found the insect was afraid of it, so put a large jar over it.—ROBT. S. SMITH, JUNR.; The Laurels, Downham Market, Norfolk.

BUTTERFLIES IN DERBYSHIRE.—This season has been exceptional for butterflies in Derbyshire. *Vanessa io* was noted here on September 30th; rather a rare species here. *V. urticaæ*, which has been scarce of late years, was plentiful. *Pyrameis cardui*, usually very rare, was reasonably common. *P. atalanta*, usually common in September, was markedly so this year. They were also about late in October in consequence of the absence of frosts.—W. ST. A. ST. JOHN; Derwent House, Derby.

LATE APPEARANCES OF *ACIDALIA EMUTARIA* AND *TOXOCAMPA PASTINUM* IN LINCOLNSHIRE.—On a piece of marshy ground bordering the sandhills on the Lincolnshire coast, between Skegness and Sutton-on-Sea, I netted a specimen of *Acidalia emutaria* at dusk on September 4th, and another on September 5th. Both had recently emerged. On September 7th in a drier portion of the same ground where *Vicia cracca* was growing in some profusion, a specimen of

Toxocampa pastinum was caught flying. Both were presumably members of a partial second brood, and in the case of *T. pastinum* this is probably worth noting. It is perhaps also desirable that the locality should be put on record.—W. G. WHITTINGHAM; Knighton Vicarage, Leicester.

ARASCHNIA LEVANA REPORTED FROM HEREFORDSHIRE.—I beg to record the capture of two specimens of *A. levana* at Symond's Yat, near Ross, Herefordshire, between July 20th and 24th last. Another collector, whom I met in the district, informed me that he had taken nearly a dozen examples several miles away.—A. W. HUGHES; 33, Dacy Road, Everton, Liverpool, October 24th, 1914.

GRAPTA C-ALBUM AND ARASCHNIA LEVANA FROM FOREST OF DEAN.—Amongst a few *Grapta c-album* recently reared from a Forest of Dean female, I have bred two aberrations. Unfortunately one is dwarfed and crippled, but the other is a perfect male. The usual two spots in the outer area of the primaries are represented by a small dot, whilst the secondaries have the darker markings spread over almost the whole of the wing, obliterating the ground-colour and giving the wings a smeared appearance. This aberration is rather similar to one I captured in the same district in July, 1912, except that the wild specimen is of the *hutchinsoni* form, and the markings are of a deeper brown. *Araschnia levana* was about in the Forest during the latter half of July last. Eight specimens fell to my share, and I heard of five others being taken.—G. B. OLIVER; October 22nd, 1914.

CORDULEGASTER ANNULATUS IN THE NYMPH STAGE.—Following up a note in the 'Entomologist' of October last (p. 278), I may mention that on October 2nd I found the nymphs of *Cordulegaster annulatus* in some marshes at Augarrack, near Hayle, Cornwall, in various stages of growth. Some were small enough, I should say, to have been hatched this season; others were, so far as outward appearances go, full grown, and might have emerged this summer. These will not now come out until next June. They certainly cannot have been hatched later than in June or July, 1913, which would make their nymph stage two years in all. But they may have been hatched in 1912. It seems strange they should be full grown, externally, at any rate, nine or ten months before they emerge.—HAROLD HODGE; 9, Highbury Place, N., November 14th, 1914.

FORMALDEHYDE USEFUL IN SETTING INSECTS.—It is safe to say that, at some time or other during one's career as a collector, everybody has viewed with disgust the relaxing and consequent drooping of wings of one or more cherished imagines that have been placed in the cabinet or store-box. It struck me last spring that this might be overcome by the use of formaldehyde. I think that I may say my experiment has been crowned with complete success. My procedure briefly is this:—After the moths or butterflies have been on the setting board for a fortnight or three weeks—a fortnight is quite sufficient—place the board with imagines, as they are, in a box that

is fairly air-tight, containing also a piece of cotton-wool soaked with 40 per cent. of formaldehyde. (I use my travelling-case, and plug up the perforations at either end with the cotton-wool.) Leave the box closed for a week, and the imagines are ready to be transferred. Last year I had a lot of imagines that drooped, but this year, since using formaldehyde vapour, not one has played me false. To be quite certain, last week I took two imagines at haphazard, one a butterfly and the other a moth, and placed them in my corked zinc relaxing-box immediately after I had saturated the cork with boiling water, closed the box, and left it for five days. On examination both imagines were found to be soaked with moisture, but neither had budged in the slightest, and I am certain that I should not have been able to reset them in a new position. For those who like to change their setting with every new fashion this might prove a disadvantage, but for those who know their own minds it would not be a deterrent. A friend of mine suggested that the formaldehyde might alter the colours, but so far I have not found this to be the case; it is true that I have not had a chance to try the process on any of the "emeralds," but I might point out that formaldehyde is used largely in making pathological specimens for museums, where it is very important to preserve colours. I claim another advantage for my process. Inasmuch as formaldehyde is a powerful germicide, one can be sure that every insect that goes into the cabinet goes in sterilized. There is another point that I am watching with interest, namely, whether it will check "grease." This is, I believe, a post-mortem change akin to the formation of adipocere in the human subject, so that if the insect is thoroughly sterilized it is only reasonable to hope that the "grease" may be checked.—WINSTON ST. A. ST. JOHN, M.R.C.S., L.R.C.P.; Derwent House, Derby, November 11th, 1914.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*October 22nd.*—Mr. B. H. Smith, B.A., F.E.S., President, in the chair.—The evening was set apart for an exhibition and discussion of the genus *Anthroceræ*, introduced by Mr. B. S. Curwen. Mr. Curwen exhibited a collection of Palæarctic Anthroceridæ, consisting of some twenty-six species and forms.—Dr. E. A. Cockayne, the series of *A. hippocrepidis* from the late Mr. J. W. Tutt's collection, with various series of *A. filipendulæ*, *A. trifolii*, *A. palustris*, and *A. loniceræ*.—Mr. F. H. Stallman, early and late races of *A. trifolii*, *A. filipendulæ*, &c.—Mr. Buckstone, similar series with suggested hybrid series *trifolii* × *filipendulæ*.—Dr. Chapman, a drawer of European Anthroceridæ captured during the last few years, including *A. anthyllidis*, *A. contaminei*, *A. sarpedon*, &c.—Mr. Hy. J. Turner, series from many localities, mainly of the five- and six-spotted species of the *Transalpiniformes* group.—Mr. L. W. Newman, series of bred Anthroceridæ species.—Papers and notes were read and communicated by Messrs. Curwen, Cockayne, P. A. Buxton, Turner,

R. Adkin, &c.—Mr. Newman exhibited long varied series of *Dianthæcia barrettii*, bred from Co. Cork and from S. Devon; bred series of *Boarmia repandata* from the Wye Valley and from N. Cornwall; and a series of the more hybrid *populi* × *ocellatus*.—Mr. Longe, the same hybrid and a *Rumicia phlæas* from Deal, with the red sub-marginal band on the hind wing quite wanting.—HY. J. TURNER, *Hon. Rep. Sec.*

LONDON NATURAL HISTORY SOCIETY.—April 21st, 1914.—Mr. Bernard Cooper, a fine asymmetrical specimen of *Numeria pulveraria*, bred in March, 1914, from New Forest ova, in which the band was obsolete on the right fore wing.

May 19th.—Mr. A. W. Mera, on behalf of Mr. B. S. Williams, a melanic specimen of *Lycia hirtaria*, bred at Finchley from wild pupæ.—Mr. A. J. Willsden, the reciprocal hybrids of *Lycia hirtaria* and *Nyssia zonaria*.

June 2nd.—Mr. J. Riches, *Colias edusa*, ab. *helice*, bred from Eastbourne ova.

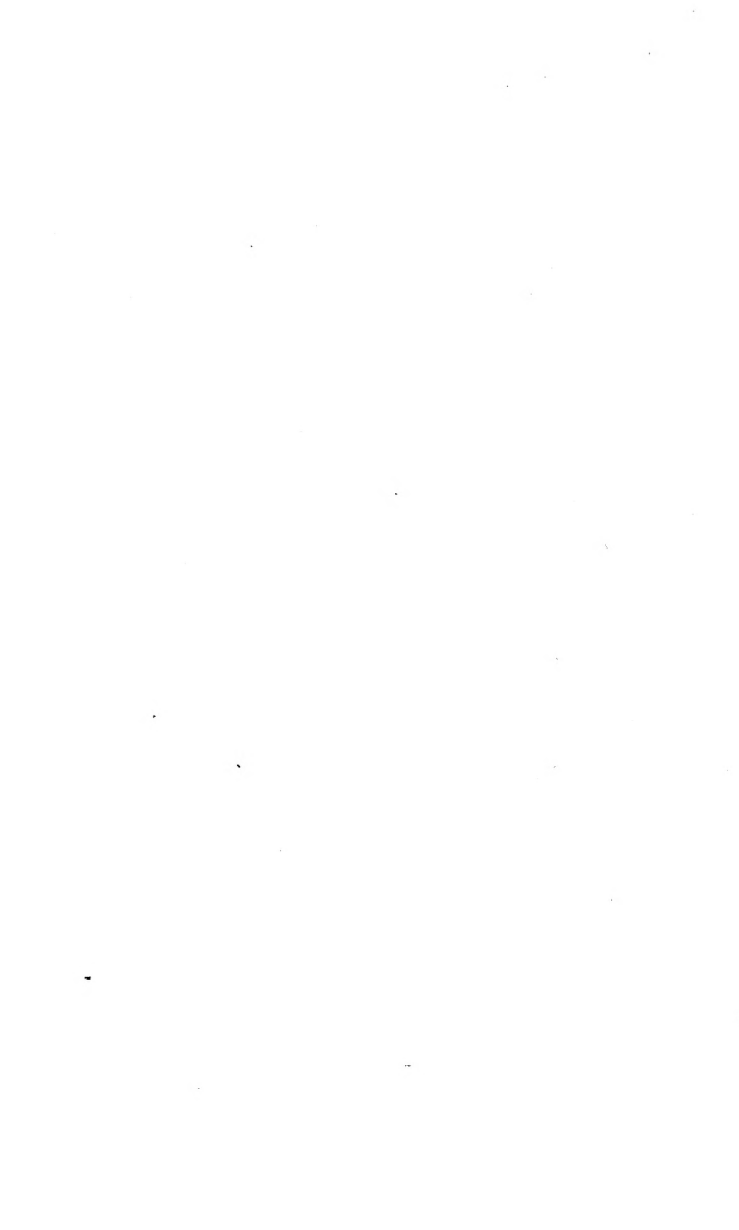
September 1st.—Mr. H. B. Williams, a short series of *Euchloë cardamines*, bred in May, 1914, including a male with extra spot below the discoidal spot, under side. A long series of *Polyommatus icarus*, taken in June at Boxhill and Banstead Downs, showing strong tendency to obsolescence in the spotting of the under side. Also two gynandromorphous specimens of *Amorpha populi*, bred on August 2nd from June ova.—Mr. W. E. King, specimens of *Zizera minima*, and abs. *obsoleta* and *extrema*, from Horsley.—Mr. Williams read a short paper on the season's collecting.

October 6th.—Mr. G. H. Heath, a fine series of *Boarmia repandata* from Lynton, including ab. *conversaria*.—Mr. C. H. Williams, *Polyommatus icarus*, from Ireland, also an obsolete male and ab. *antico-striata*, Tutt.—Mr. W. E. King, a series of *P. icarus* taken at Horsley this year, including abs. *striata*, *obsoleta*, *antico-obsoleta*, *subobsoleta*, *postico-apicalis*, *costajuncta*, *melanotoxa*, &c.—Mr. L. W. Newman, a gynandromorphous *P. icarus*, having right fore wing female, remainder male, except one red female lunule on each hind wing, another chiefly female but having small male patches. Also a gynandromorphous *Agriades thetis*, chiefly female but with a splash of male colour along the costa of the right fore wing; *Agriades coridon* ab. *minutissimus*, and a series of *Gastropacha ilicifolia*, bred from a female taken at Cannock Chase in 1913 by Mr. G. B. Oliver.—Mr. H. B. Williams, a long series of *Agriades coridon* taken in August, 1914, in North Herts, including long series of abs. *semi-syngrapha*, Tutt, *inæqualis*, Tutt, *parisiensis*, Gerh., and fine series of *obsoleta* and *striata* under sides, male and female, also a female of the colour of *C. pamphilus*, a female with bluish suffusion over the greater part of the under side of the right hind wing. Also a series of *P. icarus* from the same place, including fine blue females, and abs. *melanotoxa*, Marrott, *biarcuata*, Tutt, *basijuncta*, Tutt, *costajuncta*, Tutt, and forms combining *melanotoxa*, *costajuncta* and *basijuncta*; also ab. *antico-striata*, Tutt, four extreme ab. *subobsoleta*, Tutt, two

ab. *obsoleta*, Clark, and other interesting forms.—Mr. V. E. Shaw, living pupæ of *Cyaniris argiolus*.—Mr. A. J. Willsden, larvæ, pupæ and imagines of a species of Micro-lepidoptera found feeding in a cargo of peanuts captured from the Germans. The species has not been identified.—HAROLD B. WILLIAMS, *Hon. Rep. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—November, 1914.—Meeting held at the Royal Institution, Colquitt Street, Liverpool; Mr. R. Wilding, President, in the chair.—This being the opening meeting of the Society it was, as usual, devoted to exhibits of the season's work.—Mr. F. N. Pierce showed *Carterocephalus paniscus* from Northants, and a large number of Micro-lepidoptera, including *Laspeyresia gemmiferana*, *Penthina gentiana*, and *Leioptilus microdactylus* from Devon, also *Dicrorampha saturnana*.—Mr. A. W. Hughes brought a long series of *Vanessa c-album*, including var. *hutchinsoni*, also *V. levana* from Herefordshire; he reported that the latter insect seemed to be establishing itself there. By the same member, a long series of *Lycæna astrarche* and its var. *semi-allous* from Silverdale.—Mr. Buckley had a fine series of *Odontopera bidentata* var. *nigra* from Birmingham, also the local form of the same species from Urmston; varied series of *Agrotis ashworthii* and *Boarmia repandata* from North Wales, *Dianthæcia nana* from Anglesey, and *D. capsophila*, pale forms, from Eastbourne.—Mr. R. Tait, junr., brought three large cases containing the results of his holiday in South Devon; these included *Leucophasia sinapis*, *Syrichthys malvæ* var. *taras*, *Cidaria russata*, and var. *centumnotata*, as well as varieties of *Lycæna icarus*. From Penmaenmawr, the following taken at heather bloom: *Agrotis ashworthii*, *A. lunigera*, *A. lucerneæ*, and *Mamestra furva*; he also found *Acidalia contiguaria*, and for the first time captured wild the local melanic form of *Boarmia repandata*. From Huddersfield a very fine lot of varieties of *Abraxas grossulariata*, which included a grand series of var. *nigrosparvata*, and one remarkable specimen having the left side wings black with a few marginal streaks on the hind wing, while the wings on the right side were typical.—Dr. J. Cotton brought a fine specimen of *Acherontia atropos*, captured at light at Knowsley early in October.—Mr. R. Wilding showed fine series of Rhopalocera from the New Forest, Silverdale, and Ireland; noteworthy among these was a fine row of Irish females of *Lycæna icarus*.—Mr. W. Mansbridge brought a long bred series of *Aplecta nebulosa*, the progeny of Delamere parents; these included the local type form, var. *robsoni* and a scarce leaden-grey variation; also a short series of *Abraxas grossulariata* from Huyton, of which a number were var. *lacticolor*; dark *Polia chi* from Hebden Bridge, and *Odontopera bidentata* var. *nigra* from wild larvæ beaten on Simonswood Moss, in which locality, although of rare occurrence, this form seems to be increasing.—WM. MANSBRIDGE, *Hon. Secretary.*

INDEX.—As the Special Index is not complete for publication in this issue, the General Index will be published with it in January.



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