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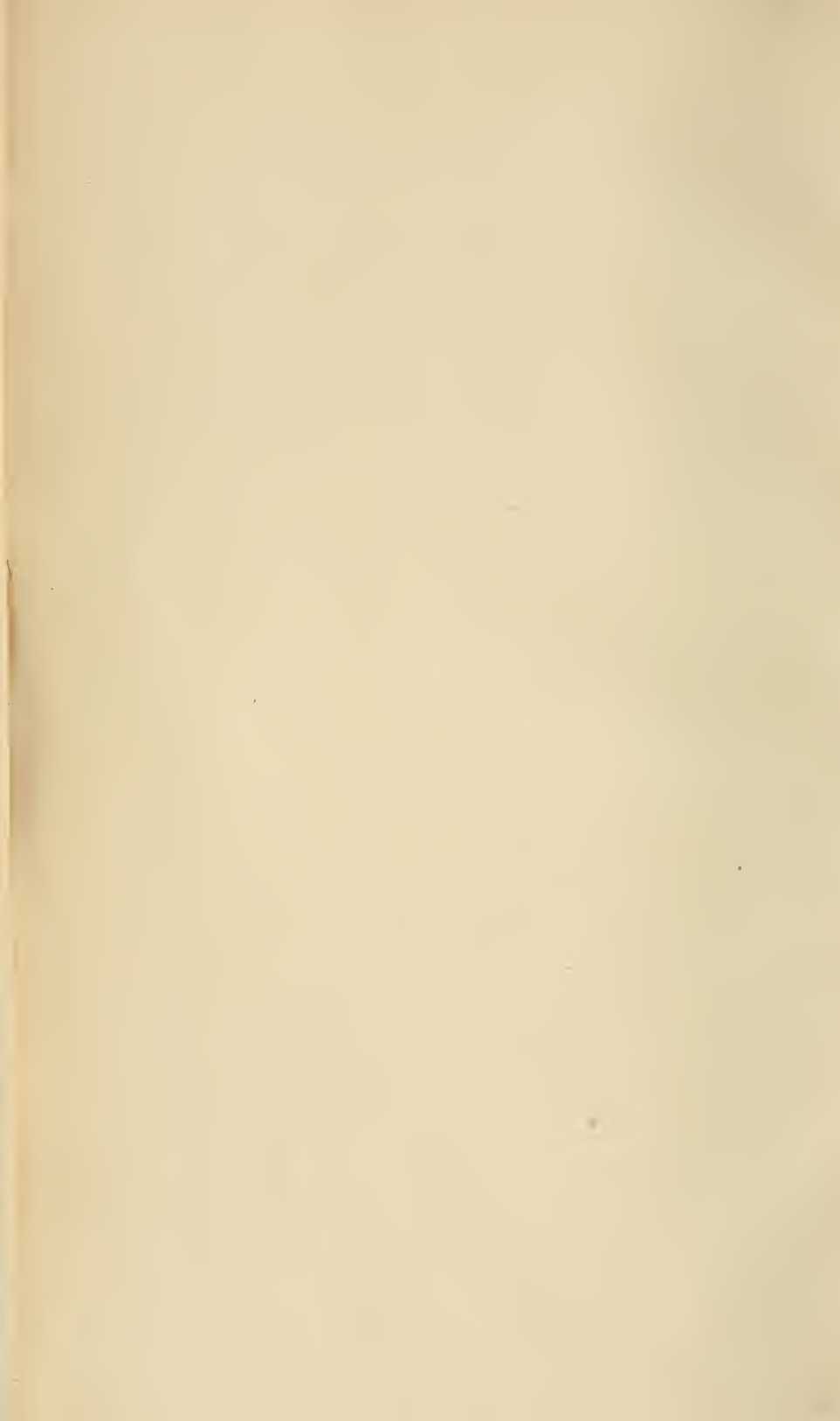
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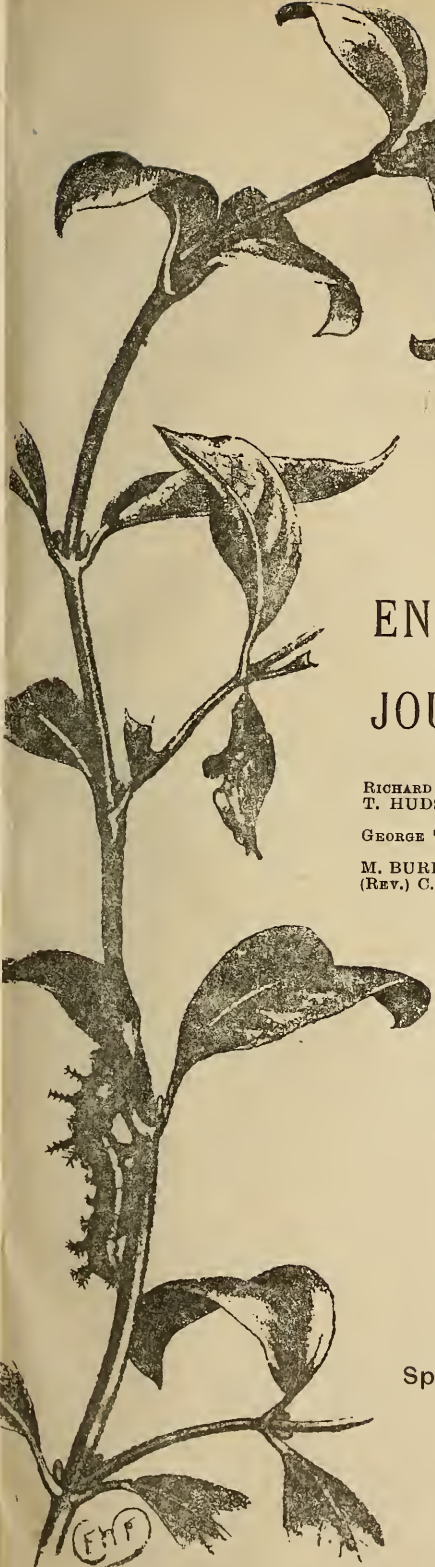
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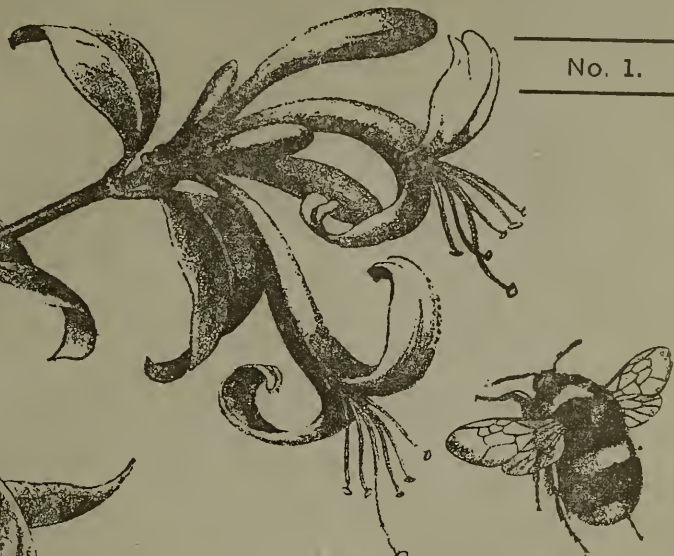
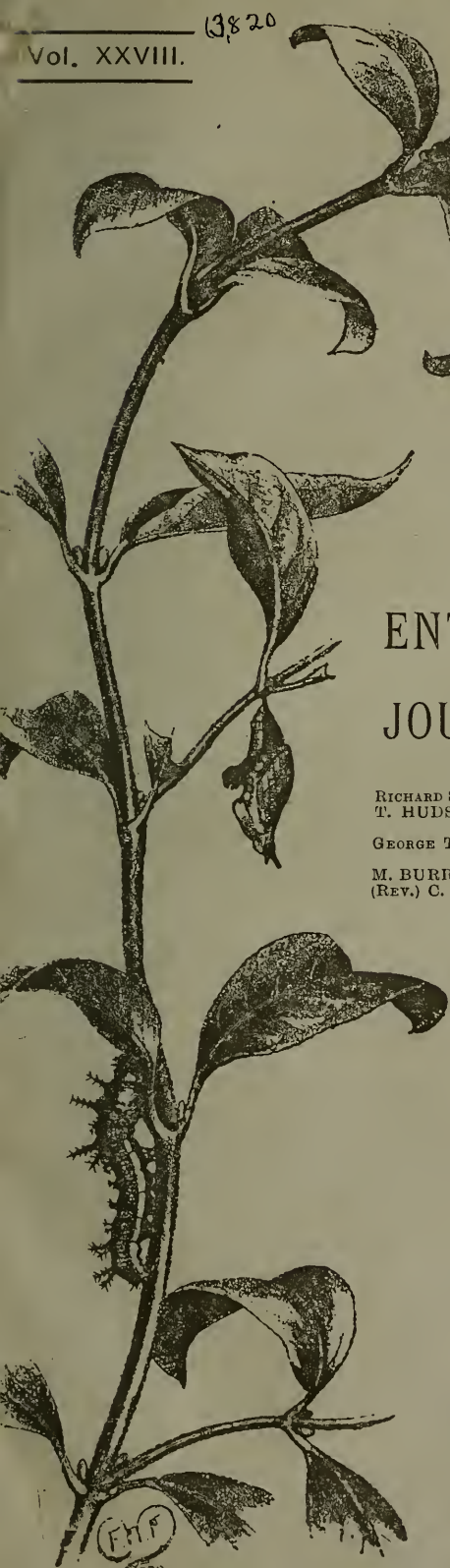
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VOL. XXVIII. No. 1.

JANUARY 15TH, 1916.

Myrmecophilous Notes for 1915.

By H. DONISTHORPE, F.Z.S., F.E.S.

During the years 1914 and 1915 I have been unable to do much collecting on account of the amount of time taken up in finishing and publishing my *British Ants*. Such observations as I was able to make in 1914 are incorporated in my book, it therefore only leaves those of 1915 to be published.

FORMICIDÆ.

PONERINÆ: *Ponera coarctata*, Latr.—On June 15th, three dealated ♀ ♀ and seven or eight ♂ ♂ were found when digging up a nest of *Myrmica scabrinodis* at Box Hill. They were evidently not really living in the *Myrmica* nest, as when introduced with the colony of the latter into an observation nest, the *Myrmica* ♂ ♂ killed them all in a few days.

MYRMICINÆ: *Myrmecina graminicola*, Latr.—I have recorded (*Brit. Ants*, foot note, p. 42): “. . . a number of winged females have hatched from pupæ in my observation nest of *Myrmecina graminicola*. I have had this colony in my possession for over five years (see page 81); these females must therefore have been produced from eggs laid in captivity! The ants in this nest have been supplied with a large amount of animal food during the last six months.” On July 1st three winged ♀ ♀ had just emerged from the pupæ, by July 10th over 50 were present, and others continued to appear up to the beginning of August. On August 9th one ♂ appeared. Copulation was not observed, but by the end of August a number of the ♀ ♀ had removed their own wings. On September 10th the old ♀ (recognisable by the fact that she was not nearly so hairy nor pubescent as the young dealated female) was observed to bite at the ♂ and drive it away. On September 16th the ♂ was observed flying about in a very excited state in the two light chambers of the nest, and on the 20th he was dead.

The winged ♀ ♀ help to carry about the larvæ, etc., and to kill and cut up flies, etc. The last winged ♀ present, removed her wings on December 15th. The young dealated ♀ ♀ behave exactly in the same manner as the ♂ ♂; it remains to be seen if they will lay eggs.

There is only one other case on record where queen ants have been reared from eggs laid in captivity. This was when Lord Avebury had

five queens developed in an observation nest of *Formica fusca*. [*Journ. Linn. Soc., Zool.*, **15**, 384 (1881); *Brit. Ants*, 308 (1915)]

Monomorium pharaonis, L.—On May 10th I visited the Reptile House at the Zoological Gardens, with the intention of capturing larvæ of this ant for photographic purposes. Many ♂ ♂ were soon observed running along their tracks, carrying what appeared to be larvæ, and were promptly bottled. On reaching home, however, I found that very few of the objects carried by the ants were larvæ. They mostly consisted of minute portions of lizard skins, very small stones, and other unrecognisable substances. The bits of lizard skins probably serve as food, but I am unable to understand to what use the ants would put the small stones, and other apparently inedible substances.

Leptothorax nylanderii, Först.—Two ♂ ♂ were developed in my observation nest of this species, the first appeared on July 14th, and the second on July 25th. The ants in this nest are from colonies taken at Yvorne, in Switzerland, on October 10th, 1912, and Claydon, in Suffolk, October, 1914. It formerly also contained a colony of *L. affinis*, taken in Switzerland, on October 9th, 1912, but no *affinis* are now present. All these ants amalgamated and became one colony [*Brit. Ants*, 159-160 (1915)]. The two ♂ ♂ were no doubt reared from larvæ introduced with the Claydon colony.

On July 30th I gave these ants some *Myrmica scabrinodis* ♀ pupæ to act as food. Some were eaten, but a few were allowed to hatch; all of them with the exception of one ♀ were then dragged about, and they died in a few days. One *Myrmica* ♀ however was not molested, and it lived in the nest until November 3rd, when it died, apparently a natural death. It was a very curious sight to see the enormous *Myrmica* ♀, in comparison with the little *Leptothorax* ♀ ♀, quite at home in their nest, walking about and resting with them on their brood.

CAMPONOTINÆ: *Donisthorpea fuliginosa*, Ltr.—On August 27th a fierce battle was witnessed between ♀ ♀ of this ant and those of *D. umbrata* at Woking. The ants were all around the foot of a hollow birch tree; hundreds of dead *umbrata* lay about, many dead *umbrata* were fastened by their mandibles to the legs and antennæ of live *fuliginosa* ♀ ♀, and some ♀ ♀ of both lay dead, joined inextricably together during their death struggle. A few live *umbrata* were still fighting with the *fuliginosa*: but the colony of the former appeared to have been practically exterminated.

I have already recorded [*Ent. Rec.*, **27**, 207 (1915)] that a *D. fuliginosa* ♀ which had been accepted into a colony of *D. umbrata* (and *mixto-umbrata*) on August 11th, 1912, died on August 29th, 1915. All the old *umbrata* ♀ ♀ having died, she had been accepted by a large number of fresh *umbrata* ♀ ♀ from Woking. This left me with a queenless *umbrata* colony, and having brought home a number of virgin *fuliginosa* ♀ ♀ taken in a *fuliginosa* nest at Weybridge, I removed the wings of one of these on September 3rd, and introduced her into the observation nest containing this *umbrata* colony. She ran about among the *umbrata* ♀ ♀, tapping them with her antennæ, she was not attacked and soon gained the last (dark, damp) chamber of the nest, which contained the bulk of the *umbrata* ♀ ♀. She appeared to

have been accepted at once, and was saluted, cleaned and fed by some of the ♂ ♂. She was treated as their queen, and was not attacked until September 7th, when the nest having been left in the sun, some of the ♂ ♂ began to attack her and pull her about. The nest was placed in a cool, dark place, and by September 19th she was once more thoroughly accepted as queen; she has not been attacked since, and to-day (December 19th) she is surrounded by a large court of attendant ants.

Wheeler first demonstrated that if the wings be removed from a virgin *Formica* ♀, it causes her to behave as would a fertilized one. I have subsequently found this to be the case in all such experiments with *Formica* ♀ ♀. With the genus *Donisthorpea*, Crawley records that the act of removing the wings from virgin *D. umbrata* ♀ ♀, was far from arousing the instincts possessed by a fertilized ♀ [*Int. Ent. Cong.*, Oxford, 1912, 2, 50 (1913)].

In the above mentioned experiment with a virgin ♀ of *D. fuliginosa*, however, the effect caused by removing the wings was to make her act undoubtedly as would a fertilized ♀.

D. nigra, L.—With regard to marriage flights, on August 8th, this year [see *Ent. Rec.*, 27, 206 (1915)], my friends Mr. Mitford and Mr. W. E. Sharp, tell me that enormous flights occurred on August 8th, 9th, and 10th, at Catleny Reservoir, in Northumberland, between Otterburn and Jedburgh, and on August 8th all the way from Crowthorne to Reading.

Formica sanguinea, Latr.—On May 27th I dug up the two nests at Woking which contained Pseudogynes in 1913 and 1914 [*Brit. Ants*, 296 (1915)]. The one contained two queens, very many workers and larvæ, and some 10 per cent. of pseudogynes; the colony appeared to be in a flourishing condition. The other consisted of a few pseudogynes, workers and larvæ, but no queen was present, and the colony was neither populous nor flourishing. The most careful search failed to discover *Lomechusa*, or its larva, in either colony.

On July 30th a large colony was discovered at Weybridge, situated in and under a heap of hay (cut grass). The heap had the appearance of a mound made of collected vegetable refuse, such as is constructed by *F. rufa* or *F. evsecta*. On the same date, on another part of the heath, a slave-raid was observed in full swing. The nest of the *F. sanguinea* colony was situated at the foot of a small gorse bush, and I noticed *sanguinea* ♂ ♂ arriving at their nest laden with cocoons. I tracked outgoing ♂ ♂ for 125 paces (all the time meeting others carrying cocoons), when I came upon a *fusca* colony, situated under a gorse root, where *sanguinea* ♂ ♂ were emerging with their booty. I tore up the gorse root and revealed a quantity of cocoons and *fusca* ♂ ♂, the slave makers poured in, put the *fuscas* to flight and carried off all the cocoons.

Mr. Oscar Whittaker tells me that he has seen this species at Grange-over-Sands, Much Wenlock, and while digging trenches last August at Thundersley, near Southend.

Formica rufibarbis, F.—On July 30th several winged ♀ ♀ and a few ♂ ♂ were found to be present in one nest of this species at Weybridge.

COSMOPOLITAN AND INTRODUCED SPECIES.

DOLICHODERINÆ: *Iridomyrmex humilis*, Mayr.—On November 22nd

Prof. F. V. Theobald sent me some ants to name, which he told me were causing great annoyance in a house at Eastbourne. These I at once recognised as the "Argentine Ant," which may prove to be a very serious pest, and is very difficult to get rid of. It has been found in Belfast and Edinburgh, but this is its first record for England (see *Brit. Ants*, p. 342).

CAMPONOTINÆ: *Pre-nolepis longicornis*, Latr.—Taken by Evans in Yester Gardens, Haddington, March, 1904.

Pre-nolepis vividula, Nyl.—Taken by Evans in the Botanic Gardens at Edinburgh, in August, 1898.

Mr. Evans has sent me these records, which are not in my book, and have not been published before. (See *Brit. Ants*, pp. 345 and 346.)

Camponotus (Camponotus) fallax-fallax, Nyl.—Mr. Mitford kindly sent me a dealated ♀ of this ant, which was taken in London, in the City, on October 15th, crawling on a cargo of deals and boards from the shore of the White Sea. This species has not been captured in Britain before; it occurs in France, Austria, Germany, Switzerland, Russia, etc.

(To be continued.)

A North Italian Valley.

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

The following is an account of the results of a short entomological trip to the valley of the Tosa river, called the Val Antigorio in the lower portion, and Val Formazza in the upper, on the Italian side of the Alps, during June of 1914. This valley is a branch of the southern approach to the Simplon Pass extending from Domodossola to the southern side of Gries Pass. The itinerary starts from Domodossola 912ft. above sea level, and goes up to the Tosa Falls at 5,490ft. elevation. The chief object of the trip was to get living females and eggs of *Pieris napi* of the two extreme forms, var. ♀ *bryoniae* from the upper part of the valley, and the almost unveined Southern European form, the extreme of *ab. napaeae*, from the lower regions. Next in importance was the getting together of a collection of *Thysanoptera* from this quite unknown region. The short time not occupied in these two pursuits was given to general collecting, and the only excuse for the following notes, chiefly on Lepidoptera, is, that this valley being rather inaccessible, particularly in its higher reaches, has been little visited by entomologists and no records have been published.

I arrived at Domodossola at midday on June 16th, 1914, and spent the afternoon and the following morning collecting, chiefly in the district just south of the town. Only a single female of *Pieris napi* was taken, but this condescended to lay about 120 eggs during the course of the next week and was still alive on my return to London on June 26th. Other Pierids included *P. brassicae* and *P. rapae*, both of which were abundant, *Leptosia sinapis* was occasionally seen; *Colias edusa* was somewhat worn and *Gonepteryx rhamni* was noted. On the road to Varna several *Libythea celtis* were seen and two captured one of which was very deep in coloration, and on the same road *Pyrameis atalanta*, *Aglais urticae* and *Eugonia polychloros* were not uncommon. *Argynnis aglaia* and *Issoria lathonia*, males of a small form, were the

only fritillaries observed, and single specimens of *Pararge maera*, *Epinephele jurtina*, a strong bright ♀ form, and *Coenonympha pamphilus* were taken. Two specimens of *Melanargia galathea* taken, one on June 17th and another on my return journey on the 25th, were both of the dark form var. *procida*, Herbst. *Rumiccia* (*Chrysophanus*) *phlaeas*, *Aricia medon* (*astrarche*), and *Polyommatus icarus* were also seen.

Turning from Lepidoptera to some of the neglected, and to me, more interesting groups, the beautiful white-fly, *Aleurodes proletella*, L., was common in all stages on the undersides of the leaves of *Chelidonium majus* on the sides of the road to Varna, and on a stone wall edging of this road were thousands of a small red mite careering wildly backwards and forwards and in circles with intense activity, in spite of (or was it on account of?) the fact that the direct rays of the sun had made the stones so hot that it was extremely unpleasant to touch them with the bare hand. Mr. C. Warburton has kindly identified specimens I submitted to him as "Trombidoid mites of the family *Rhyncolophidae*, all immature *Rhyncolophus* or *Abrolcphus*." Further up the road a heap of faggots yielded a number of interesting thrips which will be recorded elsewhere.

At mid-day on the 17th I left Domodossola and drove to Foppiano at the head of the Val Antigorio. From about this date the post wagon runs daily between these two places and a seat can be obtained for a small sum. The distance is about thirty kilometres, but six hours was occupied on the journey, the delivery of the mails and the attendant ceremonies occupying the greater part of the time.

Foppiano (in some maps Unterstalden) is at a height of 3,100 feet, and here the pale southern form of *Pieris napi* was replaced by a much more heavily veined form, and some of the males were almost as dark as those found higher up with females of var. *bryoniae*. At this height, however, all the females had a white ground colour. Other males were paler, approaching the southern form, and the range of variation here was greater than at the other localities. *Aporia crataeji* was by far the most abundant butterfly and was in excellent condition: a pupa was found attached to a low plant about two or three inches above the ground and quite conspicuous, and the adult emerged a day or two after my return. Butterflies were most abundant on the hill-side along a small stream, about three hundred yards below the Hotel Foppiano. Here *Papilio machaon*, in poor condition, *Parnassius apollo*, *P. mnemosyne*, one of which had an almost complete black transverse band on the hindwing, *Colias hyale*, *Agriades* (*Polyommatus*) *thetis* (*bellargus*), *Aricia medon* (*astrarche*), *Lycaena arion* var. *obscura* (one female), and *Cupido sebrus* were taken. Along the road-side were odd specimens of *Leptosia sinapis*, *Gonopteryx rhamni*, *Euchloë cardamines*, *Cyclopidis* (*Carterocephalus*) *palaemon*, and *Pararge maera*, a female much approaching the *adrasta* form, and also single specimens of *Erebia ceto*, the form with strongly marked ocelli, as in other valleys on the southern slope, and *E. medusa*. The only "copper" taken was *Lowia* (*Chrysophanus*) *alciphron* var. *gordius*, a male in which there was considerable striation of markings. In the woods just above the hotel *Melitaea dictynna* was common in company with *Brenthis euphrosyne* and *B. amathusia*. One specimen of the first named had intensely black hindwings without any markings, while another had only a single row of orange markings on the hindwings. In addition to the above the fol-

lowing butterflies were seen in the district:—*Coenonympha pamphilus*, *C. arcania*, *Melitaea phoebe* var. *cinrioides*, *Pieris brassicae* and *P. napi*. Among other orders, *Aleurodes proletella* was again seen, but not so abundantly as lower down the valley. In the Neuroptera (*s.l.*) the only specimens brought home have been identified by Mr. W. J. Lucas as *Raphidia flavipes*, one female, and *Panorpa communis* var. *vulgaris*. Two males and a female of a fossorial wasp, found struggling together on the ground, are *Sphex sabulosa*, according to Rev. F. D. Morice, and the only beetle so far identified is *Trichodes apiarinus*.

At the time I was at Foppiano the coach road ended at this village. Immediately above here the track up the valley crosses the river and enters a narrow steep gorge, which separates the Val Antigorio from the Val Formazza. The continuation of the road was, however, in progress, and it was then expected that it would be finished in a few years. When this happens the Val Formazza will be much more accessible and the splendid cascade at Tosa-fall will attract even those who lack an interest in smaller things.

For this last stage I had to put my baggage and apparatus on my back and a walk of three hours brought me to the hotel at the head of the falls (Albergo della Cascata del Toce, height 5,500 ft.) in a drizzling rain. This was on the evening of June 20th and the rain and mist continued till the evening of the 22nd. About 5 p.m. on the latter date, however, it cleared up suddenly, and from 6 to 7.30 p.m. butterflies were flying in the bright evening sunshine. The ground here was covered with gentians, anemones, orchids, and other beautiful alpine plants, each of which gave their quota of small inhabitants, including many interesting thrips. *Pieris napi* was abundant and all the females taken were the dark var. *bryoniae*. Most of the males were very heavily veined, but occasional specimens were paler, and families bred from the Tosa fall females have given a few forms of an intermediate coloration, indicating that the two varieties here exist side by side and probably intercross. Prof. W. Bateson, who collected at this same locality in 1895 and 1897, caught females of the type form along with var. *bryoniae*.

Aporia crataegi was not seen at this height and either does not occur or had not yet emerged. *Hesperia malroides* was abundant, sitting on all the footpaths with occasional *H. cacaliae*. The former were quite small. On the slopes at the sides of the falls a small race of *Coenonympha arcania*, with much extension of the dark clouded margins approaching the form var. *darwiniana* was common, and single specimens of *Oeneis aëlle* and *Parnassius delius* were taken. In the woods at the foot of the falls *Euchlōe cardamines* and *Brenthis ephrosyne* were flying in numbers. *Fidonia atomaria* seen in abundance on the slopes, was much smaller here than those taken a few days before at Domodossola.

A single day's collecting here (June 23rd) enabled me to get as many females of var. *bryoniae* as I required, and as *Cruciferae* for oviposition were rare I returned to Domodossola. *Pieris napi* was much more abundant now than it had been eight days before and several females were obtained. The only new butterfly seen on this second visit was *Polygonia c-album*, while *Leptosia sinapis* was much more abundant.

The return journey to England, with about thirty living females

of *P. napi*, was accomplished without disaster, and only five that were overcrowded perished on the way. They were fed at intervals with sugar and water, to the great amusement of my fellow passengers, and were permitted to come through without any objection on the part of the custom officials.

Agriades coridon var. roystonensis. A reply to Mr. H. B. Williams.

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

It does one good sometimes to be pulled up by a younger member. If Mr. Williams will allow an elder brother entomologist of over 30 years keen collecting of the "blues" and especially of *A. coridon*, to make some further remarks, I hope I can enlighten him on the new form *roystonensis*. I am indeed pleased to see that Mr. Williams is as keen as I am on varietal names. I weighed the matter up thoroughly before I put my new name into print. Since the late J. W. Tutt's varietal name *inaequalis* we have advanced a step further and are still advancing, nature's mysteries are not solved in a single season and it requires any amount of patience. One was in the hope that during August 1915 one would get a little nearer to the nature of this quaint new form of *A. coridon*. But, alas! the war stopped many an enthusiast from following up his theories. Still we have got so far as to know that this new form is quite different from Tutt's ab. *inaequalis*.

Several times I had the pleasure of going to the late Mr. Tutt's house to help him with his work in the "blue" family. On one occasion I took my long series of *A. coridon* (then four cabinet drawers) containing all his known varieties and aberrations and also several unnamed forms, over which we spent a lengthy evening, leaving them with him to go through again at his leisure. The latest volume of *British Butterflies* contains references to several of my forms, but this new form, *roystonensis* was quite unknown to him. I had his views first hand regarding ab. *inaequalis*, and saw his specimens and many others that were lent him whilst he was working at his book, but they were all very different from this new form.

Such a great number of *roystonensis* has now been taken over a period of several years from this Herts locality, that a new name is certainly justified to call it by. It seems pretty clear that Royston is its stronghold and that outside this locality it is extremely rare. Occasionally one comes across butterflies with one wing smaller than the others, but not such an aberration as we have in this new form. It is too striking, as all entomologists who have interested themselves in the "blues" have readily noted.

Mr. Cockayne's microscopical examination of these curious forms has revealed that the blue scaling on *roystonensis* contains male androconia, and we look forward to still further elucidations of this mysterious "blue." With regard to his name *inaequalis*, Mr. Tutt used the words "asymmetrical with blue scales" as applying only to the unequal amount of blue markings on the opposite wings, and certainly not to the shape of the wings. Now in *roystonensis* the shapes of the wings are in marked contrast to any of the forms of Mr. Tutt's ab. *inaequalis*. This new form is not the form named by Mr. Tutt as ab. *inaequalis*. His *inaequalis*, as seen by me at his house, are described

as follows:—"Any females with shape of wings normal or equal but with blue scaling or splashes of blue varying on different wings either slightly or a good deal."

In var. *roystonensis* the shapes of the wings are decidedly different on each side, one side with either one or both wings smaller, in marked contrast to the opposite side, the smaller wings being also more or less covered with blue scales. Occasionally, but rarely, the larger wings may contain a certain amount of blue, but in smaller quantity compared with that on the smaller wings. I have a specimen with the wings on one side much smaller than those on the other, but showing no blue. Still as long as one side is smaller I consider such specimens as var. *roystonensis*.

The forms mentioned on page 86 of the last volume I would place as follows:—

- A. A male with wings smaller on one side. I have since heard that in this particular specimen the wings are crippled, causing the diminution in size, hence it would not come under either *roystonensis* or *inaequalis*.
- B. I put under *roystonensis*, as one side is decidedly smaller. It is a rare and interesting form as it has the blue scaling on the larger wings.
- C. Would come more under ab. *inaequalis* as the wings are equal. One is almost sure to meet with specimens that want a good deal of placing.
- D. Would certainly come under *roystonensis* and I think it is the only one of its kind having no blue scaling but having the left side much smaller.
- E. Would favour *inaequalis*, being much as C, having wings symmetrical.

During August of this year I had the opportunity of working *A. coridon* throughout the whole of the month and after examining some 60,000 I managed to secure 66 var. *roystonensis*, all of which have the blue scaling on the smaller wings, I am examining each specimen carefully and shall report on them in a latter note.

Notes on Swiss Rhopalocera. VIII.

By the late A. J. FISON.

Localities supplementary to those mentioned in the Rev. G. Wheeler's
Butterflies of Switzerland.

Communicated by Miss LILIAN M. FISON.

1. *Hesperia malvae*, L., ab. *taras*, Bergstr.—Tramelan gorge.
2. *Heteropterus morpheus*, Pall.—On road between Mendrisio and L. of Lugano, about 15 vii. 85, by F. de Rougemont. 4 at Reazino near Locarno, 10 vii. 03 (A.J.F.).
3. *Heodes virgaureae*, L.—Panex, early June. Large in places at Aigle and Martigny. The Pontresina and Val Bregaglia ♀ *virgaureae* are near var. *zermattensis*, Fallou. An aberration from Champéry has three black spots, upperside forewing, as well as hindwing. "I saw two or three in meadows just below Panex, 29 vii. 13. It occurred singly near Les Ecovets. I took a short series just below the Col. de Soud between Villars

- and Bretaye, 15 vii. 14. The specimens were not very fresh.” (L.M.F.)
4. *Lowia (Chrysophanus) amphidamas*, Esp.—Villars and 1300 ft. higher sur Beau Cul, under Berbolene cow chalet, 7 vi. 06. The locality for it in the Tinière valley is in a marsh where road gets bad high up and near or on the road,
 5. *Lycaena iolas*, Ochs.—Larvæ in pods of *Colutea arborescens*, July, August, September.
 6. *Plebeius donzelii*, Bdv.—Jaman, 25 vi. 90. A most excellent hunting ground is Sion to Vex, by high road, not by path. A friend took three *meleager* there lately.
 7. *Polyommatus escheri*, Hb.—Fusio. Saillon, 7 vi. 01. Abundant on Supy Hill near Ormonaz. Saviese. Taken at Alvèneubad.
 8. *Polyommatus eros*, Ochs.—Mauvoisin.
 9. *Latorina orbitulus*, E.—Above St. Luc, Rosswald, S. side, vii. 1890, hundreds. Portailles de Fully, 18 vii. 91.
 10. *Aricia medon*, Bergstr., var. *calida*, Bellier.—Mt. Bré, 28 v. 03.
 11. *Albulina pheretes*, ab. ♀ *caeruleo-punctata*, Wh.—Albula Pass, 21 viii. 01. Little Scheidegg.
Ab. *maloyensis*, Rühl. Little Scheidegg, 1. Schafberg, 24 vii. 01. Type form from Anzeindaz Glacier. “Another locality in the Grindelwald district is on the shores of the little Bach-See (7428 ft.) on the higher slopes of the Faulhorn (8805 ft.). It was not perhaps very abundant compared with the profusion of other “blues” (*Agricides coridon* and *Hirsutina damon*) flying around and below Martenbühl (5,157 ft.), 1 viii. 14. (There was snow above 7,000 ft.) Other blues noted but not so common were (worn) *Polyommatus hylas*, *Aricia medon*, worn *P. icarus*, *Lycaena arion*, *Plebeius argus* (*argyrognomon*), and *Latorina orbitulus*.” (L.M.F.)
 12. *Scolitantides baton*, Brgstr.—En Chemin.
 13. *Plebeius sephyrus*, Friv., var. *lycidas*, Trapp.—Saasthal.
 14. *Plebeius aegon* (*argus*), W.V.—An unusual variation replaces type near Geneva. “Blue ground colour in female, with the spots of yellow underside very strongly reproduced on one or both wings upperside. Fringes, too, in the female are broad and black, and the upperside with much black towards apex of forewing.”* Found, 3 viii. 01, in the valley of the Versoix near Geneva. Crévin, and at foot of Salève in very hot spots.
 15. *Everes argiades*, Pall.—Lugano near station. Mendrisio, 15 viii. 02.
 - 15a. *Everes alcetas*, Ochs. Found abundantly, 12 v. 03 and v. 07, one mile south of Sion station, in a meadow bounded on south side by a wood which runs down to the Rhone. Take path south from west end of Sion “gare” and then second path to right going west to above meadow.
 16. *Celastrina argiolus*, L.—Brusio, 13 vii.-17 vii., female form with a broader black apex and a black margin on forewing and costa

* I do not know where Mr. Fison got this information; I have never seen any blue females of *P. aegon* (*argus*) from Geneva, nor anywhere else except the English northern “mosses”; on the other hand blue females of *P. argus* (*argyrognomon*) are the rule there.—G.W. Since identified as *P. argus* (*argyrognomon*).—G.W.

- of hindwings (summer brood) which have also a marginal row of spots. Charpigny, v.-vii. 14. "Never more than two together, v. and vii. 14. Generally just below chalet, and in meadows on warm south side. I took two along the banks of the Gryonne, early, May, 14, I noticed no more." (L.M.F.)
17. *Lampides boeticus*, L.—Charpigny, 3 x. 98. Sepey.
 18. *Raywardia telicanus*, Lang.—Charpigny, 18 ix. 05. Stresa, abundant.
 19. *Strymon pruni*, L.—On flowers of privet and dwarf elder (Dane-wort). Charpigny (Le Pontet), 4 vi. 08 (1 ♀.)
 20. *Hamearis lucina*, L.—Charpigny n May. "Common there in v. 1913 and 1914; chiefly on N. side; if anything rather more abundant in the former year." (L.M.F.)
 21. *Papilio machaon*, L., var. *burdigalensis*, Trim.—Charpigny, ii. v. 00. Jura, near Vallorbe.
 22. *Parnassius apollo*, L.—I have one measuring 63mm.
ab. *nevadensis*, Obthr.—Faido and Lavargo, 9 vii. 03 (3).
var. *pseudonominion*, Christ.—Le Pont.
 23. *Parnassius delius*, Esp., ab ♀ *nigrescens*, Wh.—Languard Alp, marshes below path to Piz Languard—not near glacier—as stated on p. 57 of Mr. Wheeler's *Butterflies of Switzerland, etc.*
ab. ♀ *hardwickii*, Kane.—Rosegg glacier foot, 9 viii. 01. Languard Thal, 5 viii. 01.
 24. *Parnassius mnemosyne*, L.—3 without spots, Lac Tannay, 23 vi. (12) and Lac Lioson, 1-20 viii. 05.
 25. *Pieris manni*, May.—Mt. Bré, 16 iv. 02.
 26. *Pontia daplidice*, L.—Saxon.
 27. *Anthocharis simplonia*, Frr.—Vernayaz, 3 v. 06. Gryon, 6 vi. 03. Illgraben, 13 v. 97. Charpigny, 29 iv. 05. Lavey, 4 v. 06 and 9 v. 06.
 28. *Leptosia sinapis*, L., ab. *lathyri*, Hb.—Note black lines at end of rays below the black blotching of the forewings upperside. I got this form too on S. side of the Alps. This ab. replaced* the type N. and S. of the Alps in 1903, and was common in the Rhone Valley as in 1891.
 29. *Colias palaeno*, L.—Very fine and large at Tramelan. Stockhorn at Binnthal, 8-15 viii. 05. On the 8th and 10th very fresh, females white or of two or three shades of yellow, began to fly above the *Vaccinium* at 9 a.m., but no male appeared until 10.30 a.m. On the 10th I got 30 by 3 p.m., half fresh and half old. By 15th most were old. They occurred more abundantly on the W. and N.E. sides.
 30. *Colias edusa*, Fabr.—"Charpigny, abundant, ix. 13." (L.M.F.)
ab. ♀ *helice*, Hb.—Bex., 27 ix. 11.
 31. *Dryas paphia*, L.—Charpigny. "Common in 1913-14. Very fond of sitting on and flying around lime-trees. Sometimes as many as half a dozen settled high up on the trees both morning and afternoon. I have noticed them between 10 a.m. and 4 p.m." (L.M.F.)
ab. ♀ *valesina*, Esp.—Roche near Mendrisio, 15 viii. 02.
 32. *Argynnis adippe*, L., var. *cleodora*, Ochs.—Lavargo, 9 viii. 03 (6). Bignasco, vii.
 33. *Issoria lathonia*, L., ab. *valdensis*, Esp.—One caught near Roche or

- Charpigny about 1892 was shewn to A. J. F. At Chésières, 6 ix. 11, a ♂ *I. lathonia* was taken with the three larger and innermost spots of silver underside hindwing enlarged and elongated. The above not having the black spots also confluent is probably not completely ab. *valdensis*. ["I am not sure if the one I saw from Roche or Champéry about 1892 had its black spots elongated."—A.J.F.]
34. *Brenthis euphrosyne*, L.—Eclépens, 20 v. 90. Les Plans, 16 vi. 90. Le Pont, Jura, 5 vi. 88. A bright yellow suffusion on underside like that of *Argynnis adippe* var. *cleodoxa* in six taken on Monte Salvatore, 22 v. 02.
35. *Brenthis selene*, Schiff.—Meienthal, 3 vii. 03. Simplon Kulm, 21 vii. 01.
36. *Brenthis thore*, Schiff.—A friend has bred *B. thore* from larvæ fed on yellow-violet leaves.
37. *Brenthis daphne*, Schiff.—Ravoire, 26 vi. 03, 19 vi. 06.
38. *Brenthis ino*, Rott.—One and a half miles of S.W. of Villeneuve. Les Pléiades.
39. *Brenthis pales*, Schiff. var. *arsilachæ*, Esp.—Lac Lioson, 1-20 viii. 05.
40. *Melitæa cynthia*, Hb.—Lac de Fully, 18 vii. 91. Trift Alp near Saas, 2 viii 94. Innfeld, above and further on 26 vii. 05. S. of Taben-horn, 31 viii. 05.
41. *Melitæa aurinia*, Rott.—It was only *very* abundant once on N. side of Charpigny, though caught there also at other times and in other places, as near Sion. "Moderately common, 1914." (L.M.F.)
42. *Melitæa didyma*, Ochs.—A Swiss collector has an aberration usually found at Sierre, with two twin lines on upper edge, upper wing clearly, although not darkly, marked. Upper spots of all the wings well marked (but not dark) with blotches.
43. *Melitæa deione*, Hb., var. *berisalensis*, Fav.—Var. *berisalensis* is no doubt a Swiss form of *deione*. Bisse Lentine below Ormonaz, N. or N.W. of Sion, 10 vi. 08 (12), and 13 vi. 08 (11). Very small in autumn brood.
44. *Melitæa aurelia*, Nick.—Visp on slopes one mile along the Brig road. "Common at Visp with *Polyommatus amandus* on low slopes near and S.E. of Hotel de la Poste when the sun came out for an hour in the afternoon of 15 vi. 14. They disappeared when the sun went in. The spot was bounded by a streamlet and a small stretch of marshland beyond." (L.M.F.)
45. *Melitæa athalia*, Rott., ab. *navarina*, Selys-Long.—Val Solda, 1 on 26 v. 03.
ab. *aphaea*, Hb.—S. edge below Les Ecovets, near Ollon, 15 ix. 85. Finely marked and large *athalia* from Coire, where it is abundant.
46. *Limenitis populi*, L.—On page 97 line 17 of Wheeler's *Butterflies of Switzerland* [Le Prese, at side of lake, 12-15 vii. 01, mostly worn (Fis.)], delete "mostly worn." Dent de Jaman, towards Montbovon.
47. *Apatura ilia*, Schiff.—See p. 100, lines 10 and 11, Mr. Wheeler's *Butterflies*, etc. "In E. Vaud and the Valais it is scarce, but found occasionally, e.g., Charpigny (Fis.)." Mr. Fison writes :

- “This was not at Charpigny, but about half way to Aigle by marsh path, on three tall oaks. I took 8 in about an hour and a half, though the sun was often hidden.” “On 28 vi. 1913 I saw 3 “Emperors” flying around a small clump of oaks on the Bex road, between Charpigny and the Gryonne river. I caught one at once, which proved to be *A. ilia*. The others flew too high for capture or identification. A few days later I looked again, but did not see any. Several days earlier I had, however, noticed 2 “Emperors” around some willows growing on the banks of a streamlet (Le Pontet) under Charpigny (S.E. corner of the rock). These again flew too high for correct identification. I do not know whether “Emperors” have been observed in the first named spot before.” (L.M.F.)
48. *Apatura ilia* var. *clytie*, Schiff.—2 at Le Pontet, under Charpigny, 10 vii. 86. The Swiss form of *clytie* is a transition between typical ab. *clytie* and ab. *eos*. Locarno. Jura.
49. *Apatura iris*, L.—6 seen on the top of Piz Alun (4,860ft.), 3 hours S. of Ragatz, 18 vii. 04. Females in afternoon about 4 p.m. Males come down in morning.
50. *Pararge hiera*, Fabr.—E. of Caux, 18 and 24 vi. 03. Ravoire de M, 31 v. 07. Tinière Valley.
51. *Pararge megaera*, L., ab. *alberti*, Redlich.—Marsh W. of St. Triphon Rock, 30 vi. 02 (2).
52. *Pararge achine*, Scop.—“Aigle. On hedges in my meadow on the plain,” Charpigny. “Common between the Gryonne river and St. Triphon station, vi. 14, chiefly around a row of acacia trees, near the railway lines.” (L.M.F.)
53. *Satyrus circe*, F.—Very common in 1901, not recorded for 14 years. Top of Pléiades near Clarens. Cubly, 1901. La Sarraz.
54. *Satyrus statilius*, Hubn.—Martigny. La Batiatz, end of August and half September 1905, very abundant.
Var. *allionia*, Fabr.—Martigny and Les Follaterres, September 1905.
55. *Enodia dryas*, Scop.—Charpigny. “July 1913-14, on the warm, rocky side, with *Satyrus alcyone* and *S. cordula*.” (L.M.F.) Aigle. Grandchamp near Chillon, 1901. Visp. Kunkel Pass and N. of Reichenau.
56. *Hipparchia briseis*, L.—Dombresson, near Neuchatel, on a bit of hot stony ground.
57. *Hipparchia arethusa*, Esp.—Val d’Anniviers.
58. *Epinephele jurtina*, L., var. *hispulla*, Hb.—Fine at Joueur, 1 viii. 13. N.W. of Champéry, 3 viii. 03.
59. *Epinephele lycaon*, Rott.—Binn, July.
60. *Coenonympha satyrion*, Esp.—Dent du Midi, very small, July and August, 1903.
Var. *unicolor*, Wh.—N.W. of Morteratsch Glacier foot, Pontresina.
Ab. *caeca*, Bl.—Rigi, Rothhorn, 21 vi. 04.
61. *Coenonympha iphis*, Schiff.—Mt. Cau, S.W. of Villeneuve.
62. *Coenonympha tiphon*, Rott.—Altmatt, 17 vii. 03 and 20 vi. 04. At Gimel with fewer and smaller spots than the flies from Weesen.
63. *Oeneis aello*, Hb.—Fusio. Laquinthal, 18 vi. 02. Dent de Morcles, Below Lac Fully, 1889. Ferpècle.
64. *Erebia ephron*, Knoch.—From Dent du Midi, a trifle larger and

darker than var. *cassiope*. Fulvous eyespots larger, more regular, and with larger black pupils. On upperside of forewings, four spots on each wing. On underside forewing, three spots on each wing (1, 2, and 4 from apex) on a more suffused band, but no band or spots on hindwing underside, which is darker than underside upperwing. Its band is constricted at the second spot upperside forewing. It is a male. A specimen I have from the Simplon is more like the type.

Var. *valesiana*, M. D.—By Rhone Glacier. From Rosegg they are var. *cassiope*, Fb., also some intermediates and var. *obsoleta*, Tutt.

65. *Erebia pharte*, Hb.—Little Scheidegg. Fusio.
Ab. *phartina*, Stgr.—Dent du Midi, 4-11 viii. 03.
66. *Erebia mnestra*, Hb.—Rosegg glacier, 3 viii. 01. Pontresina, 5 viii. 01. Boden glacier, 18 vii. 95.
67. *Erebia alecto*, Hb., var. *glacialis*, Esp.—Anzeindaz, 14 vii. 91. Portailles de Fully, 18 vii. 91.
Ab. ♂ *pluto*, Esp.—Rotthorn near Brienz, 16 vii. 92.
68. *Erebia manto*, Esp., ab. *caecilia*, Hb.—Sefinenthal.
Var. *pyrrhula*, Frey.—Mythen, 4-11 viii. 03. Sefinenthal.
69. *Erebia ceto*, Hb.—Mt. Ravoire, 17 vi. 03. Fusio.
70. *Erebia evias*, Godt.—Near Asceгна, 4 v. 96. Losone (1), 23 v. 03. Fusio.
71. *Melanargia galathea*, L.—Lugano, 28 v. 96 (lots).
Var. *galaxaera*, Esp.—Lavorgo, 9 vii. 03. Monte Bré, 28 v. 03 and 18 viii. 02.

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Compiled by Hx. J. TURNER, F.E.S.

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I wish to express my thanks to Mr. G. T. Bethune-Baker, Rev. C. R. N. Burrows, Dr. Chapman, Mr. J. Hartley Durrant, Mr. A. E. Gibbs, Mr. F. N. Pierce, Rev. G. Wheeler, etc., for much help and suggestion in obtaining material for the above.

There may be errors in year of publication and pagination, on account of papers being read in one year and published in another, pagination of reprints differing from that of the original, difficulty of seeing the original, the copying of items from the Zoological Record

and thus not at first hand, etc., etc. For any such errors I must apologise.—H.J.T.

SCIENTIFIC NOTES AND OBSERVATIONS.

POLLINATION OF ORCHIDS BY INSECTS.—The following cases are probably worth recording:—

June 12th, 1912.—A ♂ *Plusia chrysitis* with two pollinia symmetrically arranged, one on the lower part of each eye. The pollinia agreed with those of the butterfly orchis (*Habenaria bifolia*) and not with those of other genera, which were in flower at the same time. This specimen was taken at Fairhill, Tonbridge.

June 25th, 1914.—*Anthrocera jilipendulae* ♂ with two pollinia (? *Orchis pyramidalis*) on the antennæ, Caldey Island, Pembroke.

July 1st, 1912.—A specimen of *Anthrocera meliloti*, taken in the New Forest with two pollinia of *Orchis maculata* on its head.

July 1st, 1915.—A specimen of the wasp, *Odynerus pictus*, Curtis, bearing one pollinium of an undetermined orchid on the clypeus. The specimen is now in the Cambridge University Museum. I believe I am right in stating that this is the first record of an *Odynerus* being found carrying a pollinium. The species is, of course, predacious mainly.—P. A. BUXTON, St. George's Hospital, W.

NOTES ON COLLECTING, Etc.

ABERRATIONS OF ARGYNNIS SELENE IN WYRE FOREST.—On the 20th of June, 1915, I was one of a party of entomologists who were spending their week-end in Wyre Forest. The party included also Mr. W. H. Edwards and Dr. D. Dewar. We started together after breakfast, but at first we found very little of interest, and in an opening in the Forest I netted a slight aberration of *Brenthis (Argynnis) euphrosyne*, with the black markings unusually large near the base of the primaries. About midday, after a not very interesting morning, I found myself on the railway line near Cleobury Mortimer Station. Here, on a bank of heather close to the line, I took a white aberration of *Brenthis (Argynnis) selene*, black markings normal, ground colour entirely white. I returned to our farmhouse to dinner, and after dinner the whole party turned out again. Mr. Edwards and I kept together, and presently I captured another specimen of *B. selene* similar to the first, but slightly damaged. After this nothing happened till it was nearly time to give up the hunt. Then coming to a damp hollow near the railway, where the species seemed plentiful, we decided to spend the rest of our available time there. Mr. Edwards had the next stroke of luck, and netted a white specimen similar to mine. On the way back we fell in with Dr. Dewar, who had taken one white specimen and one very fine melanic aberration, all the wings deeply suffused with black. Thus the total bag for the day for "three guns" was four white specimens and one black one.

A week later I was on the same ground again with two other entomologists, but though *B. selene* was plentiful, and we kept a sharp lookout, we saw no more aberrations.

The occurrence of all these specimens on one day challenges speculation as to the cause. One might suggest pure coincidence, or the emergence of an abnormal brood about that time. But the numbers

seem too extraordinary for the hypothesis of coincidence; and as to the other suggestion, it scarcely seems likely that the individuals in one brood would emerge so nearly together, and have so short a life, as to be almost entirely over within a week.—J. E. R. ALLEN, 19, Chestnut Walk, Worcester.

CURRENT NOTES AND SHORT NOTICES.

May we urge upon all contributors to the pages of the magazine to send in their articles and notes as early as possible, that our printer may have more time to set up the matter, and above all will they kindly return all proofs as nearly as possible by the next day.

The list of Officers and Council of the Entomological Society of London for the present year is as follows:—*President*, The Hon. N. C. Rothschild, M.A., F.Z.S. *Treasurer*, A. H. Jones. *Secretaries*, Commander Jas. J. Walker, M.A., R.N., F.L.S., and the Rev. Geo. Wheeler, M.A., F.Z.S. *Librarian*, Geo. Chas. Champion, A.L.S., F.Z.S. *Council*, A. W. Bacot, E. A. Butler, B.A., B.Sc., T. A. Chapman, M.D., F.Z.S., E. A. Cockayne, M.A., M.D., M.R.C.P., J. C. T. Fryer, M.A., C. J. Gahan, M.A., E. Ernest Green, G. B. Longstaff, M.A., M.D., G. Meade-Waldo, M.A., L. Neave, M.A., B.Sc., H. Rowland-Brown, M.A., and A. E. Tonge.

In the *Scottish Naturalist* for November is a most interesting article entitled "Some Observations and Deductions regarding the Habits and Biology of the Common Wasp," by James Ritchie, M.A., D.Sc. In dealing with the nest and its contents, based on a July examination he notes the size, number of individuals, age and development of the colony, the rate of egg-laying, the rate of cell-building, the rate of hatching and the amount of earth removed. In this last respect one would like to know what was the nature of the debris and where it was deposited by the workers, the average size of the grains removed and what was done with the larger portions if there were any. The writer gives some information as to the working hours and was struck by the late hour at which wasps might be noted abroad. At 10 p.m. on one occasion he plugged the entrance with cotton wool and cyanide of potassium, with the result that in the morning he found no less than 30 dead wasps outside. As an instance of the resourcefulness of the wasps, he relates that on one occasion he had plugged the entrance with a cloth saturated with ammonia, and in the morning the wasps had opened a new exit and were at work as usual. He gives the size of an enormous nest, found by a friend near Edinburgh, in which there were 9 cell-flats, which was estimated to have produced not less than 25,000 wasps in the course of the season.

In the *Scottish Naturalist* for December Percy H. Grimshaw, F.E.S has begun a Catalogue of the "Greville Collection of *Chalcididae* and *Proctotrupidae* in the Royal Scottish Museum," which, as the collection contains a number of Walker's types, will no doubt be of much use. We understand that the specimens are in perfect condition and beautifully set. In the same number are details with figures of the smaller pine beetle, *Myclophilus minor*, a rarity in Scotland as a rule, and a comparison of structure and borings is given with its larger relative *M. piniperda*. This latter article is by Walter Ritchie, B.Sc.

The *Naturalist* for December contains a capital article on the

"Guests of Yorkshire Ants," by T. Stainforth, B.A., B.Sc., in which he gives many records and classifies the "guests" into three groups, (1) true guests, (2) indifferent tolerated tenants, and (3) actively pursued tenants. Several diagrams illustrate the distribution in the British Isles of some of these myrmecophiles.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

October 14th.—LIFE-HISTORY OF STERCORARIUS.—Mr. Sano exhibited a large number of lantern-slides illustrative of the life-history of *Geotrupes stercorarius*, and contributed a series of notes. GEOTRUPES SPECIES.—Mr. Priske, the seven British species of the genus *Geotrupes*, including a coppery-coloured aberration of *G. stercorarius*. CAGES FOR BREEDING COLEOPTEROUS LARVÆ.—Mr. Main, cages arranged by himself to watch the method of cell-making by these beetles. MENDELIAN RESULTS IN BREEDING *A. NEBULOSA*; CURIOUS RESULTS WITH *B. REPANDATA* AND VAR. *CONVERSARIA*.—Mr. Newman, a long bred series of *Aplecta nebulosa* from a pairing of var. *robsoni*: of 350 reared 50% were *robsoni*, 24% *thompsoni*, and 26% typical; also a long series of *Boarmia repandata*, the result of crossing a ♂ *conversaria* with ♀ type, most of the brood were reared, every specimen was *conversaria*, and every one a ♀. AB. VARLEYATA STRAIN DORMANT FOR FIVE YEARS.—Mr. Newman recorded the fact of the ab. *varleyata* of *Abraaxas grossulariata* disappearing from a strain which contained it and reappearing after five years. BIRD ATTACKING A HAWKMOTH.—Mr. P. A. Buxton communicated from his brother in the Dardanelles an instance of a bird, a young butcher-bird, attacking and capturing a large hawkmoth. EXHIBIT OF THE GENUS SETINA.—Mr. Morford, a number of specimens of *Setina irrorella*, with *S. aurita* and its aberration *ramosa*, sent to him by Prof. Morel, N. Italy. A RARE BUPRESTID.—Mr. Ashby, a long series of the rare Buprestid beetle, *Agrilus viridis*, from the New Forest. A FIVE-SPOTTED FILIPENDULÆ.—Mr. R. Adkin, specimens of *Anthroceva filipendulæ* reared from Otford pupæ, including an aberration with only five spots on the forewings, upper-side. Mr. Newman recorded a number of similar specimens from near Brighton.

October 25th.—PAPER ON BRITISH COCKROACHES.—Mr. W. J. Lucas read a paper on "British Cockroaches," and exhibited a large number of lantern slides illustrative of all the indigenous species and those of occasional occurrence. Instances were subsequently given of one species gradually supplanting another. EXHIBIT OF ALGERIAN BUTTERFLIES.—Mr. P. A. Buxton, a box of Algerian butterflies, and pointed out that the general facies was almost completely European, *Teracolus nouma* being the sole representative of the really African fauna. OCCURRENCE OF A RARE TINEID, N. TILLÆ.—Mr. Sich, mines of the rare Tineid, *Nepticula tillæ*, from Dolgelly, in leaves of lime, the trees growing in shady situations near water. A RARE SLUG.—Mr. Priske, the rare British slug, *Limax cinereo-niger*, from Epping Forest, the first record for Essex. OCCURRENCE OF A MALE STICK-INSECT, LINCRODES.—Mr. H. Moore, a living male specimen of the stick-insect, *Linchodes* sp., which was very rarely met with. ABERRATIONS OF *P. ÆGON* AND *C. GRAMINIS*.—Mr. Brooks, specimens of the beautiful blue female of *Plebeius ægon*,

known as ab. *masseyi*, from Kendal, and also an aberration of *Charaas graminis* with the usual dark submarginal wedges on the forewing almost obsolete. ABERRATIONS OF *MAMESTRA TRIFOLII* (CHENOPODII).—Mr. B. S. Williams, aberrations of *Mamestra trifolii* (*chenopodii*) including a pale ochreous grey form, a dark greyish fuscous form, and a reddish ochreous form. A DOUBLE COCOON (?) OF *S. CARPINI*.—Mr. Bowman, a very dark coloured specimen of *Saturnia pavonia* (*carpini*) with deep red lower wings, and a cocoon of the same species, which from its shape and size suggested it was a composite one.

November 11th.—UNUSUAL FOOD OF *E. CASTIGATA*.—Mr. R. Adkin, a short series of *Eupithecia castigata* reared in May from ova laid by a ♀ taken at Beaconsfield in 1914. The larvæ fed by preference almost entirely on the flowers of an Alpine plant (*Campanula pusilla*). PAPER ON BRITISH SLUGS.—Mr. Sich, several living species of British slug, and read a paper entitled "Limacology."

November 25th, 1915.—THE ANNUAL EXHIBITION OF VARIETIES.—Mr. Tonge exhibited aberrations of *Pyrameis atalanta*, orange on hindwings; *Polyommatus icarus*, blueness of females, and underside spotting; *Agriades thetis*, blue females; *A. coridon*, blue females, and a leaden coloured male; and a confluent *Anthrocera filipendulae*.

Mr. Leeds, a long series of Lycænid and other aberrations, of *A. coridon*, male with wide borders, male near ab. *fowleri*, male with completely ringed spots on hindwings, female var. *semisyngrapha*, females with discoidal spots elongated, with much coalescence on underside, with spots lanceolate on underside, with very light and very dark ground on underside, ab. *melanotoxa*, with much enlarged spots and much reduced spots on underside; *P. icarus*, a similar range of aberration with, ab. *caerulea* ♂; *Coenonympha pamphilus*, ab. *lyllus*, ab. *pallida*, with bright ochreous patches, with smoky undersides, with large spotting on underside; *A. thetis*, a smoky suffused male with extra and coalescent spotting on underside; *Chatterdenia w-album*, without the W; and *Epinephele jurtina*, with large extra spots on forewing below.

Dr. Cockayne, a series of *Dysstroma concinnata* from Argyllshire, Arran Island, and Achil Island, with *D. truncata* and *D. citrata* (*immanata*) var. *pythonissata*, and gave the distinguishing characters.

Mr. Percy Bright, very striking aberrations of, *Rumiccia phlaeas*, hindwing with forewing markings, with striated markings below; *Arctia caja*, a graduated series of aberrations from almost white to completely brownish-black, a form melanic on one side only, an example with colours on forewing reversed; *Agriades coridon*, a silvery-white form; *P. brassicae*, a male pinkish-drab in colour, an almost perfectly banded female; *Euchloë cardamines*, with pale orange apex, with clear yellow apex, six gynandromorphs, with very dark hindwing below; *Leptosia sinapis*, a cream coloured form, underside dark brown, underside deep green; *Gonepteryx rhamnii*, with irregular scarlet markings, three gynandromorphs; *Chrysophanus dispar*, a series of 14.

Mr. Bright, for Mr. Tatchell, *Saturnia pavonia*, a very dark male; *Eriogaster lanestris*, with discoidal spots dark brown; *A. coridon* ab. *fowleri*, a very perfect example.

Mr. L. W. Newman, *Pieris napi*, males spotless to large-spotted

forms, females heavily spotted and yellowish; *Aplecta nebulosa* ab. *robsoni*, pairing result, 50% *robsoni*, 26% type, and 24% *thompsoni*; *Anthrocera filipendulae*, bred from ova from a pairing of yellow ♂ and orange ♀, all the imagines bred were pink, orange or yellow, no red; *A. grossulariata* ab. *varleyata*, from a *varleyata* strain after five years suppression; *Eunomos quercinaria*, banded, and unicolorous chocolate forms.

Mr. Hy. J. Turner, some Royston forms of female *A. coridon*, ab. *semisygrapha*, incomplete *semisygrapha*, with conspicuous discoidal spots, and underside aberrations; *Parnassius delius* from the Eugadine, a varied series.

Mrs. R. E. Page, for Mr. Muschamp, many gynandromorphs of a cross between *Lymantria dispar* and its var. *japonica*.

Mr. A. W. Mera, *Lampropteryx suffumata*, with three divergent examples much resembling *Eustroma silaceata*.

Mr. Curwen, aberrations of *Polyommatus icarus*, including ab. *caerulescens*, ab. *caerulea*, ab. *angulata*, ab. *striata*, ab. *arcuata*, ab. *iphis*, ab. *icarius*, and ab. *semipersica*.

Mr. R. T. Bowman, bred *Geometra vernaria*, with much converging transverse lines, with transverse lines united by an irregular suffusion of white; *Hydriomena impluriata*, some melanic forms bred.

Rev. G. Wheeler, forms of *P. icarus*, large and brilliant including ab. *icarinus*; *Plebeius aegon* var. *masseyi*, the blue hindwing female; *Aricia medon*, var. *salmaeis*, with ab. *albiannulata*, ab. *redrae*, ab. *obsoleta*, ab. *semiredrae*, ab. *inclara*, and ab. *artaxerxes*; *Pieris napi*, with grey suffusion of margins and veins in females, with extension of black in the males.

Mr. Fryer, *P. icarus*, a striated underside.

Rev. A. T. Stiff, aberrations of *Epinephele tithonus* from Tavistock, 1915, lemon-yellow females, golden-yellow females, with borders a mouse grey, with extra spots on forewings, with anal spots of hindwings very large, females with five spots on hindwing, having white streaks on underside of hindwings; *Coenonympha pamphilus*, with double apical spot on underside; *Catocala nupta*, with a submarginal series of long black streaks on forewings.

Rev. J. E. Tarbat, *Epinephele hyperantus*, having very light underside with conspicuous eye-spots; *A. grossulariata* ab. *varleyata*; *Lupulina testacea*, dark melanic forms; *A. nigricans*, a melanic form.

Mr. W. West (Lewisham), on behalf of the Society, ten cabinet drawers of the Canadian Lepidoptera, presented to the Society by Mr. Lachlan Gibb.

Mr. W. J. Kaye, two drawers of Morphos, *Morpho cacia*; *M. adonis* with the very rare ♀; *M. cypris*, including yellow females and the rare blue female; *M. sulkowskyi*, *M. eros*, *M. aurora* male, *M. aureola* male, *M. uraneis*, probably the rarest species, *M. cytheris*, *M. godarti*, *M. aega*, the females graduated from yellow to extreme blue, *M. menelaus*, the geographical forms *amathonte*, *melacheilus*, *nestira*, and *didius*.

Mr. Dunster, *A. thetis*, female suffused blue with large red spots on hindwing.

Mr. G. Talbot, for Mr. J. J. Joicey, many new brilliant lepidoptera from New Guinea, etc., the genus *Delias*, 52 varied forms, seven from the Schouten Isles, and four new species from Wandammen Mountains, Dutch New Guinea; the genera *Milionia*, *Callhistia*, *Lobocraspeda*,

Eubordeta, *Craspedopsis*, and *Bordeta*, comprising 37 species of brilliant Geometers; a local race of *Papilio paradisea*; a new *Diacrisia*; the largest New Guinea Pyrale, *Ethopia roseilinea*, etc.

Mr. Stallman, *Amorpha populi*, a bred series, males three typical, three coppery tint, and two grey with olive markings, females one rich copper and three very pale olive with markings indistinct; *Boarmia abietaria*, a bred series, males type to completely black, females no typical, dark to black; *B. gemmaria*, greyish and ochreous forms, two var. *perfumaria*, and one banded male; sixteen species of *Eupithecia* bred this year.

Mr. Schmassmann, Exotic Rhopalocera, including *Papilio memnon*, a series of female local forms; *P. memnon* female, *L. achates* and *P. coon* of similar pattern, which fly together in Java; *P. mayo* and *P. rhodifer*, of similar pattern, which fly together in the Andamans; *Cethosia leschenaulti*, showing resemblance to *Euvanessa antiopa*; *Agyrophorus argenteus*, a silver coloured Satyrid; several brilliant South American *Nymphalidae* of the genus *Callithea*.

Mr. C. B. Williams, ab. *olivacea* of *Lasiocampa quercus*, with its dark coloured cocoon and a very dark coloured larva of the same form; and under the microscope, species of Thrips, including *Kakothrips pisorora* and British species of *Protura*.

Mr. A. E. Gibbs, aberrations of *A. coridon* from Herts, including ab. *semi-syngrapha*, female forms with blue spots inside hindwing margin, white fringed female, rayed females, many undersides spotting aberrations, a coffee coloured underside, females with white ringed discoidals, asymmetrical forms, male with orange on the submargin of hindwings, etc.

Mr. Bacot, living examples of the yellow-fever mosquito, *Stegomyia*, in all stages.

Mr. Edwards, the *paris* group of *Papilio*, *P. ganesa*, *P. arjuna*, *P. brama*, *P. arcturus*, *P. peranthus*, *P. moultanus*, *P. bianor*, and *P. paris* var. *karna* and var. *vernalis*.

Mr. E. J. Salisbury, D.Sc., the variation in the seedlings of maize, *Zea mais*, and contributed notes.

Mr. R. Adkin, eight representative series of families of *Boarmia gemmaria* reared through successive years from captured females of the black form. (1) Black \times black, result, all black, 39% σ , 61% ρ ; (2) black σ \times type ρ , result, 44% typical, 56% black; (3) black \times black, result, 22% typical, 78% black; (4) black \times black, result, 50% typical, 50% black; (5) black \times black, result, 29% typical, 71% black; (6) type σ \times black ρ , result, 62% typical, 38% black; (7) black \times black, result, all black; (8) black \times black, result, 29% typical, 71% black.

Mr. F. W. Frohawk, *Lycaena arion*, a long series of Cornish specimens, including spotless to heavily spotted males, females with spotting like males to large club-shaped spotted females, dwarf examples, dull coloured forms; *Gonepteryx rhamni*, a specimen similarly coloured to *G. cleopatra*.

Mr. C. Pickett, *A. coridon* from Herts, 1915, including 66 asymmetrical gynandromorphic females ab. *roystonensis*, fourteen females with asymmetrical splashes of male colour ab. *inaequalis*, light golden-brown females, females with golden-brown patches, other aberrant females such as black, white rayed, ab. *semisyngrapha*, ab. *obsoleta*, ab. *minor*, and examples with blackish-grey undersides, whitish to sky-

blue males, ab. *suffusa*, ab. *minor*, and ab. *pallida* males, and examples near ab. *fowleri*; *A. grossulariata*, several dark Aberdeen forms and ab. *varleyata*: *Angerona prunaria*, the results of eighteen years interbreeding and latterly to colour environment, those under orange environment produced deeper orange, those under green became lighter and the orange colour absent, those under red produced deep reddish-orange males and deep chocolate banded females, and a series of ab. *pickettaria*, the half banded form.

THE LONDON NATURAL HISTORY SOCIETY.

October 5th.—AGROTIDS EXHIBITED.—MR. A. W. Mera exhibited a cabinet drawer of Agrotids. MENDELIAN, ETC., RESULTS.—MR. L. W. Newman, a drawer of *Aplecta nebulosa* bred from ab. *robsoni* parents. From 400 ova hatched he bred 350 imagines, which gave 50% ab. *robsoni*, 24% ab. *thomsoni*, and 26% type; also representatives of a brood of *Boarmia repandata* bred from a ♂ ab. *conversaria* and a light Hants ♀; about 100 specimens were reared all of which were ♀ ab. *conversaria*. RACES OF *P. DALELLA*.—MR. G. H. Heath, a long series of *Plutella dalella*, taken on the south border of Durham, in August, showing the extensive variation observed in one small wood. Mr. J. E. Gardner, a similar series from Epping Forest for comparison. RECENT CAPTURES IN "OTHER ORDERS."—MR. C. Nicholson, *Lampyrus noctiluca*, *Phytodecta riminalis* bred from larvæ, *Creophilus marillosus*, *Ledra aurita*, *Triecphora vulnerata*, *Dolycoris baccarum*, *Tipula gigantea*, *Ptychoptera contaminata*, *Echinomyia fera*, *Xylota sylvaram*, *Limosina coenosa* and puparium bred from a nest of *Vespa germanica*, with a *Phora* from the same nest, identified provisionally by Mr. J. E. Collins as *P. sublugubris*, Wood, *Ammophila campestris*, *Fanus jaculator*, and a worker of *Vespa vulgaris*, which he said was the smallest wasp he had ever seen; attention was called to the disproportionately long antennæ. A. VESTIGALIS AND PARASITE OF WASPS.—MR. Worsley-Wood, a short series of *Agrotis vestigialis* ab. *nigra*, Tutt, from Surrey, and specimens of *Echinomyia possa*, a dipteran parasite on *Dimorpha versicolora* and *Physöcephala rufipes*, from a wasp's nest at Boxhill. CAPTURES AT HORSLEY.—MR. W. E. King, interesting forms of *Callophrys rubi* from Horsley, and specimens of *Hecatera serena*, *Dianthoecia conspersa*, *D. carphophaga*, *D. cucubali* and *D. capsicola* from the same locality. AGROTIDS EXHIBITED.—MR. L. B. Prout, a box of coast Agrotids, mostly from the Scotch coast, including one *A. obelisca* from Stonehaven, a new record for this locality. LYCENID ABERRATIONS.—MR. C. H. Williams, varieties of *Agriades coridon* including ab. *marginata*, ab. *albina*, ab. *fowleri*, ab. *semispygrapha*, and ab. *obsoleta*. PAPER.—DR. G. B. Longstaff, M.D., F.R.C.P., read a paper on "Points to observe in common insects," illustrated by a series of lantern-slides from photographs by Mr. Hamm, of Oxford.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

April 19th, 1915.—PAPER.—A paper by Mr. Joseph Collins, Oxford, entitled "Notes on the Family *Pselaphidae*," was read to the Society. Mr. Collins reviewed in a very interesting manner the literature of the family and showed how his own work, and that of Mr. Dutton, of Helsby, had greatly assisted in clearing up many doubtful points in the determination of the various species; much of the material leading to

this having been obtained in Delamere Forest and in Oxfordshire. The author drew attention to the obscurity which still invests the early stages in the life-histories of both the *Pselaphidae* and the *Euplectinae*, and although a very difficult task, he recommended it as a fruitful field for research. Mr. Collins' paper was accompanied by an exhibit comprising his collection of the family, in which nearly all the species were represented.

October 18th.—THE SEASON'S WORK.—This being the first meeting of the session it was, as usual, devoted to an exhibition of the work of the members during the past season. TWO SPECIES OF TORTRICES NEW TO BRITAIN AND TO SCIENCE.—Mr. F. W. Pierce exhibited, on behalf of the Rev. J. W. Metcalfe and himself, *Peronea fissurana* and *Halonota littoralana*, two new species of *Tortrix* discovered by examination of the genitalia, and read descriptions of the species; also *Peronea ferrugana* with its vars. *tripunctana*, *brachiana* and *multipunctana* from various localities; a long series of *Stigmonota perlepidana* from near Mold, and *Acentropus niveus* from Tansor, Northants, where it had been abundant this year. * ABERRATIONS, ETC., OF BRITISH LEPIDOPTERA.—Mr. A. W. Hughes had, from the Mold district, a nice series of *Cidaria suffumata*, some specimens with a tendency to extension of the white ground colour but none of the melanic form; a series of *Triphaena jimbria* from Delamere, one example being of the scarce mahogany-brown form; from the Wye Valley a number of species, including *Pyrameis atalanta*, *Polygona c-album* and var. *hutchinsoni*, *Vanessa io*, *Strymon v-album*, *Asthenes blomeri* and *Abraeus sylvata*. SOME LOCAL LEPIDOPTERA.—Mr. R. Wilding showed long series of the following:—*Pyrameis cardui* from Barmouth; *Coenonympha tiphon*, *Erebia epiphron* and *E. aethiops* from Rannoch. HUMBLE BEES AND THEIR PARASITES.—Dr. A. Randell Jackson brought a very interesting exhibit of humble bees and their parasites, captured in his garden at Chester, comprising some forty species, and contributed notes. LOCAL LEPIDOPTERA, ETC.—Mr. H. B. Prince's exhibit contained long series of many local insects, prominent among them being *Pachygastris trifolii* from the Lancashire coast, *Agriades coridon* and ab. *semi-syngrapha*, *Aglais urticae*, several specimens having the usual orange-red colour replaced by fuscous-ochreous, and *Cyclopides palaemon*. ABERRATIONS AND LOCAL SPECIES OF BRITISH LEPIDOPTERA.—Mr. Wm. Mansbridge showed *Plebeius aegon*, a series from Witherslack with var. *masseyi*, and one male in which the orange spots on the underside were dark fuscous-ochreous while the hindwings on the upperside were slaty-grey; from Simonswood several specimens of *Acrionicta leporina* var. *melanocephala*, *Hyria muricata*, moss form, and *Emnychia octomaculata* from Witherslack, *Rhodaria sanguinalis* from Wallasey, *Peronea comparana*, *P. variegana* and *Depressaria assimilella* from Delamere Forest, the last named being new to the county list. MICRO-LEPIDOPTERA OF BURNLEY.—Mr. W. G. Clutton sent a box of micro-lepidoptera collected in the Burnley district, which contained among the usual common kinds a specimen of *Gelechia scalella* taken at Burnley; this insect is new to the county list, and the records shows an extension of its range toward the north.

OBITUARY.

Prof. Charles Blachier.

It is a real sorrow to hear of the death of Charles Blachier in

Geneva—his native town. He was so active, almost to the last, that those who were not in daily intercourse with him scarcely realised he had long been suffering from an internal trouble; he will be sorely missed by a large circle of friends and students for as a matter of fact, most of his students were his friends also, as in the largeness of his soul he drew young men to him in a wonderful way. It is several years since I had the pleasure of meeting him, though we had more than once recently tried to arrange our summer holidays together, but each time something intervened to upset it. I well remember, however, our last evening together, and how he impressed me, all unconsciously to himself, with the wideness of his reading as well as of his research, though perhaps the greatest characteristic of the man was his innate modesty, whilst a quiet courtesy of manner was blended with an essential manliness of being in a way that is not often met with. Naturally somewhat reserved, he was nevertheless an excellent and most interesting conversationalist, and he had a grace about him that charmed and endeared him to all. In this country we should say that he took his degree in classics, and language came to him naturally, and though (as I think he told me) he had never been to England, yet his ear for sound, in addition to his reading of English literature, enabled him to understand the English language provided it was enunciated slowly. No doubt his classical education helped to bring this about.

As a collector and observer he was very keen, with an eye as sharp as a hawk's, and I have happy memories of several excursions with him, the last of which was, I believe, up the Dourbes valley—he and I had wandered on beyond our companions and crossed the sandy river to a spot that promised good things, but the promise was not equal to our expectations. We however stuck to it, when I saw a blackish butterfly that I could not make out, so up the hill after it I went and was fortunate enough to secure it, but when in the box the puzzle was not solved, and I did not recognise that I had captured the melanic aberration of *Melanargia galathea* until I rejoined the Professor, when as I handed my box to him I well remember the look of delight that came over his face in returning it to me, with the remark, "très precieuse—*Melanargia galathea* var. *lugens*." It is little incidents like this that show the refined character of the man, for my good fortune seemed to give him just as much pleasure as if it had happened to himself. I believe this was quite typical of him, for he naturally had the gift of sympathy, and where he was, there we might be sure of finding young men as well as his own contemporaries, all attracted by the fineness of his nature, quite as much by his love of his profession and his keenness in natural history, or whatever might be the subject that was occupying his attention for the time being.

He often sent me exotics to identify, and his remarks on my identifications (when I did not happen to have referred the species to their near allies), showed with what detail he had gone into the literature of the subject and what a careful and sound judgment was given to all he undertook.

We lose in him a man with a great soul, a great love of all things beautiful, a keen discerner of men, and one who, in the very prime of life, could ill be spared. Very many friends will sorely mourn his loss.—G.T.B.B.

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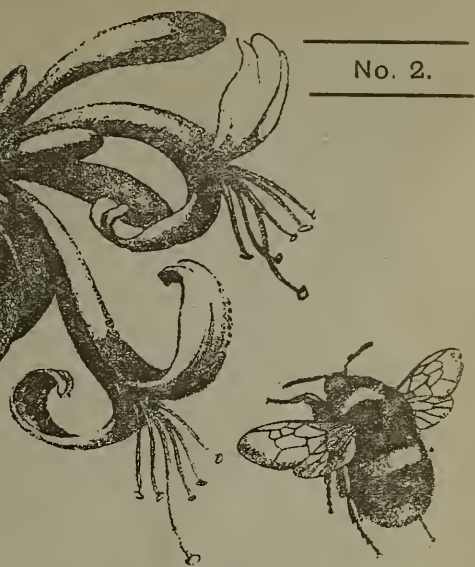
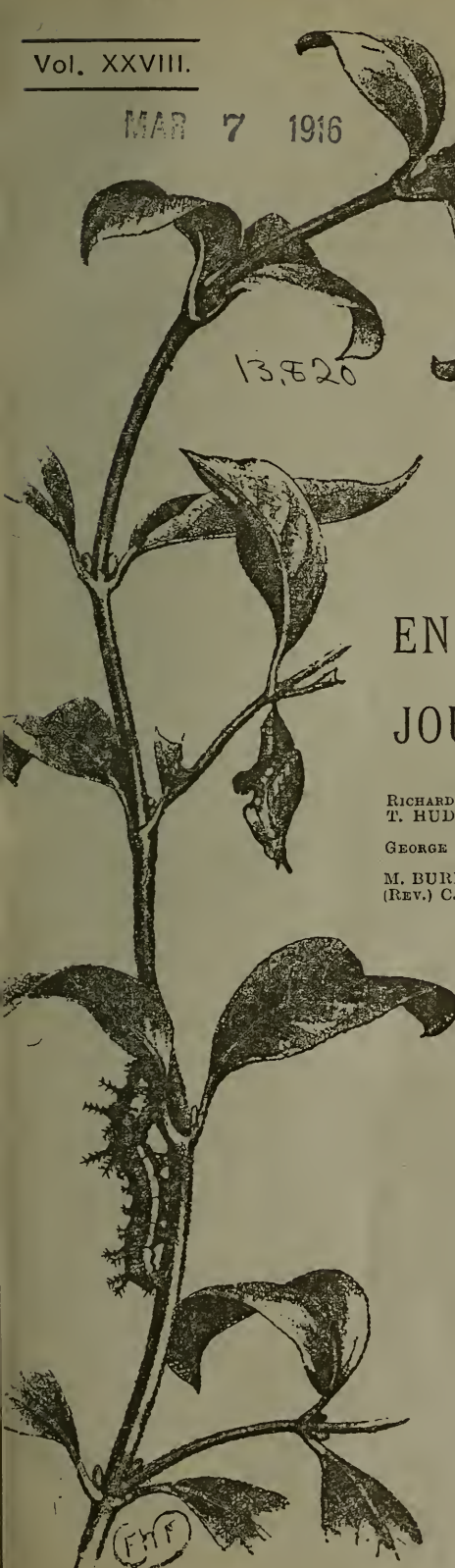
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The Synonymy of *Zygaena*, *Adscita* (*Procris*), and *Amata* (*Syntomis*).

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

ZYGAENA, Fab., *versus* *ANTHROCERA*, Scop.

The *Record* has for many years adopted the genus *Anthrocera* instead of the older Fabrician genus *Zygaena*, which had been in almost universal use for the Burnets up to the time of Tutt's first volume. The reason of its use in the *Record* is quite natural and obvious, but the reason of Tutt's adoption of the name is not so obvious. He apparently relied on Kirby, whilst Kirby arrived at his opinion by the process of elimination, but at the same time by completely ignoring both the first and second revisers of the group.

The genus *Zygaena* was created by Fabricius in his *Syst. Ent.*, p. 550, 1775; here the species he placed under it were *filipendulae*, *phegea*, *ephiates*, *annulata*, *cerbera*, and others, including *statices*. As will be seen, they are a somewhat heterogeneous assemblage. In 1793, *Entom. System.*, p. 386, the same author more than doubles the size of his genus, enumerating and diagnosing no less than seventy-eight species, inserting between *filipendulae* and *phegea*, *scabiosae*, *loti* (*lomcerae*), *lavandulae* and *sedi*, as well as including many heterogeneous species.

Scopoli instituted his genus *Anthrocera* for *filipendulae*, etc., in 1777, but I have not been able to trace that any of the authors of his day followed him. Schrank, it is true, divided *Zygaena* into three sections: A, for *phegea*, B, for the Burnets, and C, for the Foresters, but this certainly was no restriction, and I believe that Stephens was the first to adopt the name *Anthrocera* in 1828 (*Ill. Brit. Ent.*, i., p. 105), and he did so under a misapprehension. This application, however, was "ultra vires," as Fabricius had himself revised his own genus, *Zygaena*, in *Illiger's Magazine*, vi., p. 289, 1807, as follows:—

46. *Amata*, Fab., for *Zygaena passalis*, *cerbera*.

47. *Zygaena*, Fab., for *Zygaena filipendulae*, *scabiosae*, *quercus*, etc.

48. *Glaucopis*, Fab., for *Zygaena argynnis*, and sixty-eight other species, including *infausta*.

49. *Procris*, Fab., for *Zygaena statices* and ten others.

We have here a very definite revision of the genus *Zygaena*, *Amata* being created for what we know as the *Syntomidae*, the type of the genus being *passalis*, F. *Phegea*, L. (*quercus*, Fab.), is congeneric with *passalis* and *cerbera* and falls into that genus.

Syntomis, Ochs., was created in 1808 for *phegea* and therefore sinks to *Amata*, Fab.

It is evident from this that Fabricius wished to restrict his genus to the Burnets, recognising as he did that *ephiates* was one of that family, but mixing up *quercus* as a close ally, though he saw that *passalis* belonged to another genus; this was of course natural under the circumstances.

Scopoli's action should now be considered. He proposed the name *Anthrocera* for "*filipendulae*, etc." It is quite evident from the etc. that he included other species as well as *filipendulae*. What were those species? We find them in his earlier work. In his *Entom. Carniol.* are three species, viz., no. 479 *filipendulae*, 480 *phegea*, 481 *statices*, so that there is no doubt that he made the genus *Anthrocera* not only for *filipendulae*, but for *phegea* and *statices*, that is to say for almost the same ground as *Zygaena*, Fab. Under these circumstances, and in

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view of the Revision of the group made by Fabricius himself, *Anthrocera* must sink as a direct synonym to *Zygaena*. Tutt, *Brit. Lep.*, i., p. 383, is not really correct when he says, "Scopoli diagnosed the Burnet moths proper under the name *Anthrocera*," he did nothing more than repeat what Fabricius had already done.

If we refer to the older authors we find that Cuvier, Lamarck, Hübner (1805), and Curtis, all treat *Zygaena* as if *filipendulae* were the type. But before Curtis, Boisduval had stepped into the field, and, in 1829, monographed the group, naming the Burnets *Zygaena*, and the Arctiid (*i.e.*, the Syntomids) *Syntomis*. He apparently was unaware of the Revision made by Fabricius in *Illiger's Magazine*, in 1807, as he does not refer to the genera in that work.

Boisduval's monograph would therefore render Kirby's action "ultra vires," but in front of Boisduval was the Revision of Fabricius, dividing his previous genus into four—

Amata type *passalis*, this includes *Syntomis* and that family.

Zygaena type *filipendulae*, including the true Burnets.

Glaucopsis for a heterogeneous group, the type of which, however, was fixed by Hübner as *phegea* in the *Tentamen*. It therefore falls before *Amata* and *Syntomis*.

Procris for *statices* and other species. In this case, however, Retzius, in 1783, proposed *Adscita* for *filipendulae* and *statices*, and it is most unfortunate that Kirby, ignoring both Fabricius and Boisduval, should have revived a genus that was dead by naming the type as *statices*, instead of allowing it to sink altogether under name *Zygaena*, inasmuch as it was for the same insects. Kirby's action, however, renders the name *Adscita*, type *statices*, as valid, and it must be used for the Foresters as Tutt has done. *Procris*, therefore, sinks to it. We therefore have standing out from it all—

Zygaena, type *filipendulae*.

Syn. *Anthrocera*, type *filipendulae*.

Amata, type *passalis*.

Syn. *Syntomis*, type *phegea*.

Adscita, Retz. type *statices*.

Syn. *Procris* and *Ino*.

These names, *Zygaena* for the Burnets and *Amata* for the Syntomids, have priority, and ought to be used in future.

Mr. Durrant has kindly made out the following tabulated statement of the synonymy of this section of the group.

ZYGAENA F.

=*ANTHROCERA* Scp.

Type: *Sphinx filipendulae* L. (Cvr. 1798; Lmk. 1801; Hb. 1805; Leach 1815; Crt. 1835;—Scp. 1777; Wstwd. 1840; Kby. 1892).

ZYGAENA F. Syst. Ent [28], 550-6 no. 141 sp. 1-28 (1775) [1. *filipendulae* L.; 2. *phegea* L.; 26. *statices* L.; etc.]. *ANTHROCERA* Scp. Intr. Hist. Nat. 414 no. 163 (1777) ["*filipendulae* L. etc."]. ZYGAENA F. Gn. Ins. 156, 160, 275-7 no. 141 (1777): Phil. Ent. 91, 110 (1778): Sp. Ins. 2. 157-67 no. 144 sp. 1-53 (1781): Mant. Ins. 1. p. xvii no. 150: 2. 101-7 sp. 1-66 (1787): Ent. Syst. 3 (1). [3], 386-407 no. 190 sp. 1-72 (1793): 4. (Ind. Alph.) 174-5 no. 190 (1796); Cvr. Tbl. Élément. HN. An. 593 (1798) [Type: *filipen-*

dulae L.]; Lmk. Syst. An. sans Vert. 285 no. 140 (I. 1801) [Type: **filipendulae** L.]; Schrk. Fn. Boica 2 (1). 154, 236-43 no. 204 sp. 1403-14 (III. 1801); Ltr. HN. Crust-Ins. 3. 402-4 (1802); 14. 137-40 no. 436 sp. 1-12 (1805); Nouv. Dict. HN. 24. Tbl. Méth. 185 no. 479 (1804); 23. 564-6 (1804); Hw. Lp. Br. 3. 5. no. 3 sp. 1-4 (1803); Hb. Tent. 1 (1805) [Type: **filipendulae** L.]; F. (Syst. Gloss.) Illig. Mag. Ins. 6. 289 (1807); Ochs. Schm. Eur. 2. 19-20 no. 3 sp. 1-30 (1808); Leach Edinb. Encycl. 9. 131 no. 435 sp. 1 (1815) [Type: **filipendulae** L.]. *ANTHROCERA* Stph. Ill. Br. Ent. Haust. 1. 106-10 no. 22 sp. 1-6 (1828); Syst. Cat. Br. Ins. 2. 29-30 no. 22 sp. 5900-6 (1829). *ZYGAENA* Cr. Br. Ent. 12. expl. Pl. 547 (1835) [Type: **filipendulae** L.]; *ANTHROCERA* Wstwd. Syn. Gn. Br. Ins. 89 (1840) [Type: **filipendulae** L.]; Kby. Syn. Cat. Lp-Het. 1. 62-79 no. 1 sp. 1-100 (1892); Tutt Br. Lep. 1. 414-546 (1899). *ZYGAENA* Stgr-Rbl. Cat. Lp. Pal. 1. 380-9 no. 711 sp. 4321-89 (1901).

[Stephens adopted *Anthrocera* Sep. in lieu of *Zygaena* F. because "*Zygaena*: Genus Piscium antiquorum"!]

ADSCITA Rtz.

= *PROCRIS* F.; = *ATYCHIA* Ochs.; = *INO* Leach.

Type: **Sphinx statices** L. (Kby. 1892;—Leach (1815); Cr. 1832).

ADSCITA Rtz. Gn. et Sp. Ins. 8, 35 no. 3 sp. 35-6 (1783) [35. **filipendulae** L.; 36. **statices** L.]. *PROCRIS* F. (Syst. Gloss.) Illig. Mag. Ins. 6. 289 (1807) [1. **statices** L.; 2. *pruni* S-D.; 9 Art.]. *ATYCHIA* Ochs. Schm. Eur. 2. 9-18 no. 2 sp. 1-4 (1808) [1. **statices** L.; 3. *pruni* S-D.]. *INO* Leach Edinb. Encycl. 9. 131 no. 436 (1815) [Type: **statices**, L.]; Stph. Ill. Br. Ent. Haust. 1. 105-6 no. 21 sp. 1 (1828); Syst. Cat. Br. Ins. 2. 28-9 no. 21 sp. 5898-9 (1829); Cr. Br. Ent. 9. expl. Pl. 396 (1832) [Type: **statices** L.]; Wstwd. Syn. Gn. Br. Ins. 89 (1840). ADSCITA Kby. Syn. Cat. Lp-Het. 1. 81-6 no. 8 sp. 1-49 (1892) [Type: **statices** L.]; Tutt Br. Lep. 1. 384-5, 387-406 (1899). *INO* Stgr-Rbl. Cat. Lp. Pal. 1. 389-91 no. 716 sp. 4394-4418 (1901).

[Kirby adopted *Adscita* Rtz. and rejected *Procris* F. thinking the latter invalid as a homonym, but Agassiz' footnote reads "*Procris* Comm. *Urticeae*." Those who reject *Adscita* should adopt *Procris* F. (1807); both Leach and Oken published genera named *Ino* in the year 1815.]

AMATA F.

= § *GLAUCOPIS* Hb.; = *SYNTOMIS* Ochs.; = **ZYGAENA* (sect. A, Schrank) Kby.

Type 1: **Zygaena passalis**, F. (Hmsn. 1898; Prout 1904).

AMATA F. (Syst. Gloss.) Illig. Mag. Ins. 6. 289 (1807) [1. **passalis** F.; 2. *cerbera* L.]. AMATA F. (= *SYNTOMIS* Illig.) Ltr. Nouv. Dict. NH. (n. edn.) 1. 408 (1816); Hmsn. Cat. Lp. Phal. BM. 1. 59 (1898) [Type: **passalis** F.]; Prout Ent. 37. 116 (1904) [Type: **passalis** F.].

Type 2: **Sphinx phegea** L. (Ochs. 1808;—Hb. 1805).

SYNTOMIS Ochs. = § *GLAUCOPIS* Hb. Tent. 1 (1805) [Type:

phegea L.]. SYNTOMIS Ochs. Schm. Eur. 2. 103-12 no. 4 sp. 1 (1808) [Type: **phegea** L.]; Ltr. Nouv. Dict. HN. (n. edn.) 32. 320 (1819). **ZYGÆNA* (sect. A, Schrank) Kby. Syn. Cat. Lp-Het. 1. 89-98 no. 23 sp. 1-147 (1892). SYNTOMIS Hmsn. Cat. Lp-Phal. BM. 1. 59-114 sp. 69-207 ff. 30-6 Pf. 2-12-28, 3-1-28, 4-1-24, 5-1-24 (1898); Stgr-Rbl. Cat. Lp. Pal. 1. 363 no. 663 sp. 4145-54 (1901). AMATA F. (=SYNTOMIS Ochs.) Prout Ent. 37. 116 (1904).

[§*GLAUCOPIS* Hb. (1805) is invalid, being homonymous with *GLAUCOPIS* Gmel. (1788) *Aves.*]

§*GLAUCOPIS* F. (Syst. Gloss.) Illig. Mag. 6. 289 (1807) [Type: **hyparchus** Crmr. (= *argymnis* F.) = *CHARIDEA* Dlm. (1816) [Type: **hyparchus** Crmr.].

Dartmoor Notes—*Zygæna trifolii* and other species.

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

In November, 1914, Commander Walker exhibited at the meeting of the Entomological Society of London, on behalf of Dr. R. C. L. Perkins, two beautiful series of *Zygæna trifolii* from two separate colonies not more than 200 yards apart. The one series was composed of fine robust specimens with the spots all separate, or at least only the two median ones confluent, the other series was composed of small specimens with a large percentage of examples, in which all the spots were more or less confluent. A yet more interesting point was the fact that the two colonies though so near did not intermingle.

I have visited Dartmoor regularly for over twenty years, always once and generally twice every year, and in all my many peregrinations and in all my sojourns there, often for weeks together and always in the right season, I have never come across so deeply interesting a case. I have, of course, known places where *trifolii* occurred and also equally likely spots, where it did not occur, so that Dr. Perkins' exhibition imbued me with the resolution to investigate the matter.

Fortunately for the species, the two colonies referred to are on private ground that is strictly preserved and guarded; with some difficulty, however, Dr. Perkins was able and was good enough to take me to the spot last summer. The large colony, or rather the colony of the large race, was in full evidence and very vigorous, and we took thirty-four specimens from it, of which nineteen were quite typical with the median spots confluent, the united spot being in most instances large, but in no case were all three sets of spots confluent; fifteen, however, had all the spots separate. In two cases out of the nineteen a small red dot lies between the median and the outer single spot, in one specimen—a large one—the median and the outer spots are confluent in one wing only, *viz.*, the right wing; in another example the same thing occurs with the addition in both wings of a prolongation of the lower median spot towards the lower basal spot, whilst in yet another specimen both the lower median and basal spots are prolonged towards each other and are united by a fine dash of red scales, whilst between the outer single spot and the median pair of the right wing only a small but distinct red dot is present.

Taking into consideration these six specimens out of the thirty-four, we find no less than 17%, or more correctly nearly 18%, are in a

marked state, and $38\frac{1}{2}\%$ in a less marked state, of development towards the confluence of all the spots; this is certainly a large ratio.

Unfortunately the colony of small specimens was in a very weak condition. Dr. Perkins made a couple of visits after our day together and he kindly sent me the specimens he captured, but altogether we only took ten between us. Of these, three are decidedly small, two of them being the ab. *orobi*, Hb. (with the spots all separate) one typical example having the median spots confluent, whilst the other seven examples are larger, about the size perhaps of quite the smallest from the vigorous colony two hundred or more yards away. Of these seven one is typical, one has the median spots separate—*orobi*, one has the median spots confluent with a prolongation towards the basal ones, one has the median and outer spots confluent, whilst the other three have all the spots confluent. 30% of the total are therefore in the confluent, 40% are in a more or less progressive stage of confluence, whilst 30% are ab. *orobi*. The development of these two colonies, so near and yet so isolated, will be worth watching, only I fear, apart from Dr. Perkins, it is unlikely that this will be possible. As we wandered about the open hill-side, however, we chanced on another spot some 300 yards away from the large robust colony, where we took seven specimens, all large, two of which are *orobi*, four are typical with the median spots confluent, and one has the median and outer spots joined, the two median being confluent, by a short red dash, this small extension having evidently carried with it, the inheritance of its parent colony.

I was well pleased with my day's collecting with Dr. Perkins, and only wish we had been able to arrange another one, but the fates were not propitious, nor yet was the weather either. The problem, however, made me search out other colonies where I knew of its existence, or where I thought it ought to be found, but *trifolii* is very capricious, usually, I should say, it selected sheltered localities, but the one I have given an account of is well exposed, and must be frequently swept by storm and wind, without the least cover at all, and I therefore omitted no likely spot in my search during last July. The strongest colony was within a quarter of an hour of my holiday home, and it was certainly an ideal spot, for it had a little stream running on either side, with plenty of shelter from bushes around, and screened from the prevailing winds by a rampart of forest trees perhaps a quarter of a mile away. There also I found *Callimorpha dominula* just emerging and in beautiful condition. I watched this colony for several weeks and took eighty specimens at random, making no selection, the numbers were amply sufficient for me to take this number without harm, and it is interesting to note that the colony had two extensions, one separated by a thoroughly dry area of perhaps half an acre, the other separated only by a thick dense hedge below and a close row of trees above, a barrier such as Devonshire loves. Out of the eighty specimens fifty are ab. *orobi*, three being smallish, not as small as the smallest of Dr. Perkins' small colony, but smaller than the larger ones therefrom, the rest are average or large sized insects. There are twenty-seven typical specimens with the median spots confluent, of which eleven are but average in size, two specimens have all the spots confluent, one of them being quite a small insect, whilst one has the median spots confluent, but it shows distinct traces of a sixth spot below the outer or fifth spot,

this is interesting, more especially as I have never seen a *filipendulae* near the vicinity. Thirty-seven and a half per cent. are therefore progressing towards the confluence of the spots, though the number of extreme specimens is very small indeed. Separated from this large colony by perhaps half an acre was another little colony, no doubt a recent extension from the other, where I took thirteen specimens, of which six are of the *orobi* form, six are typical with the median spots confluent, and one has all the spots confluent. In size only two can be considered large, the others are average, and the confluent specimen is smallish, *i.e.*, it is the smallest of the thirteen. I only visited the colony two or three times, as I did not discover it for perhaps a fortnight after I had been working my original colony. There remains the near extension of the parent colony, only separated by a stream and a very dense hedge; here I took fourteen specimens, all of which are large, eight of these are *orobi* and six are typical. Some three or four miles away from here I found another thriving colony of the species. Separated as it was by hill and dale as well as by a large trout stream, I have no doubt of its being an entirely independent colony. I only discovered it three days before I left the district, and it was at the very end of July, so that specimens are nearly all *passé*, but I took them for the sake of comparison. Of forty-one specimens twenty-three are *orobi*, sixteen are typical, and two have the median and terminal spots confluent; the majority of the specimens are of a small average size, not more than half a dozen could be considered large, and all of these are with confluent median spots.

It would be well to compare these results with captures from three other British localities where I have taken it.

In 1909 I found it fairly common not far from Shanklin, in the Isle of Wight. Here the locality was quite different from its Devonshire haunts, it was an old disused gravel pit surrounded entirely by corn land. Here I took thirty-five specimens, twelve of these are small specimens of the form *orobi*, nine are small typical specimens, and one small with median and terminal spots confluent. The smallest example I have seen is among these typical specimens, a beautiful little insect with very broad dark borders to the secondaries, almost inseparable from the race *syracusiae*. Eleven are fine specimens with large confluent median spots, of which four have prolongations on to the basal spots, two others are small with all the spots confluent, and one has distinct traces of a sixth spot. Here, however, *filipendulae* was abundant and active in the near vicinity.

Another locality where I found the species was in the Cotswold Hills in the year 1900. It was, however, rare, and I did not discover a definite colony, and none of my captures had confluent spots.

I also took the species in 1901, on the same ground as *Lycæna arion* in Cornwall, here—a sheltered spot—there was a small colony, but unfortunately I was intent on *arion* and only took five specimens of *trifolii*, though looking back I remember the colony well. Of the five, however, two are typical and large, three are *orobi* of average size.

It would appear, therefore, that it is the habit of the species to develop a small and a large race, and this quite irrespective of the abundance of its larval food. I can attest to this in its Devonshire and Isle of Wight localities.

That it is usual for it to develop two well-marked forms in abund-

ance, viz., what I call the *orobi* form with all the spots separate, this being nearly always the smaller race, and the typical form with the two median spots confluent, which is generally a large form, though there is always a percentage of medium-sized specimens.

Further than this in all large colonies it is usual to find a few of the form *minoides*, Selys, *i.e.*, with all the spots confluent; usually this is only present as a rare variety. Dr. Perkins' exhibit is therefore of great interest, inasmuch as the two colonies, though near each other yet keep distinct, and the one shows such a marked tendency to develop the *minoides* variety.

I should say that I have examined specimens from other collections but am unable to give the exact proportions of the forms, but they largely confirm my own observations.

It may be of interest to record a few of my other captures, though none are new to the district. *Zephyrus (Bithys) quercus* is always to be found, I could always go in July to one or two special ash trees I know of with the certainty of finding this species there, and it is a nice large race. *Plebeius aegon (argus)* is local, only occurring in certain places, but in one spot the females are unusually large and fine and are of two forms; among the ordinary brown ones are always to be found a fair number with the orange marginal bands well developed in both wings, whilst there is also a percentage shot with blue on both wings and especially on the secondaries. I took one fine female at the end of July of *Celastrina argiolus*, evidently one of the second brood.

I have taken the three large Argynnids in different parts of the Moor. In one spot, a sheltered valley, I have seen them all on the same morning, but *paphia* and *adippe* only affect, so far as my experience goes, the sheltered wooded valleys, and not all of them, whilst *aglaia* is fairly widely spread. *Aphantopus hyperantus* is to be found in nearly all the bye-ways where the hedges are allowed to run their own free will; and though *Pararge aegeria* var. *egerides* is abundant in the Devonshire lanes generally, yet on the Moor it is very much less in evidence, and whilst it is well out in May and early June in the former localities, in the latter it is later and occurs all through July but not in exposed situations. I have already said that *Callimorpha dominula* occurs alongside *Zygaena trifolii* in certain localities, but only I believe in very sheltered ones, at least I have only found it in one or two such places. Among the other Heterocera perhaps the most interesting that I took last summer are *Cybosia mesomella* and *Bomolocha fontis (crassalis)*, and also some nice strongly-marked specimens of *Crambus geniculeus*.

This little record is, of course, very meagre and does not represent all the specimens that I took or noticed, but my visits to Devon and to Dartmoor are not generally entomological, for except when my cousin is with me and we take big walks, and these are not infrequent, my time is generally spent, apart from drives with my wife, in quest of something special—as *trifolii*—or in solitary wanderings over the hills and avoiding the bogs, enjoying the scenery and watching the birds and other little beasties that come across my path; too often I have not even taken a net with me, so that in this way I have, I believe, missed being able to make one or two records when I have thought I have seen certain species that are not supposed to occur in the district.

Notes on the Micro-lepidoptera of South-West London.

By ALFRED SICH, F.E.S.

(Continued from vol. xxvii., p. 151.)

Hyponomeuta vigintipunctatus, Retz.—Two moths were bred in April, 1907, from pupæ given me by the late Mr. George Nicholson. He had bred several specimens from larvæ found on *Sedum telephium* in Kew Gardens in the previous September (*Bull. of Miscellaneous Information, Royal Botanic Gardens, Kew*, No. 5, 1907, p. 183).

The eggs of this species are laid on the leaves of the foodplant and the larvæ, passing through the base of the egg-shell, mine through the thickness of the leaf before coming into the daylight.

Hyponomeuta plumbellus, Schiff.—One imago taken in Chiswick, October 7th, 1915. This is a very late date, but the species of this genus often remain on the wing for a long period. I have found the imago elsewhere on *Euonymus japonica*, and if the species has taken to this as a foodplant it may, like *H. cognatellus*, be able to extend its range to suburban districts. At Cookham, Berkshire, I found the young pale yellow larvæ living in solitude in the interior of the shoots of *E. europæus* in May. The bored shoots were quite yellow. When older the larvæ feed on the leaves under a web.

Hyponomeuta padellus, L.—Chiswick, apple and hawthorn. Ham Common, blackthorn. Doubtless throughout the district. The larval nests are very common on whitethorn and also occur on apple and sloe. Some doubt has been expressed as to whether the apple-feeding larvæ produce this species. Owing to lack of details this question has not yet received a definite answer, but so far as my own knowledge goes, it leads me to the opinion that *H. padellus* is a most variable insect and that its larva feeds on apple as well as on other trees. On the continent there is an apple-feeding species, the *H. mallinellus* of Zeller (*Isis*, 1844, p. 198), and possessing specimens of Zeller's species, I feel sure that the insects I have seen, bred from apple in Chiswick and elsewhere in England, are not Zeller's *mallinellus*, but belong to his *variabilis*, which is usually considered to be conspecific with the *padellus* of Linnæus. The whitest specimens bred from apple in Chiswick are not snow-white, like the smaller *mallinellus* or like *H. cognatellus*, but grey white. The darkest specimens are from hawthorn while those from blackthorn are intermediate. All together they form a graduated series from white, through white clouded with dark grey, to entirely dark grey. Sometimes the underside of the forewing shows a narrow whitish costal line and the fringes are partly whitish but not to the same extent as in *H. mallinellus*. Like the other species of this genus the black dots vary on the opposite forewings of the same specimen. On the hawthorn the eggs are laid in batches on the twigs and the larvæ hatch out in late summer but remain under the egg-shells till spring. R. H. Lewis, in 1834, first called attention to this fact and also stated that the larvæ on leaving their shelter first mined the leaves before commencing to live under a web. This I believe is also true. Lewis was writing of the larvæ on apple (*Trans. Ent. Soc.*, ser. i., vol. i., p. 21).

Hyponomeuta cognatellus, Hb.—Chiswick, Richmond, Kew, and probably everywhere in the district. The larval nests very frequent on the ornamental bushes of *E. japonica* in suburban gardens. Some bushes of *E. europæus* that used to grow in a garden in Chiswick were attacked every year. The eggs are laid on the bark of the second year shoots where the larvæ remain till the spring.

When a new district is laid out by the builder and *Euonymus* is planted, the larvæ must often be introduced with the plants.

Swammerdamia caesiella, Hb.—Chiswick, 1901. Though apparently common elsewhere it is rare in this district.

Swammerdamia heroldella, Tr.—Richmond, 1914. Larva on birch. The antennæ of the imago are distinctly banded with white on the upperside. The larva makes a much more elaborate dwelling than that of *S. pyrella*.

Swammerdamia lutarea, Hw.—Chiswick, Ealing, Richmond, 1914. Larva on hawthorn. The imago is in general appearance somewhat near to *S. heroldella*, but the antennæ are almost unicolorous. It is common in hedges and at rest on the trunks of old thorns.

Swammerdamia pyrella, Vill.—Chiswick, Ealing, Barnes and Richmond. Very common on hedges and at rest on the stems of fruit trees in gardens. The larva on hawthorn, apple, cherry and pear. The imago appears to be more abundant in the spring and the larva in autumn. I am not sure whether this is really the case, or whether it may be because the entomologist's attention is taken up in summer by the numerous, less common, species that then occur.

Prays curtisellus, Don.—Chiswick, 1914. Palewell Common, where the var. *rustica*, Hw., also occurs. The imago may be seen at rest on the stems of ash trees and on palings in the vicinity of the trees. It varies considerably in the ground colour. Several specimens intermediate between the type and the variety have come under my notice.

(To be continued.)

Myrmecophilous Notes for 1915.

By H. DONISTHORPE, F.Z.S., F.E.S.

(Continued from page 4.)

COLEOPTERA: *Myrmedonia limbata*, Pk.—A specimen of this beetle was captured on April 19th, on Barnes Common, running about with a number of *Donisthorpea nigra* ♂ ♀, on a sand-bank in which the ants' nest was situated.

Notothecta flavipes, Gr., and *Thiasophila angulata*, Er., occurred in nests of *Formica rufa* in Abbot's Wood, near Eastbourne, on September 19th.

Claviger longicornis, Müll.—Two specimens of this beetle, captured in nests of *D. mixta*, at Box Hill, on May 26th, 1913, lived in my *D. umbrata* observation nest (with a *D. fuliginosa* ♀ as queen) for a long time, and on several occasions I saw them fed by the *umbrata* ♂ ♀.

I have written in my note-book (October 14th)—“The two *Claviger* frequently sit for hours together on the gaster of the *fuliginosa* ♀.” Again, later, I wrote (June 19th)—“Removed the two *Claviger* and introduced them into my *D. aliena* nest, as they seem to worry the *fuliginosa* ♀.”

I have recorded in a previous paper that these beetles generally sat on the body of the *fuliginosa* female [*Ent. Rec.*, 25, 291 (1913)].

Crawley, when writing about our other species, *Claviger testaceus*, Preys., states [*Ent. Rec.*, 27, 206 (1915)]:—that the parasitic females (*D. umbrata*) “have an attraction for the myrmecophilous beetle *Claviger testaceus* not possessed by *L. niger* or *L. flavus*. In two nests of *L. flavus* containing two *Claviger* and one queen, and fourteen *Claviger* and five queens respectively, and in one of *L. niger* with one queen and one *Claviger*, the beetles were never observed to cling to the bodies of the queens, whereas in two colonies of *Lasius niger* with a *L. umbratus* queen and two *Claviger* in each, the beetles were almost invariably clinging to the gasters of the queens, and often appeared to lick the surface of the body.”

This, however, as regards the behaviour of *Claviger testaceus* towards queens of *D. flavus*, is contrary to the experience of other observers.

Wasmann, when speaking of *Claviger testaceus* in nests of *D. flava*, writes [*Stet. Ent. Zeit.*, 52, 8 (1891)]:—“When queens were in the nest, so sat the *Claviger* with pleasure (gern) on the large backs, or hindbodies of the same.” He also mentions a small colony of *Strongylognathus testaceus* with *Tetramorium caespitum*, in which he kept two *Claviger testaceus* for several months, and the two *Claviger* often sat for half a day long on the back and hindbody of the *Tetramorium* queen.

Hetschko records [*Berlin Ent. Zeitschr.*, 41, 46 (1896)] that he found a *Claviger testaceus* in a *flava* nest in nature, sitting on the queen, and he says, “In my observation nests the beetles commonly mount on the queens (of *D. flava*) and hold themselves often two together on the backs and hindbodies, etc.” He also says they sit on the female pupæ and creep on to the newly hatched females.

Janet [*Report des Animaux Myr.*, 40 (1897)] also refers to the habit of *Claviger testaceus* in sitting on the gasters of *D. flava* queens.

I have also published similar observations. In 1909 I had an observation nest of *D. flava*, in which I kept a number of *Claviger testaceus*, and I wrote [*Ent. Rec.*, 21, 288 (1909)]:—“As many as five or more specimens sat on and crawled about the ♀ ♀, especially on their abdomina, and I believe they ate the eggs as they were laid.”

Again, when describing the habits of *Claviger* [*Col. Brit. Isles*, 6 (Supplement), 320 (1913)], I state “They are also very fond of riding on the ants (*D. flava*), especially on the queens.”

I do not in any way wish to cast any doubt on my colleague's observations, but only to show that according to the experience of others, it is the usual habit of these beetles to cling to the gaster of any queen, or queens, present in the nest in which they may be situated.

Amphotis marginata, F.—This beetle, captured with *D. fuliginosa* on August 23rd, 1914, and introduced into my *D. umbrata* observation

nest on the same day, is still alive (to-day December 24th, 1915) in my new *umbrata* nest. On August 26th last, when all the old *umbrata* ♂♂ had died, and only the *fuliginosa* ♀ and the *Amphotis* were left alive, the beetle and the ant were observed tapping antennæ and, apparently vainly, mutually asking each other to be fed. I have frequently seen the beetle fed by the old ♂♂. When introduced into the new nest on August 27th it was not taken much notice of, but settled down at once, and has been quite at home ever since.

Coccinella distincta, Fald.—In May and June a number of examples of this "Lady-Bird" were found on and about the hillock of a colony of *Formica rufa* at Woking. Some of the specimens possess an extra small shoulder-spot—these are the var. *domiduca*, Weise. This variety, as far as I am aware, has not been recorded by name for Britain before, but it is evidently the var. γ . of Stephens of *C. septempunctata* [Mand., 4, 380 (1831)]. I have found it also at Bexhill and in the Blean Woods on nests of *Formica rufa*. The form usually found in Britain appears to be the var. *magnifica*, Redtb., with the same number of spots as in *C. septempunctata*. Although I have found this beetle freely in many localities I do not appear to have taken the so-called type form in which the first spot fails.

Clythra quadripunctata, L.—The larval cases of this beetle occurred in numbers in *rufa* nests at Abbot's Wood on September 29th.

LEPIDOPTERA: *Lycaena arion*, L.—On July 2nd I dug up a large colony of *Myrmica scabrinodis* which was situated in a sandy bank on Barnes Common. It consisted of a small, very dark (nearly black) queen, a large number of typical ♂♂, larvæ, and ♀ and sex pupæ. These were all introduced into a large "Crawley-Lubbock" nest, where the ants soon excavated chambers and winding passages in the sandy soil, with pillars at the entrances. On August 4th Dr. Chapman brought me two *arion* larvæ, and one of these we introduced into one of the doors of the nest. Later in the day I pushed the other larva in at the other door by means of a piece of string. A ♀ meeting it, seized it and carried it into a chamber in the nest, where it was soon surrounded by a number of ♂♂, who tapped it with their antennæ, climbing all over it, but did not hurt it.

August 5th.—The first larva had come out of the nest during the night; I forced it to go back and blocked it in with some sand. The second larva was in a side gallery with one ♀ in attendance. Eggs had been laid by the queen, which were carried about by ♂♂.

August 6th.—Only one *arion* larva to be seen, resting in the largest chamber with all the brood and most of the ants; it had certainly increased in size.

August 11th.—The larva was still in the large chamber with the brood covered by the ants; when the nest is uncovered, the ants rush off with the brood, leaving the *arion* larva exposed. It then commences to move slowly.

August 13th.—*Arion* larva nearly twice its original size; in its usual position. It was observed up to August 18th, when I measured it with a micro-millimeter placed above it on the glass roof-pane. It measured 9.0mm., as against 5.0mm. when first introduced. After

that date I never saw it again, but it seems unlikely that the ants had destroyed it, after it had lived in their midst for a fortnight. It was never observed to feed on the ant's brood, though always resting among them. This, however, is not very surprising, as when the nest is uncovered the ants, as we have seen, remove their brood. I was inclined to think that it fed on the droppings and pellets of the ants as I have shown does the larva of *Microdon mutabilis* [*Ent. Rec.*, 24, 36 (1912)], because it seemed to be eating when moving the head from side to side on the floor of the nest, but Dr. Chapman tells me these are the usual movements of *Lycaena* larvæ. Judging from Dr. Chapman's and Mr. Frohawk's experiments, it is most probable it fed on the ant's larvæ.

(Dr. Chapman and Mr. Frohawk have shown in papers read before the Entomological Society of London, that the food of *L. arion* in its last instar, in which it does nearly all its growing, consists of the larvæ, and possibly the pupæ, of the ants. The hosts belong to the different species of the genus *Myrmica*, and they regard it as tolerably certain that it is not found with *Donisthorpea flava*.)

The two following observations made on this colony, which however do not concern *arion*, may be mentioned here:—

September 17th.—♂♂ which had hatched in the nest were observed to endeavour to embrace some of the ♀♀.

September 19th.—Having swept flowers, etc., in the garden for flies and other insects to give to the ants as food, the contents of the net were emptied into the box which contained the nest. A number of the seeds of the blue cornflower (*Centaurea cyanus*) were by this means accidentally introduced; these were collected by the ants and taken into the nest, the elaiosomes of the seeds were eaten and the seeds buried in the earth of the nest. Subsequently, when enlarging the galleries and passages, the ants dug up the seeds and threw them on their dust heap.

August 13th.—An *arion* larva, sent to me by Dr. Chapman, was introduced into the first (light, dry) chamber of a four-chambered "Janet" nest, which contained a colony of *M. scabrinodis*, dug up at Weybridge on July 30th. Very little attention was paid to it, one or two ants only tapping it with their antennæ. It crawled up the wall of the chamber, where it remained, and on August 15th it was dead.

August 13th.—A second larva sent to me by Dr. Chapman was introduced into another "Janet" nest containing a colony of *M. scabrinodis*, also dug up at Weybridge. Great attention was paid to it by one ♀, and the *arion* larva was observed to swell up in the extraordinary manner described by Dr. Chapman. On August 15th, however, it was dead in the last (dark, damp) chamber of the nest, which contained the bulk of the ants and their brood.

I sent the two dead larvæ to Dr. Chapman and he told me they had died a natural death, and had probably passed the stage when they would seek the ants' nests or be of interest to the ants.

ARANEINA: *Thyreosthenius biorata*, Camb.—Observed in some numbers in nests of *F. rufa* at Abbot's Wood on September 19th.

Tetrilus diversus, Camb.—A ♀ was taken in the heart of a *D. fuliginosa* nest at Weybridge on September 3rd.

Micaria pulicaria, Sund.—Captured running on a bank on Barnes Common with ♀ ♀ of *D. nigra* on April 19th.

Micryphantus beatus, Camb. ♂.—Dr. Randell Jackson tells me this is the name of a small spider I captured at Woking on May 29th running on a bank in company with ♀ ♀ of *Tapinoma erraticum*. In life the spider was so remarkably like the ant, that I actually bottled it under the impression that it was one of the ants. (The colony of the ant was subsequently dug up and contained some nine or ten queens. One of the ♀ ♀ was observed, carrying a minute yellow insect, which proved to be the larva of a Thrips.)

A new Myrmecophilous Aphid from Africa.

By FRED. V. THEOBALD, M.A., F.E.S.

APHIS PHEIDOLEI, NOV. SP.

Apterous viviparous female.

Antennæ less than half the length of the body; sixth segment and the apex of the fifth darkened; the first segment larger than the second; the third a little longer than the fourth and much shorter than the sixth; the fourth about as long as the fifth; the latter with the usual sub-apical sensorium; the sixth longer than the fourth and fifth, its basal area about one-fifth the length of the flagellum; the third to the sixth imbricated, the latter markedly so.

Head slightly protuberant in the middle and at the sides.

Pronotum with a papilla on each side.

The more or less ovate abdomen has a lateral papilla between the meso- and meta-thoracic legs; one on the abdomen before the cornicles and one larger one between the cornicles and the cauda.

The cornicles are short and thick, not as long as the cauda, and are somewhat expanded basally; faintly imbricated.

Cauda with four pairs of lateral bristles, somewhat irregularly placed, and one or more irregularly placed dorsal ones; slightly spinose.

Anal plate somewhat quadrilateral, with some scattered long hairs.

Apparently from the spirit specimens of a dull greenish to greenish-brown colour; the antennæ being dark at the apex of the fifth and on all the sixth segment.

The cornicles are dark; the cauda appears dusky and also the anal plate.

The legs are the same colour as the body, except the apex of the tibiæ and the tarsi, which are much darkened.

Length.—1.3mm. to 1.9mm.

Alate viviparous female.

Apparently of similar colour to the apterous female. The thoracic lobes, cauda and cornicles dark.

The short, thick cornicles are about two-thirds the length of the cauda, imbricated and laterally serrated.

The cauda is spinose and has three pairs of lateral hairs and one medio-dorsal sub-apical one.

Wing venation normal; veins apparently brownish; the inner border of the stigma darkened more than the rest of the stigma.

The veins where they join the wing border have dusky areas around them on the membrane.

Length.—1.9mm.

Locality.—Mwengwa, N.W. Rhodesia, Africa. ix. 1913.

Notes.—Found by Mr. Dollman in the nests of an ant—*Pheidole*, sp. The specimens in spirit were sent me by Mr. Donisthorpe. There

were many apterous viviparous females, a few nymphæ, and one much damaged alate female, the antennæ unfortunately being absent. In spirit they still showed a greenish hue, and I at first took them to be the *Aphis plantaginis*, Schrank, but the marked, short, thick cornicles at once separate it. This is the third myrmecophilous Aphid I have received from Africa.

It probably occurs on some native Rhodesian plant just as the myrmecophilous *Aphis plantaginis* of Schrank does in Europe.

SCIENTIFIC NOTES AND OBSERVATIONS.

THE HOUR OF EMERGENCE OF LEPIDOPTEROUS IMAGINES.—It appears that very little is actually known about the time of day at which butterflies and moths of any particular species emerge. I can state with some confidence that certain species have a definite time of day at which they may be expected to appear, but it is quite possible that this is not so with all species, and that the emergence of these may be determined by some totally different factor, such as temperature or humidity; we require a mass of observation on as many species as possible, and it is quite impossible for most of us to know the actual hour of emergence of most of our bred insects, but I publish these few observations in the hope that some great and successful breeder may become interested in the matter.

Melitæa aurinia. See *Ent. Rec.*, xxiii., 1911, p. 26. Both sexes appear to emerge early in the afternoon.

Zygaena filipendulæ, July, 1911, Salisbury. Great numbers between 10 and 11.30 a.m., when the sun was shining on the cocoons; but on sunless days the emergence was continued irregularly all through the day, from 8 a.m. till 9 p.m.

Bryophila muralis ♀. 5 p.m., August, 1915.

Triæna (Acrionicta) psi. Several males between 6 and 9 p.m., July, 1911. Fairhill, Tonbridge.

Gortyna ochracea. 10.0, 10.15, 10.30, 11.0 a.m., noon, 12.30, August, 1911. Heigham Sound, Norfolk.

Agriopsis aprilina. Between 8.30 and 11.30 a.m., September 28th, 1911. Fairhill.

Plusia gamma ♂. 11.15 a.m., September 23rd, 1912. Fairhill.

Geometra papilionaria. 6.15 p.m. Near Rugby. Males between 9.45 and 12.0 noon, twice, 8.15 a.m., 10.0 a.m., 12.0 noon; females 8.15 p.m. and midnight, 1912. Fairhill.

Eupithecia subfulvata. 8.0 a.m., June 14th, 1911. Rugby.

Laverna phragmitella. 9.30 p.m., July 23rd, 1915.

Elachista poæ. See *Ent. Rec.*, xxvi., 1914, p. 184. Generally between 8.0 and 9.0 a.m.—P. A. Buxton, Fairhill, Tonbridge.

NOTES ON COLLECTING, Etc.

COLLECTING LEPIDOPTERA IN ENGLAND. SUMMER AND AUTUMN, 1915.—On Saturday, July 31st, I left Waterloo Station for Swanage, arriving there that evening, and put up at "Craigsides," a private hotel, which I found quite comfortable, but very crowded this year owing to the war. My object in visiting Swanage was to obtain an English series of *Thymelicus acteon*, which occurs in various places along the

Dorsetshire coast, and generally not more than 200 yards or so from the sea-shore, quite different thus from its habitats in Switzerland and France. The following morning broke fine and warm, and I succeeded in discovering early that *T. acteon* was to be taken in Punfield Cove, near Swanage, "a favourite place for picnics, but there is generally no one there," my informant told me.

This cove is situated due east of Swanage, one and three-quarter miles along the actual sea-shore, a cove hardly to be seen until you actually come to it, so hidden is it by Nature's devices. This day I found *T. acteon* flying in fair numbers, both males and females to be had in good condition, though some of the former showed signs of wear. I succeeded in getting a total series of 22 perfect specimens, and also saw the following butterflies flying in the same locality, viz., *Melanargia galathea*, *Aricia medon* (*astrarche*), *Epinephele tithonus*, *Aglais urticae*, *Coenonympha pamphilus*, and above the cliffs over Punfield Cove, in returning, I saw the three common white Pierids, together with *E. jurtina*, and also nine *M. galathea*, with *Argynnis aglaja*. These last were flying along a slope bordered by a flowery hedge, running inland from the sea front. I saw no signs of *Agriades coridon* in this neighbourhood. The following morning, August 2nd, was dull, and I only ventured some way along the Downs to be caught by the most awful storm of wind and rain I have ever known in England, and I was glad to get back to Middlesex by the afternoon train from Swanage.

Having never properly visited the West Country of England, I decided to spend my autumn holiday of this year in "Glorious Devon."

On Saturday, September 18th, I left London from Paddington and arrived at Totnes that evening in time for dinner at the very comfortable and very congenial hotel known as the "Hotel Seymour." I made this my headquarters the whole trip, making use of the G.W.Rly. Co.'s local holiday tickets from Totnes, which enable one to cover a great deal of ground very reasonably.

On September 19th I took the morning train to Ivybridge. Leaving the station and passing under the large viaduct away from the village, I entered the wood by the path from the road and followed up the river Erme some mile and a half before emerging into more open country with the woods still on my right. Here the autumn brood of *Pararge aegeria* var. *egeoides* was much in evidence, and I feel certain I saw one specimen of *Ruralis betulae* but failed to secure it. The scenery of this day's excursion was very beautiful, and the many trout pools on the river Erme would probably afford an angler's paradise.

On September 20th I took the train to Buckfastleigh, where there is an interesting abbey, and walking through the village I worked up towards Holne. It was windy and I did not see much beyond *Pyrameis atalanta* and *P. cardui*, most of which were caught near and in Buckfastleigh on my return. I had intended to work round from Holne either to Ashburton or to South Brent, either of which routes makes a very fine day's outing, but I somewhat lost my bearings and gave up both ideas for that day.

On Tuesday, September 21st, I took train to Gara Bridge Station via Brent, by which (Gara Bridge) the river Avon runs placidly. Here in the valley bottom, after a dull and rainy forenoon, in the later afternoon I found *P. atalanta* abundant, with a sprinkling of *Aglais urticae*, *P. cardui*, and *Gonepteryx rhamni*, all resting after a short day's flight.

September 22nd.—To Ivybridge again, following my route of September 19th. I walked up the stream much further towards the hilly country at the back and crossing many pastures, I found *P. atalanta* swarming and in perfect condition, more numerous than I have ever found it in any part of the world, together with numerous *A. urticae*, and a few *P. cardui* and *G. rhanni*. The females of *egerides* were in excellent condition. and I noticed a few *Polyommatus icarus* quite fresh.

September 23rd.—To Torquay. No sun.

September 24th.—To Plymouth. No sun. I should otherwise have broken my journey at Cornwood Station, which looks extremely promising for collecting in favourable weather and time of year.

Plymouth struck me at once as being the only thing I had so far seen by which the term "glorious" Devon could be termed as accurate, as after the Alps of Europe and the rivers and lakes of North America, I had so far been quite disappointed. But here, standing on the magnificent Hoe and looking seaward, all the greatness of our country's past flashes home at once, and Drake and his gallant captains live again.

September 25th.—Down the River Dart by steamer past Totnes to Duncannon, where I landed. The bird fauna of the Dart interested me much. Heron, Kingfisher, Tern, and Gull, and numerous other kinds, all quite in their native habitat, and undisturbed, I should say, by man to a large extent, judging by their comparative tameness. The famous Sharpham Woods, which we passed, were conspicuous for their great beauty. About Duncannon *Pyrameis cardui* and *A. urticae* were not infrequent, and a gentleman who most hospitably asked me to collect in his garden, showed me a fine specimen of *Sphinx convolvuli*, which had flown into his drawing-room a few evenings previously.

September 26th.—By train to Churston, then across the ferry to Dittisham, thence by the main Dartmouth Road, which still rejoices in many gates across it, to Dartmouth. The last part of this walk, just before reaching the Naval College struck me as quite the best entomological ground I had so far met with in Devonshire, although on this day it rained as hard as reputation attributes to the county, yet I am quite convinced that anyone staying at Dartmouth and working this ground towards Dittisham, especially the Dartmouth end, would be well repaid in fine weather, and in a better time of the year by a numerous bag of both Rhopalocera and Heterocera, besides captures in other orders.

Returning to Hounslow on the following day, I put up my net for the year, but on October 3rd and the few days ensuing, I boxed a number of a late brood of *Rumicia phlaeas* just emerging on Hounslow Heath. This is the brood which in England is subject to the most variation and therefore of much interest.

May 1916 end the Armageddon of Europe and bring back an erst-while joy to our "brethren of the net" in all countries.—E. B. АШВУ, F.E.S., Hounslow. [It is very interesting to hear that *T. actaeon* still holds its own in Punfield Cove where I took it twenty years ago. At that time *M. galathea* was in abundance on the dry grass slope adjoining the road from the Cove. One could then have taken many dozens if so disposed.—H.J.T.]

LAC LIOSON.—In Miss Fison's communication of "Notes on Swiss Rhopalocera. viii.," by the late Mr. A. J. Fison, in your January issue

of this year, there are I believe two errors, which I feel I must not let pass unnoticed. I refer to the statements contained in paragraphs 24 and 39, and in the first I refer only to the record of Lac Lioson.

Mr. Fison's information on the butterflies from that place was, I believe, entirely gathered from Major Holland and myself. We had made two excursions to the Lac (the month and year named in the "Notes") from La Comballez, where we were staying. We neither took nor saw *Parnassius mnemosyne* anywhere, but we caught seven or eight *Parnassius delius* ♂s at the Lac, and of the five in my possession the spots are normal. At the latter end of August or early September I had much pleasure in making the late Mr. Fison's acquaintance at the Beau Site Hotel, Aigle, where we both remained for some weeks. During that time he, with his unfailing kindness, went very carefully through our summer's catches, and this being our first season with butterflies they were consequently rather numerous. The entry found in his notes is evidently a mistake for *P. delius*.

Regarding paragraph 39, *Brenthis pales* var. *arsilache*, Mr. Fison looked long and interestedly at the *B. pales* captures. He hesitated to name them *arsilache*, but eventually labelled mine so, at the same time expressing doubts. I later found this to be a mistake on his part, at least as regards mine. Mr. Fison I know had wished to try himself for *arsilache* at Lac Lioson, but he never got there. This certainly looks as though the *arsilache* impression was strong in him, and rather leads me to think Major Holland's series may have approached that variety. However these cannot be referred to now, as he is at present in British East Africa. If altitude were a deciding factor they would not occur at Lac Lioson, which is 5,000 feet above sea-level at least, and perhaps considerably more. Twice that summer it had even been my desire to revisit the Lac to search especially for *P. delius*, and to examine again the *B. pales*. This opportunity did not arise till eight years later, when I went up to La Comballez on August 4th, 1913, hoping to have a few days at Lac Lioson and its neighbourhood. The next day opened badly with lowering clouds, which delayed the start, but a very strong wind getting up the sky cleared, and I eventually had a short, but successful day considering the difficulties of collecting in a raging wind. On reaching my destination (a two hours' climb) my first quest was for *P. delius*, but only one worn specimen put in an appearance. I next turned my attention to the *Erebiae* which were flying locally in fair abundance. My first take was an *Erebia eriphyle*. This fly and *E. pharte* had a little district almost entirely to themselves. One had to go round to the other side of this little knoll to find flying *E. euryale* and *E. manto* together with *B. pales*. *E. eriphyle* was fairly common, about two thirds being worn, but I secured fifteen good specimens, three being ♂s. *E. pharte* was in better condition and more numerous, and a nice little series of 22 were taken with spots on forewing varying from very small to a well defined band. Only one ♀ was seen and taken. I also gathered a short series of both *E. manto* and *E. euryale* in fresh condition. *B. pales* were scarce, ten ♂s and one ♀ only were netted, all very distinctly *type form*, having no or next to no black markings on underside forewings.

Of course *E. eriphyle* was the catch, and my hopes of paying them further attention the following day were dashed by the break up that

night of the fine spell we had been enjoying.—R. TEMPERLEY, Boscombe. [Quite typical strongly marked var. *arsilache* were taken by me in August 1914 at the little lakes in the woods near Campfer, Engadine, at an elevation of 6000 ft. They are smaller in size than Mr. Sheldon's examples from the Hohe Tâtra. Mr. A. H. Jones had previously taken this form at the same place. See Wheeler, *Butterflies of Switzerland*, p. 80.—H.J.T.]

NYSSIA ZONARIA RECORDED FROM THE HEBRIDES SEVENTY YEARS AGO.—Mr. Turner's interesting extract on page 233, vol. xviii., from the *Scottish Naturalist*, which records *Nyssia zonaria* from the Hebrides, seemed to me a very remarkable one, for I did not until recently know that it had been found in Britain elsewhere than at Wallasey. The other day, however, I happened to consult the *Zoologist* for 1845, and came across the following note on page 1006:—"I formerly made a communication respecting some larvæ which were found in the Isle of Skye, by my friend Mr. Cooper, of Preston (*Zool.*, p. 686). I saw him last week and learned that a female of *Nyssia zonaria* had come out this spring from one of the chrysalides that was uninjured. I hinted to Mr. Doubleday what I thought they were. Now it is a question whether *Nyssia zonaria* is indigenous to the Hebrides or not; and those which have been found at New Brighton, Cheshire, have been originally imported thither amongst wool, etc., or rushes that had been used to pack up fish with. My friend informs me that the larvæ were in swarms upon the sandhills of Bernarah, and several other islands which he visited.—Jas. B. Hodgkinson, Manchester, May 21st, 1845." Is there anything new under the sun, one wonders?—W. G. SHELDON, Youlgreave, S. Croydon.

[The first note referred to is as follows: "A friend of mine who lately visited the Isle of Skye, observed a great number of the larva of a Geometer very similar to those of *Abraxas grossulariata*; they were feeding on the burdock on the summit of Ben Beckley, where he shot a rock-dove, the crop of which was completely gorged with them. A few of these larvæ have since changed into pupæ." J. B. Hodgkinson, *Zoologist*, p. 686 (1844).

In 1871, F. Buchanan White issued his *List of Lepidoptera of Perthshire*, but he did not include *N. zonaria*. However, he made the following note on the species, "Perhaps someone who has the opportunity will try and solve this enigma by finding and rearing the larvæ in question." In fact, as the late C. G. Barrett says, *Lep. Brit. Isles*, vol. vii., p. 152, "it was discredited for fifty-five years," until 1899.

In the year 1899, Mr. Evans, in the *Ann. Scot. Nat. Hist.*, p. 239, published the following note on the subject.

"Among a number of insects recently brought to me by Mr. R. Godfrey for identification, I was delighted to find an unset example of the male of this local moth (*N. zonaria*), which had been captured by Mr. Jas. Baxter, on the Island of Tiree, Inner Hebrides, in April of the present year. The larvæ of the species are said to have been common in 1847, on a hill in Skye and on 'Bernarah,' but apparently only one of those taken reached maturity. It was a ♀ which is wingless."—W. Evans, Edinburgh.

In the *Ent. Mo. Mag.* for 1900, p. 41, A. F. Griffith says, "*N. zonaria* is abundant on the 'machars' (sandy pastures) along the western coasts of the Outer Hebrides. The larvæ occasionally have a

curious habit of climbing to the top of the shoots of *Galium verum* there, and swaying about as if on purpose to attract attention."

In the *Ent.* for 1884, p. 61, W. H. Campbell states, "My brothers, in company with our friend Mr. J. N. Milne, took a number of larvæ of this species on sandhills on the Antrim coast . . . We have since succeeded in forcing two or three of the pupæ, and have thus made sure of the identity of the species."

In his *Lep. Brit. Isles*, vol. vii., C. G. Barrett gives as localities Ballycastle, Antrim, west coast of Connemara, Achil Island, and on the authority of Mr. G. H. Carpenter, near Roundstone, Galway. South, in his *Moths of the Brit. Isles*, gives a summary of the distribution of this species so far as the British Islands are concerned.—H.J.T.]

GYNANDROMORPH POLYGONIA (GRAPTA) C-ALBUM.—I am very pleased to record breeding, in September, 1915, a *P. c-album* with left side ♀ and right side ♂. I believe that this is unique. Only by chance have I to-day noticed it, as it was set for me as an upperside. When filling a row in the cabinet drawer I noticed that one specimen looked lopsided, the right side being the larger, and upon turning the specimen I found it was a gynandromorph. As most collectors know, the male and female of this species have totally distinct undersides, the former sex having a quantity of blue scaling, and being far more mottled than the female.—L. W. NEWMAN, Bexley, Kent. *January 28th*, 1916. [Oscar Schultz some few years ago collected all the records of gynandromorphs, and no specimen of this species had then been met with. See *Ent. Rec.*, vol. xxvii., p. 58.—H.J.T.]

EARLY SPRING EMERGENCES.—*Hibernia leucophaearia*, January 9th, one; January 12th, three; January 16th, several; all in woods. *Apocheima hispidaria*, January 9th, first male, some every day since. *Tephrosia crepuscularia*, January 11th, one; three to eight daily since; in breeding cages out of doors exposed to all weathers and a north aspect. Larvæ of *Abraxas grossulariata*, on hedge in the front garden, started feeding on January 7th, and have grown considerably since. *Melitæa aurinia* larvæ were out on the web sunning themselves on January 27th. Larvæ of *Arctia caja* were feeding out of doors on January 15th.—L. W. NEWMAN.

On January 19th I saw a male of *Hibernia leucophaearia* at rest on a wall, in the higher part of Hampstead near the Heath. There were oak-trees not far off.—A. SICH.

CURRENT NOTES AND SHORT NOTICES.

Ferdinand de Coburg, Tsar of Bulgaria, was a member of the Entomological Society of France. At the meeting of October 13th last the President referred to the entry of Bulgaria into the Great War in these words, "L'extension du conflit est, en effet, l'oeuvre de l'un de nos collègues, elle est son oeuvre personnelle, menée avec une puissance de dissimulation, une fourberie que l'on ne saurait trop mettre en relief. Nul doute ne peut persister sur le rôle de Ferdinand de Coburg, tsar des Bulgares; ce rôle ressort avec évidence de documents actuellement publics. Nous ne pouvons conserver comme collègue un homme qui a si manifestement bafouré les règles les plus élémentaires de l'honneur. Parfaitement renseignés à son sujet et absolument sûrs de ne point frapper à faux, nous vous proposons de la rayer des contrôles de la

Société entomologique de France." The motion for taking the Bulgarian Tsar's name from the list of members was carried unanimously.

It was announced in the *Bull. Soc. ent. France* of October 27th last, that M. Ch. Kerremans, the President of the Société Entomologique de Belgique, died on October 10th, in Brussels, at the age of 70. The death was also announced of Prof. Ch. Blachier, of Geneva, on October 6th last, who was known to many British entomologists and a personal friend of our colleague, Mr. G. T. Bethune-Baker, from whom an appreciation appeared in our last issue.

In the *Ent.* for November the Rev. F. E. Lowe adds his quota to the question of *Nordmannia* (*Thecla*) *aesculi*, and sums up his opinion on the results of his captures in many localities in the Tyrol, Switzerland, France and Spain, in the suggestion that there are two insects called *aesculi*, viz., the usual Swiss form, which he calls *pseudoesculi*, and which he takes for a form of *ilicis*, and the *aesculi* from the South of France, etc., which he considers nearer akin to *acaciae*. Incidentally he names a beautiful aberration of the latter ab. *arouitens*, a form suffused with yellow upperside, with spots on hindmargin of lower wings.

The *Canadian Entomologist* for October deals mainly with orders other than Lepidoptera, of which latter there is an interesting account of collecting the genus *Catocala* in 1914. On several occasions the authors collected in Louisiana, with the temperature over 100°. In fact the hotter the day apparently the greater the chance of an abundance of captures. On a number of occasions during the year more than a dozen species of this beautiful Noctuid genus were met with. In the same number there are descriptions of a number of new species in the Rhyncophora (*Delphacidae*), Hymenoptera (*Tenthredinidae*), and Diptera (*Tipulidae*), as well as two articles devoted to the question of Insect importations to the N. American Continent, from which latter we note that in the spring of 1915 there were found on imported nursery stock in New Jersey the following number of species:—Acarina, 1; Lepidoptera, 7; Coleoptera, 6; Hymenoptera, 4; Homoptera, 9; Hemiptera, 1; and Diptera, 3. *Evetria buoliana* "came over in the larval stage in surprising numbers on six shipments of pines from Holland."

The *Can. Ent.* for November has an article entitled "Some old Classifications of Insects," which gives a summary of the various systems of insect classification from the time of Aristotle to the curious quinary system of MacLeay. The list includes Aristotle, Aldrovandi, Ray and Willoughby, Swammerdam, Vallisnieri, Linnaeus, Lamarck, Latreille, Home, and MacLeay, all of whose systems are detailed. This makes a handy reference.

In the *Ent. News* for November is a figure of an aberration of *Euvanessa antiopa*, captured in Ohio on a sugar patch. "Three wings are normal male, but the left hindwing has the blue dots missing altogether, the yellow edge is about 2mm. broader than the edges of the other wings, and is of a whitish-yellow. The rest of the wing is dull black instead of reddish-brown, and the vein structure is exactly the same as that of the other wing."

In the *Ent.* for December, Prof. T. V. Theobald describes another species of Aphid, *Macrosiphum lamii*, new to science. It is found at Wye, attached to *Lamium purpureum*.

In the *Ent. Mo. Mag.* for December, Mr. D. Sharp describes a species of Coleoptera, *Philhydrus ytenensis*, as new to science. He has differentiated it from *P. fuscipennis* and *P. frontalis*, basing his decision on some 200 specimens obtained in the New Forest.

One of the plates in the December number of the *Can. Ent.* gives us portraits of many active entomologists in the Dominion who were taking part in the Annual gathering. Another is a portrait of M. Jean Fabre, seated at his table. In the same number is an account of "Kirby and Spence's" *Introduction to Entomology*, of which the first volume was published in 1815. Some half a dozen years ago we picked up the four volumes of this work, quite clean and perfect, two being first editions and uncut, for the astonishing price of one penny each. Some of the plates were slightly "foxed" and the cardboard covers broken, otherwise they were equal to new.

The following is a list of Officers and Council of the Lancashire and Cheshire Entomological Society:—*President*, J. Cotton, M.R.C.S. *Vice-Presidents*, R. Newstead, M.Sc., F.R.S., Leonard West, R. Adkin, F.E.S. *Hon. Treasurer*, J. Cotton. *Hon. Librarian*, F. N. Pierce, F.E.S. *Hon. Secretary*, Wm. Mansbridge, F.E.S. *Council*, Wm. Webster, R. S. Bagnall, F.L.S., F.E.S., Chas. Fred. Burne, J. W. Ellis, M.B., F.E.S., A. W. Hughes, J. Collins, R. Wilding, P. F. Finne, M.A., T. P. Doudney, E. A. Cockayne, M.A., M.D., F.E.S.

In the *Ent. Mo. Mag.* for November, Mr. J. H. Durrant describes a species new to science, a Pyrale, *Myelois neophanes*, from specimens in the Bankes Collection taken in Dorsetshire and Surrey. It has hitherto been confused with *Salebria fusca* (*carbonariella*), which it much resembles. He also adds another species new to science, *Myelois phoenixis*, bred in this country from Algerian dates. It is nearly related to *impunctella*.

There seems to be a growing desire just now for a kind of research which has been aptly termed "archeological research." Dr. Gordon Hewitt, in the December number of the *Can. Ent.*, quotes freely from a curious old work entitled "New Improvements of Planting and Gardening, both philosophical and practical," by Richard Bradley, F.R.S., published in 1724. The interest is that a considerable number of pages in this work are devoted to a consideration of the relation of insects to disease.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

October 20th, 1915.—Mr. Charles Ernest Stott, Woodcroft, Eglington Road, Chingford, Essex, was elected a Fellow of the Society.

The Hon. N. Charles Rothschild exhibited some examples of *Zygaena* (*Anthrocera*) bred from cocoons found in a marsh near Camberley. The interest attaching to the specimens was the fact that, though found in a marshy situation, they apparently resembled in all respects the dry, chalk-down, form of *Z. trifolii*.

Mr. H. J. Turner expressed the belief that the specimens were ordinary *A. trifolii* and not var. *palustris*; other Fellows concurred, and several instances were mentioned of ordinary *trifolii* being found in damp localities.

DR. G. D. H. CARPENTER ON THE LIFE-HISTORY OF *PAPILIO HESPERUS*, WESTW., AND THE RESEMBLANCE OF ITS LARVA TO THAT OF *P. NOBILIS*, ROG.

—Prof. Poulton gave an account, written by Dr. Carpenter, of the life-history of *P. hesperus*, from a specimen reared from an egg laid by a female *hesperus* on Kome Island, N.W. Victoria Nyanza.

Prof. Poulton also brought forward some observations recorded by Mrs. D. R. Fyson, on the proportions of the female forms of *Papilio polytes*, L., in the neighbourhood of Madras city.

A MANTIS AND ENTOZOON.—Mr. E. E. Green exhibited a specimen of a Mantis from Ceylon, together with a *Gordius* worm that had emerged from it.

A REDISCOVERED BRITISH COCCID.—Mr. Green also exhibited specimens of the Coccid *Gossyparia ulmi*, Geoff. (or *spuria* of Modeer—according to the American authorities), collected by Mr. J. C. F. Fryer, on a Cornish elm at Farnham, Surrey.

SOME BRITISH LYCÆNIDS.—The Rev. G. Wheeler exhibited some British Lycænids, taken in July and early August this year:—(1) *Polyommatus icarus*, Rott., from the Durham coast, remarkable for their large size and the brilliant tint of the ♂♂. (2) *Plebeius aegon* var. *masseyi*, Tutt, the form from the northern mosses, the ♂♂ bright blue, with very narrow black border and conspicuous black marginal spots on the hindwing, the ♀♀ strongly suffused with blue. (3) *Aricia medon*, Hüfn., from the Durham coast, including almost typical specimens, also var. *salmacis*, as described by Stephens, the ♂ with a black discoidal spot on the upperside of the forewing, the ♀ with a white one; ab. *similis*, Tutt, ab. *albiannulata*, Harr., ab. *vedrae*, Harr., with its extreme form ab. *obsoleta*, Obth., ab. *semivedrae*, Harr., and ab. *inclara*, Harr. To these were added a few var. *artaxerxes*, F., from Kinghorn.

A GYNANDROMORPHOUS ANT.—Mr. Donisthorpe exhibited two remarkable mixed gynandromorphs of *Myrmica scabrinodis* taken in the same colony at Weybridge, July 30th, 1915.

MIMICRY OF NYCHITONA MEDUSA, BOISD., BY LEUCERONIA THALASSINA, BOISD., EXTENDING TO HABITS AND FLIGHT.—Dr. F. A. Dixey exhibited specimens of *Nychitona* and *Leuceronia*, remarking on their resemblance in habits and flight.

A FIVE-SPOTTED ZYGÆNA FILIPENDULÆ.—Mr. R. Adkin exhibited a 5-spotted specimen of *Zygæna filipendulæ*, from a field at the top of the Downs near Otford, Kent.

A NEW BRITISH CAPSID.—Mr. E. A. Butler exhibited a specimen of *Brachyarthrum limitatum*, Fieb., a Capsid new to the British list, taken in Epping Forest, July 3rd, 1915, on aspen.

A TERATOLOGICAL BEETLE.—Mr. Butler also exhibited a specimen of *Timarcha violaceo-nigra*, De G., with the left intermediate leg furnished with two tarsi, placed upon a much-broadened tibia.

November 3rd.—Messrs. H. C. Tytler, Vacoas, Mauritius, and Alfred F. Winn, 32, Springfield Avenue, Westmount, Montreal, Canada, were elected Fellows of the Society.

AN UNRECOGNISED ACRAEA.—Mr. S. A. Neave exhibited a remarkable and unrecognised species of *Acraea*, which was described and figured by Lathy, in the Transactions of the Society for 1903, as a Lycænid, and placed in the genus *Telipma*. The name for this species will therefore stand as *Acraea actinota*, Lathy.

SCYMNUS ARCUATUS.—Mr. Donisthorpe exhibited a series of the beetle

Scymnus arcuatus, and also communicated a short paper descriptive of the life-history of the insect, sent to him by Fr. J. F. Perry.

TERATOLOGICAL LUCANID BEETLE.—Mr. Willoughby Ellis exhibited a teratological specimen of the common Lucanid beetle, *Sinodendron cylindricum*, L.

INSECTS CAPTURED FEBRUARY 20TH, 1915, AT THE FLOWERS OF A EUCALYPTUS AT HEALESVILLE, VICTORIA.—Prof. Poulton exhibited a collection of insects of various orders, taken on February 20th, 1915, by Mr. Kelly, on *Eucalyptus calophylla*—a pink flowering vernacular gum, a native of West Australia, flowering in his garden at Healesville, Victoria.

A NEW SPECIES OF THAUMAGLOSSA BRED FROM THE EGG-CLUSTERS OF MANTIDÆ.—Mr. Arrow exhibited specimens of a new species of *Thaumaglossa*, bred from the egg-clusters of *Mantidae*, and read notes.

NEW LEPIDOPTERA FROM THE WANDAMMEN MOUNTAINS, DUTCH NEW GUINEA.—Mr. G. Taylor exhibited, on behalf of Mr. J. J. Joicey, a number of new Lepidoptera from Dutch New Guinea, and read notes.

ABERRANT RHOPALOCERA.—Mr. Stanley Edwards exhibited a small box of aberrant butterflies taken by Mr. Dawson, *viz.*, an albinistic specimen of *Epinephele jurtina* (ab. *semialba*); melanic specimens of *Brenthis pales*, *Melitaea dictynna*, and *M. didyma*, a striated specimen of *Agriades escheri*, and a specimen of *Polyommatus hylas* with obsolescent spotting. The specimen of *M. didyma* was taken at Digne, the others in Switzerland.

The following paper was read:—"On new and little-known species of *Xylophilidae*," by G. C. Champion, A.L.S., F.E.S.

November 17th.—Messrs. John Wesley Carr, M.A., F.L.S., F.G.S., Professor of Biology in University College, Nottingham, and Albert Harry Hamm, 22, Southfield Road, Oxford, Assistant in the Hope Dept., Oxford University Museum, were elected Fellows of the Society.

The President said he was sure the Fellows would wish, without passing any formal vote, to express their regret at the death of the late Professor Meldola, formerly President of the Society.

IRISH COLEOPTERA.—Mr. O. E. Janson exhibited on behalf of Mr. L. H. Bonaparte Wyse a number of Coleoptera taken by him in Ireland this year.

SCOTCH DYSSTROMA CONCINNATA.—Dr. Cockayne exhibited a series of *Dysstroma ? concinnata*, Steph., taken by Mr. R. Y. Horn at Tarbert, Argyllshire, July 1915. They were at rest on rocks amongst heather. For comparison *D. concinnata*, Arran, and the two Irish specimens taken by Capt. Gwatkin-Williams, R.N., on Achil Island. Also *D. citrata* ab. *pythonissata* (*inmanata*), Shetlands, and *D. truncata*, Sutherland. Also a melanic aberration of *D. concinnata* taken by Mr. Horn on Arran Island.

SCOTCH PIERIS NAPI.—The Rev. G. Wheeler exhibited a series of *Pieris napi*, from Kinghorn on the coast of Fife, taken on August 4th, 1915, the ♂s being remarkable for the extent of the black markings on the forewings, the ♀s for the extent of the grey suffusion along the costa, inner margin, and nervures of the same wings.

A NOCTUID MOTH FEEDING ON THE MOISTURE FROM THE EYES OF MULES.—Dr. Guy A. K. Marshall exhibited a specimen of a Noctuid moth, *Arcyophora longivalvis*, Guen., forwarded from Rukuba Hill, 4,000 ft., German East Africa, by Mr. W. F. Poulton, a veterinary officer of the Uganda Protectorate, who, when attending a troop of mules

at night, constantly noticed a number of moths about them. "They would alight on the animal's head, either in close proximity to the eye or on the nose; from the latter they would make their way straight to the eye, elongate the proboscis and feed on the secretion which collects under the lower lid."

PENTATOMID BUGS DEVOURING THE LYCÆNID BUTTERFLY *A. CORIDON*.—Prof. Poulton exhibited the two examples of a Pentatomid bug, *Zicrona coerulea*, L., and the butterfly referred to in the following letter from Dr. E. A. Cockayne, dated July 26th, 1915:—"I enclose you a freshly emerged male *Agriades coridon*, E., taken at Royston, Herts., July 25th, 1915. The two brilliant green bugs were sucking it, one attacking the thorax the other the abdomen."

PYRRHOPYGID OVA AND IMAGINES.—Mr. W. J. Kaye exhibited ova of *Pyrrhopyge charybdis*, a skipper belonging to the wholly neotropical sub-family *Pyrrhopyginae*. The eggs for the size of the butterfly are enormous. Also a number of species of the *Pyrrhopyginae* illustrative of the different genera of the sub-family. Also *Pseudosarbia phoenicicola*, a mimic of *P. pelota*; and lastly, *Phocides pygmalion* mimicking *J. hospita*.

MELANIC CYMATOPHORA OR.—Mr. G. T. Porritt exhibited a form of *Cymatophora or*, entirely black with the exception of the pale stigmata, taken at Sunderland this year.

NEW BUTTERFLIES FROM BIAK.—Mr. G. Talbot exhibited on behalf of Mr. J. J. Joicey a number of new butterflies from Biak.

AN ILL-PLACED WASP'S NEST.—Mr. Talbot also exhibited cells of a mud-wasp (*Odynerus* ? sp.) formed in the groove of an insect store-box in the Witley Museum, the mud having been collected and brought into the museum by the wasp.

Paper, "On the Biology of *Sphodromantis guttata*," by C. B. Williams, B.A., F.E.S., and P. A. Buxton, B.A., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

December 9th, 1915.—DECEASE OF A MEMBER.—The decease of Prof. Meldola was announced.

ABERRATIONS OF BRITISH *P. MACHAON* AND COLIADS.—Mr. F. W. Frohawk exhibited (1) a *Papilio machaon*, from Wicken, of a dark cinnamon-brown colour, and another with odd-coloured anal-angle blotches. (2) *Colias hyale* and *C. edusa* with irregular blotches of crimson, due to scale colour and not to stain.

AN OBSERVATION CAGE.—Mr. H. Main, a cage for observation of the burrowing and metamorphoses of *Geotrupes* species, etc.

ABERRATION OF *E. PENDULARIA* IN SURREY.—Mr. B. S. Williams, var. *subroseata* of *Ephyra pendularia* bred from a larva taken in Surrey.

LYCÆNID ABERRATIONS.—Mr. Dunster, (1) dwarf examples of *Pieris napi*, ♂, 1½ in., and *Polyommatus icarus*, ♀, 7/8 in. (2) Lilac tinted ♂ of *Plebeius aegon* from Oxshott. (3) Underside aberrations of *P. icarus* from Ranmore and Beaconsfield. Mr. F. H. Stallman, a *Lycaena arion* ♀, quite fresh, taken on August 25th, an unusually late date.

MELANIC *T. VARIATA* IN LONDON.—Mr. R. Adkin, a melanic *Thera variata* (*obeliscata*) taken at Lewisham.

REPORTS OF FIELD MEETINGS.—Reports of the Field Meetings were read by their respective leaders, viz., Ranmore Common and Pickett's Hole by Mr. Hy. J. Turner; Otford, by Mr. R. Adkin; Swinley Woods, Ascot, by Mr. B. S. Curwen; and Claygate Woods, by Mr. Hy. J. Turner.

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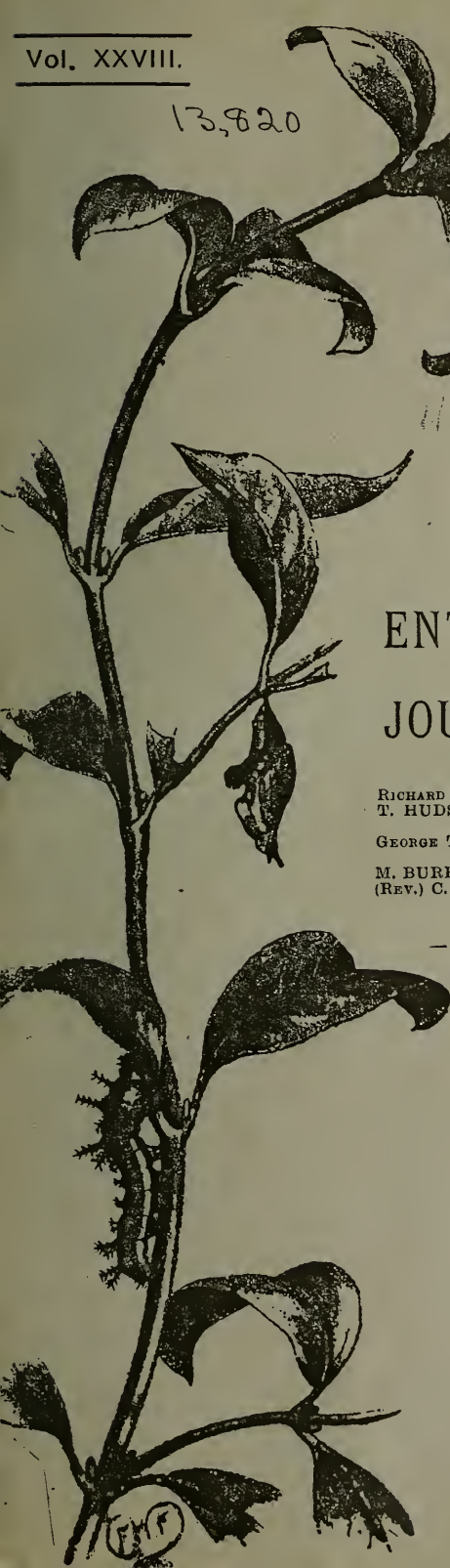
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The egg of *Liphyra brassolis*.

(With two plates.)

By T. A. CHAPMAN, M.D.

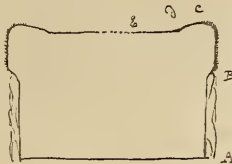
I know very little of the eggs of exotic *Lycænid*s, and therefore it goes for very little that I am unable to place the egg of *L. brassolis* as at all in line with any other *Lycænid* egg that I have seen, still the remarkably isolated position of *Liphyra* in relation to other *Lycænid*s, makes it not at all unlikely that this difficulty of classifying the egg does arise, not simply from my narrow outlook, but because it is really in accord with the facts.

It would be only after some examination that one would conclude that they were *Lycænid*, and probably nearer to *Theclids* than to any other subfamily we know much of.

It is a very large egg, 1.45mm. in diameter and 0.94mm. high. Seen from above, it is circular; and viewed laterally, the sides are broadly, vertical, in fact, in a detail to be mentioned immediately, it is wider at top than at bottom, still speaking broadly, it has the form of a portion cut off a cylinder, 1.45mm. thick and of a length of 0.94mm.

The material under observation being three whole (but of course dead, not simply unhatched, but without any embryonic development) eggs and six that had hatched, any statement of colour may be very wide of the truth, as regards the fresh living egg.

Seen from above, the upper flat surface has a dark brown margin about 0.3 mm. wide, inside that, quite a pale ring of equal width, with a central, still paler, circle, 0.2mm. in diameter; this is the rather large micropylar area. Laterally, the same brown area seen on top, occupies 0.36mm. of the upper part of the sides, and the lower 0.6mm., is pale, probably white, in the living egg.



Diagrammatic vertical section across middle of egg. About $\times 25$.

Returning to the form of the egg, and taking it as a portion of a cylinder, we find the upper margin has, as it were, a roll of material laid over it.

I have endeavoured to show this in the diagrammatic vertical section of the text block.

Describing this along with the photographs, pl. II., giving vertical views of the egg after dividing it horizontally at the level of B, the lower portion A to B viewed from above in pl. II., fig. 2, is vertically ribbed, as suggested in block, in the figure the upper ends of these ribs are seen as angular projections all round. These ribs are a little waved, not absolutely straight, and in some case actually anastomose. Their number may be judged from the photograph, they appear not to be

MARCH 15TH, 1916.

portions of the egg structure proper, but of the same adventitious material that ornaments the eggs of blue butterflies and is found also in *Thecla*, and in most cases more developed in the lower zones. The upper portion of the side B-C, projects to about the level of the tops of the ribs, or if anything a little further (see pl. II., fig. 1). This portion is very dark brown and is continuous on over the top to D; as far as C, it is clothed with fine hairs, or rather hair-like processes, probably arising from the angles of the cells. Just as this dark portion subsides below into the less prominent sides, so it slopes downwards on top to the shallower basin. This portion in the living egg is probably quite flat, it is very pale compared with the margins and the central micropylar area is paler still.

The base of the egg is colourless, but a netted structure of cells can be made out, the cells rather larger than the largest on the top. The sides are of probably similar cellular structure, which would be seen if the adventitious coating forming the surface were removed. The top is shown in pl. II., fig. 1.

It should be explained that an egg was divided horizontally at the line B. Fig. 1 and 2 are views from above of the two portions. In interpreting the upper portion (fig. 1) it must be noted that it has the whole depth of from B to C (text figure) and so cannot be all properly focussed, and so, in focussing the flat top, the cut margin also happens to come nearly in focus, whilst the portion of the top that comes against it is out of focus and the cells are not visible. It will be easily understood, keeping this in mind and comparing it with pl. I., fig. 1. It shows the hair-like processes of the margin, where they come in profile. The netting on the top is fairly hexagonal, but not strictly so as the cells are larger near the centre. Towards the margin they are about 0.018mm. in diameter, a little further in 0.02mm., and towards the micropylar area 0.026mm. In the micropylar area the cells are much smaller and narrowly lanceolate with the long diameters radial.

The eggs that had hatched are all nearly uniform in showing that that larva made a central circular opening, that left a margin of pale area within the dark border zone, actually 0.5mm. to 0.6mm. in diameter.

PLATES. (Photos by F. N. Clark.)

Plate I. Egg of *Liphyra brassolis*.

- Fig. 1. Vertical view, $\times 25$.
 ,, 2. Lateral view, $\times 25$.
 ,, 3. Micropyle, $\times 200$.

Plate II. Fig. 1. Top of egg, $\times 40$.

- ,, 2. Lower portion of egg viewed from above, showing the numbers and positions of the ribs, each of course seen from its upper end, something of their disposition may be seen in pl. II., fig. 2.

These two specimens include the whole egg, which proved to be very hard and solid and difficult enough to divide into these two portions, so no efforts were made at further division or section, which would no doubt have been more satisfactory, if successful.

The specimens are in the collection of Mr. G. T. Bethune-Baker.

Records of some new British Plant-galls. I. Diptera (Cecidomyidæ).

By RICHARD S. BAGNALL, F.L.S., F.E.S., and J. W. H. HARRISON, B.Sc., F.E.S.

During 1915 we spent a good deal of our spare time in working out the plant-galls of Northumberland and Durham, and are publishing accounts of the *Cecidomyidæ* and *Eriophyidæ* in due course. It is desirable that galls caused by insects and mites previously unknown as British should be put on record at once, hence the reason for these brief notes.

See also E. W. Swanton, *Jr. of Bot.*, 1916, pp. 24-29; and H. J. Burkill, *Ent.*, 1916, pp. 4-8.

CECIDOMYIDÆ.

Rhabdophaga pierrei, Kieffer.

DURHAM, Birtley, rare on twigs of *Salix repens* (J.W.H.H.).

Perrisia fructuum, (Rübs.).

In seed-pods of mouse-eared chickweed (*Cerastium vulgatum*). YORKSHIRE, Marton (J.W.H.H.): DURHAM, near Fatfield (R.S.B.).

Perrisia geranii, Can.

NORTHUMBERLAND, Budle Bay, exceptionally common, and DURHAM, Cowpen Bewlay, one example only (J.W.H.H.).

Perrisia salicariae, Kieffer.

NORTHUMBERLAND, not uncommon on purple loosestrife (*Lythrum salicaria*), near Bamburgh (J.W.H.H.).

Perrisia scabiosae, Kieffer.

DURHAM, common on small scabious, Penshaw Hill (R.S.B.).

Perrisia schlechtendali, Kieffer.

DURHAM, sparingly on *Lathyrus macrorhizus*, Birtley (J.W.H.H.).

Perrisia sp. (probably *virgae-aureae* (Leib.).

DURHAM, in heads of golden-rod (*Solidago*), Gibside (R.S.B.).

Janetiella thymicola, Kieffer.

NORTHUMBERLAND, Seahouses (J.W.H.H.), and Crag Lough (R.S.B.).

Stictodiplosis hypochaeridis, (Rübs.).

NORTHUMBERLAND, in quantities on *Hypochaeris*, near Haydon Bridge (R.S.B.); YORKSHIRE, sparingly, Cleveland district (J.W.H.H.).

Contarinia tragopogonis, Kieffer.

DURHAM, on the Wear at North and South Hylton, Washington and Penshaw on goatsbeard, *Tragopogon pratensis* (R.S.B.).

Cystiphora pilosellae, Kieffer.

On mouse-ear hawkweed (*Hieracium pilosella*). DURHAM, Birtley Fell (J.W.H.H.), and near Penshaw, once only (R.S.B.).

Cystiphora taraxaci, Kieffer.

NORTHUMBERLAND, on leaves of dandelion, on the coast near Bamburgh (J.W.H.H.).

? *Cystiphora leontodontis*, Kieffer.

DURHAM, on leaves of *Leontodon hispidum*, Washington and Penshaw (R.S.B.).

Four Seasons at Martigny.

By H. L. EARL, M.A., F.E.S.

In the summer of 1910 I was collecting butterflies in the Rhone Valley, and spent ten days, from May 23rd to June 3rd, at Martigny, returning to it for a further search on July 10th. I was much impressed by the abundance of species under the cliffs, and in 1911, after a spring campaign at Hyères and Digne, I again took up my old quarters at the Mont Blanc Hotel, on June 17th, for a month. After five weeks spent at Simplon village, Simplon Kulm, Saas Fée and Brigue, I returned once more to the cliffs, and worked them from August 25th to September 12th. Two more visits in 1912, from May 15th to the 25th, and in 1913 from April 29th to the first week in June, nearly filled in the intervening periods at the cliff walk, so that I can claim to have worked it thoroughly from the beginning to the end of the season.

The total number of species taken on the wing under the cliff was 109, of which 98 were found between June 17th and July 10th, in 1911. I think this record is an effective answer to any collector who may wish to know the most prolific time and place for a three weeks' search. This list would have been considerably increased had I included visits to Branson, Charrat, Bovernier, Les Marécottes, and other districts within the compass of a morning's expedition, but I confined myself to the semicircle of rocks facing the great bend of the Rhone opposite Follaterres. This amphitheatre seems to have been scooped out by the pressure of the great Rhone valley glacier of the glacial period, 5,000 feet deep, and rock slides from the top make the ground very difficult in places.

It is not attractive at first sight, as it faces east-north-east, and the sun sinks behind the ridge before three o'clock in June and July. It combines, however, a variety of attractive features; a hot and arid mountain side, a wooded section, gradually clearing with the rise of the ground, an open patch with scrubby bushes of privet and blackthorn, a stony walk for those species which seem to prefer glaring rock and sand to anything in the form of vegetation, and last but not least, a flowery meadow, which becomes increasingly marshy as Vernayaz is approached, swarming not only with mosquitos, but with the far more formidable "taons."

From La Bâtiaz to Vernayaz is not more than two and a half miles, and within this area, I might almost say inside a few hundred yards of it, are to be found more than one-third of the butterflies of Europe. not only this, collecting was almost limited to the footpath itself, as I never found it of use to climb the steep rocky slopes in pursuit of species which were sure to be found sooner or later on the level.

Another point to be noticed is that at each end of the district are valleys leading up to the high Alps. At the La Bâtiaz end is the Great St. Bernard, and at Vernayaz, the Gorge du Trient, and the zig-zags leading to Les Marécottes, Finhaut, and Chamonix.

From the numerous instances of high flying species found on the cliff walk, it would seem that they are blown down the passes, or breed down them, till they reach the bottom of the Rhone valley, always remembering that the bottom is fifteen hundred feet above sea level. As Switzerland is to Europe, a small country of varied vegetation and

climate, and so rich in species out of proportion to its size, so is the Martigny undercliff to Switzerland.

In 1910, the latter part of May was cold and ungenial, but I was surprised and pleased to find *Parnassius mnemosyne* as soon as I entered the ground, a species I connected hitherto with the slope above Bérissal; also *Erebia erias*. *Hesperia carthami* could generally be seen haunting a manure heap near the village of La Bâtiâz, and *Melitaea cinxia* was the commonest *Melitaea*. I scarcely saw a single *Melitaea parthenie* in the whole Rhone valley during three months' collecting. Some of this genus appear to go through cycles of abundance and rarity. In 1911, *M. cinxia* was generally scarce, and *M. parthenie* abundant; in 1912, *M. cinxia* was hardly to be seen; in 1913, it was again common, while *M. parthenie* had fallen off in numbers. The afternoon Rhone valley wind, which blows from March to September, and is a great drawback to collecting all over this region, used to begin every day about eleven o'clock in the part of the cliff walk near La Bâtiâz, and most of my work was done before this hour.

On July 10th, after five weeks in the mountains, I returned to Martigny, and found a crowd of species on the wing. *Nordmannia ilicis* and *Klugia spini* were common though worn, in fact the former must be caught the day of its emergence. *Brenthis daphne* was everywhere in the wooded parts. *Dryas paphia* was common on a few brambles, but confined to them. *Melitaea didyma* was in all its glory, I counted 27 with outspread wings on the ground, sharing with *B. daphne* and *Melitaea phoebe* the attractions of a crushed field mouse. Of the *Lycaenidae*, *Lycaena arion* occurred singly at the Vernayaz end, as also *Aricia eumedon*. *Polyommatus damon* was common, and *Scolitantides baton* was in little groups, playing on the mud with some ragged *Cupido minimus*. The only abundant Hesperid was *Erynnis lavateræ*, fine dark greenish forms, darting about with intense activity. *Limenitis camilla* was common, with occasional *L. sibylla*, and a single *Apatura iris*, with several *A. ilia*. *Loweia alciphron* var. *gordius* was in great force, and I took three in which the black markings of the upper wings were lumped into one big spot. Add to these a goodly muster of the New Forest species in a prolific August, making plenty of inducement to plan another attack in the following year.

The season of 1911 was hot, early and prolific. Coming straight from Digne, a district very hard to surpass in abundance of butterflies, I reached my old ground on June 17th, and from the moment of leaving La Bâtiâz I was struck by the profusion of species and specimens. It was interesting to see bunches of full-grown larvæ of *Vanessa io* feeding on the hop, and sometimes sampling the bramble which supported the creeper. *Coenonympha iphis* was abundant all along the marshy ground, together with *Polyommatus amanda*. I was surprised to take a fine *Brenthis amathusia*, a species which I always connect with Corbeyrier and the fourth Refuge, or the pine zone at 4,000 feet. *L. alciphron* var. *gordius* and *Heodes virgaureæ* were flying together, the latter just out. *Melitaea dictynna* was the commonest *Melitaea*, and *Erebia stygne* was now added to the *Erebia* list, with a single *Erebia ceto*, which I had not hitherto taken so low down. It was no less surprising to see odd specimens of *Coenonympha arcania* var. *darwiniana*, *Coenonympha satyrion* and a pair of *Chrysophanus hippothoe*, which last I had only seen at Pontresina, Bel Alp; Zermatt and

the Simplon Hospice, *i.e.*, from 5,000 to 6,000 feet. On the 21st *Lycaena arion* appeared, and *H. virgaureae* increased during the week until it equalled var. *gordius* in numbers, the females emerging on the 26th. The males seemed to fly most about one o'clock, and on the 28th I took thirteen splendid specimens, fresh from the pupa. A single worn *Lycaena iolas* turned up on the 29th, probably a wanderer from its district across the Rhone. The 30th, the hottest day I can remember in the Rhone valley, was marked by a great falling off in the number of butterflies. They seem to rest during excessive heat under the leaves, except *Rumicia phlaeas* and *Erynnis lavaterae*, which apparently gain greater activity from it. Little of fresh interest was noticed during the first week of July, except that the large fritillaries became common, and I left the district for six weeks of semi-tropical weather, returning to Martigny on August 26th. Its appearance then was desolate in the extreme, perfect weather with nothing to be seen except a few feeble abortive second broods, small in size, poor in colour, and often half crippled in the wings, left behind by the gaudy crowd of June as caretakers of this magnificent collecting ground. Three *Limenitis camilla* were noted, abnormally small, just able to fly, a second brood of *Melitaea didyma*, about the size of *M. aurelia*, with a few *Brenthis dia*. *Pararge maera* was the size of *hierax*, and not unlike it.

In the fields behind Martigny *Colias edusa* and *Agriades thetis* (*adonis*) and *Polyommatus icarus* (*alexis*) were still flying in some abundance on late crops of mowing grass, and *Loxia dorilis* and *Rumicia phlaeas*, the latter a very fine dark form, could be taken on flowers of the mint. Owing to the excessive heat, these species used to fly from 4 p.m., when the sun sank behind the Plan Cerisier, till six o'clock in the shade.

The season of 1912 was marked by broken weather and a distinct falling off in the numbers of Lepidoptera, but varieties were much more common, especially in var. *gordius*, also several species fresh to my knowledge of the cliff walk put in an appearance. *Everes alcetas*, which I had not seen nearer than Branson, *Scolitantides orion* from the same district, *Cupido sebrus*, *Melitaea deione* var. *berisalensis*, *Erebia medusa*, and *Erynnis althaeae*. *Cyclopides palaemon* was also a surprise, as I had not taken it nearer than St. Triphon and Aigle. The following species also appeared here and there which had only occurred singly before: *Plebeius aegon*, *Polyommatus semiargus*, *Glaucopsyche cyllarus*, *Aricia eumedon*, and *Celastrina argiolus*. Collecting in 1912 was from May 25th to June 19th.

But if the season of 1912 was broken weather, that of 1913 was the most unbroken period of settled Swiss weather at its very worst that I ever experienced. From April 29th to the 20th of July there were not two fine days together, and during the stay at Martigny until the 31st of May, the place was swept by an evil blast from the Grand St. Bernard, to say nothing of the afternoon Rhone valley wind. This continued with intervals of heavy rain for three weeks, then came dust storms at Brigue, with gales from the Simplon, ten days' rain at Bex, much worse rain at Wesen, and lastly I was driven down from Pontresina on the 26th of July by a twelve hours' thunderstorm with six inches of snow, a region which boasts a climate of nine months' winter and three months' cold weather.

Of course there were brief intervals of sunshine and calm in the summer of 1913, and collecting was possible on sheltered ground, but the whole district was under a cloud, and to think of repeating the experience of 1911 was to imagine a vain thing. There was also another drawback; that universal destroyer, the goat, had invaded my Eden, and was making his presence felt; from spurge to orange-peel, marjoram and wood sage, nothing seemed to come amiss to its appetite, and it was poor work to follow in its tracks. Still I have little doubt the place will again abound with Lepidoptera as before, especially at collectors themselves are now so scarce, and many severely hunted species will revive. It would be as well, however, if collectors on their first Swiss season should not count on taking forty-six species in one morning, as on May 28th, 1912, or forty-two, as on June 17th, 1911 (not on a long morning's tramp, but on a few hundred yards of foot-path).

I have given below a list of the 109 species taken, and am sure that it does not exhaust the possibilities of the district, in fact I am only recording what I have caught myself. I know that *Strymon pruni* is found there, and a friend reports the presence of *Polyommatus escheri* and *Pontia callidice* from the heights. To the six *Erebia* mentioned above, it is certain that *E. aethiops* must be added, and probably more, especially as such high altitude insects as *Brenthis amathusia*, *Erebia goante*, *E. ceto*, *E. hippothöe*, *Coenonympha arcania* var. *darwiniana* and *C. satyrion* are on the list.

HESPERIIDÆ.

Erynnis lavateræ.—Always present in its season, never common.

Erynnis althææ.—Twice captured in the *iphis* meadow. •

Erynnis alceæ.—Half way up La Bâtiâz.

Hesperia carthami.—Generally common.

Hesperia alveus.—Not common.

Hesperia malvoides.—Always to be taken, never common.

Powellia sao.—Generally common.

Nisoniades tages.—Generally common.

Argiades sylvanus.—Common, a very large form.

Thymelicus acteon.—Single specimens.

Adopæa lineola.—Abundant locally.

Adopæa flava.—Abundant locally.

Cycloptides palaemon.—A single specimen.

CHRYSOPHANIDÆ.

Loweia alciphron var. *gordius*.—In considerable numbers.

Loweia dorilis.—From May onward, but never common, except in August, 1911, when they were attracted by the flowering mint.

Chrysophanus hippothöe.—Two specimens, June 23rd, 1913.

Heodes virgaureæ.—All along the cliff walk from June 17th to July 10th.

Rumiccia phlæas.—Single specimens here and there throughout the season. I generally notice that it is only the rare species that are ever really common, while the common species are usually scarce though widely distributed.

LYCENIDÆ.

Lycaena arion.—Always to be found in three different spots, and

rare in those; the examples are large and dark as compared with Cornish forms, though not so pronounced as *ab. obscura*. Very difficult to take on the steep slopes.

Lycaena iolas.—A single specimen taken June 28th, 1911.

Polyommatus amandus.—Common on the damp meadows from June 17th.

Polyommatus icarus (alexis).—To be found the whole season, never abundant. The female smaller than the British form, and very uniform.

Polyommatus semiargus.—Always to be found but never common.

Cupido minimus.—Little colonies along the footpath.

Cupido sebrus.—Restricted to one spot.

Glaucopsyche cyllarus.—Always to be found, but never common.

Polyommatus damon.—A few on June 28th, 1911; common in July, 1910.

Polyommatus hylas.—Confined to certain spots, and apparently never quitting them. I have noticed a damaged specimen day after day at the same spot.

Aricia eumedon.—Occasionally. The best place I have known for this species is St. Niklaus.

Aricia medon (astrarche).—A form with large orange spots. I have always found this the most difficult butterfly to set in good condition.

Agriades coridon.—Abundant.

Agriades thetis (adonis).—Abundant.

Plebeius aegon.—Abundant in certain spots.

Plebeius argyrognomon.—Abundant in certain spots.

Scolitantides orion.—Two specimens on May 21st, 1913, one of them in the grip of a large green spider.

Scolitantides baton.—Occurred in little groups.

Celastrina argiolus.—Common at the end of April.

RURALIDÆ.

Callophrys rubi.—A large form; from the beginning of May.

Bithys quercus.—Very common, only twice seen.

Ruralis betulæ.—One taken September 6th, 1911.

Nordmannia ilicis.—By far the commonest "hair-streak"; abundant for a few days, then soon over.

Klugia spini.—A good series on July 4th, 1911.

ERYCINIDÆ.

Hamearis lucina.—A large form.

PAPILIONIDÆ.

Papilio podalirius.—Especially common.

Papilio machaon.—Common.

Parnassius apollo.—I have seen three or four in a day.

Parnassius mnemosyne.—Common at the Vernayaz entrance to the path.

PIERIDÆ.

Aporia crataegi, *Pieris brassicæ*, *P. rapæ*, and *P. napi*.—Never so common as many species which are much more in request.

Pieris manni.—In the wood section of the undercliff.

Pontia daplidice.—Rare.

Anthocharis simplonia.—Not uncommon in 1913.

Euchloë cardamines.—A very large form.

Leptosia sinapis.—The commonest "white" in May.

Colias hyale.—Common in May.

Colias edusa.—Fresh specimens taken on May 12th, more abundant in August.

Gonepteryx rhamni.—Common.

ARGYNNIDÆ.

Dryas paphia, *Argynnis aglaia*, and *A. adippe*.—Never as common as I have seen them in England; the last named very large.

Argynnis niobe var. *eris*.—Not common.

Issoria lathonia.—Sixteen were counted near La Bâtiaz on May 27th, 1912.

Brenthis ephrosyne.—A very large form.

Brenthis daphne.—Very common.

Brenthis ino.—A single specimen taken on July 8th, 1911, in the damp meadow, otherwise I have not seen it nearer than St. Triphon.

Brenthis amathusia.—A fine specimen taken on June 18th, 1911.

Brenthis dia.—Not unfrequent in May; and a late brood at the end of August, 1911.

Melitaea phoebe.—Common, fine dark forms.

Melitaea cinxia.—Very common in some seasons.

Melitaea didyma and *M. dictynna*.—The most abundant of the *Melitaea*.

Melitaea deione var. *berisalensis*.—Taken low down on the track leading up to La Bâtiaz; a much handsomer insect than the typical *deione*.

Melitaea parthenie and *M. athalia*.—Always to be taken, never abundant.

VANESSIDÆ.

Pyrameis cardui and *P. atalanta*.—Common after hibernation.

Euranesa antiopa.—Abundant in May, 1910. Hardly seen in July.

Vanessa io and *Aglais urticae*.—Swarming in the larval state. What becomes of the imagines of *V. io*, *A. urticae*, and *E. polychloros*? I have seen large sallows in the New Forest stripped bare by thousands of *E. polychloros* larvæ, but never more than three or four butterflies in a day during August, and only those because they were attracted to the moth sugar. I have only once seen *A. urticae* common, on a large bed of flowering mint.

Eugonia polychloros.—Two specimens.

Polygona c-album.—Not uncommon from the end of June.

NYMPHALIDÆ.

Limenitis camilla.—First seen on June 4th, last on September 12th.

Limenitis sibylla.—Never so common as the last.

APATURIDÆ.

Apatura ilia.—Not uncommon. Aigle is the best district.

Apatura iris.—I have only taken it once.

SATYRIDÆ.

- Pararge maera*.—Common.
Pararge megaera.—Most abundant in 1910.
Pararge aegeria.—Common at the end of April.
Satyrus hermione var. *alcyone*.—Generally common.
Satyrus stalinus.—In September, 1911.
Satyrus cordula.—Especially common about La Bâtiâz.
Enodia dryas.—I missed this species in 1911, as it was badly worn when I returned to Martigny on August 25th.
Hipparchia semele, *Epinephele jurina*, and *E. lycaon*.—Common.
Aphantopus hyperantus.—Sometimes swarming.
Coenonympha iphis, and *C. pamphilus*.—Common.
Coenonympha satyrior, and *C. arcania* var. *darwiniana*.—Single specimens.
Erebia ceto.—One or two.
Erebia medusa.—Common at the end of May.
Erebia stygine.—Always found in one spot. June 18th, 1911
Erebia evias.—The commonest *Erebia*.
Erebia ligea.—Common on a very small area.
Erebia goante.—Taken once.
Melanargia galathea.—Abundant.

***Agriades coridon* var. *roystonensis*.**

By E. A. COCKAYNE, D.M., F.E.S.

Since my paper appeared in 1914, in which I stated that the gynandromorphous *Agriades coridon* from Royston fell under Tutt's ab. *inaequalis*, there has been some difference of opinion expressed on this point. Mr. H. B. Williams supported my view that Tutt's definition covered the Royston form, though he confessed that he did not think that Tutt had ever seen one. Mr. Pickett, in the *Ent. Record*, xxvi., p. 275, named the gynandromorphs var. *roystonensis*, and in the January number for the present year defined his meaning more clearly and extended it to include not only those specimens showing inequality of size with asymmetry of blue scaling, but also those with inequality in the size of the corresponding wings only. Referring to Tutt in the same note he says, "this new form *roystonensis* was quite unknown to him," and later gives what purports to be Tutt's definition of ab. *inaequalis* in the following words:—"Any females with the shape of wings *normal* or *equal*, but with blue scaling or splashes of blue varying on different wings either slightly or a good deal." If this had really been Tutt's own definition it is clear that the Royston gynandromorphs would have been ruled out, but a reference to the *Natural History of the British Butterflies*, vol. iv., 1910-1914, p. 30, shows that he merely said "with blue streaks sometimes varying on opposite sides of the same insect." Neither here nor in his original description in *British Butterflies*, 1896, p. 167, is there any mention of normality of shape or equality of size. The descriptions, as Mr. Williams rightly suggested, cover the Royston form. Fortunately, I can supply actual proof that Tutt intended it to do so. In his *Natural History of British Butterflies*, vol. iv., p. 6, he describes a teratological specimen: (θθ) "Right forewing a little shorter, but

much narrower, than the left; all the interneural spaces well supplied with blue scales; the right hindwing also narrower and thinly sprinkled with blue scales. The left wings normal and without blue. Bevendean, September 7th, 1888, Hodgson Coll." On p. 30, after describing ab. *inaequalis*, he refers to the same specimen, and according to the Editor of the book, the Rev. George Wheeler, includes it as an example of this aberration, notwithstanding the inequality in size and shape of the corresponding wings. He says, "Hodgson notes (*in litt.*) that, near Brighton, in 1888, he took a ♀ with blue scaled striæ between the nervures of the right forewing, which showed no blue scaling elsewhere." I think there can be no doubt that this is the teratological female previously described.

The specimen is still in the Hodgson collection at Cambridge, where I examined it microscopically. It has coarse blue hair scales on the small forewing and ordinary blue scales and androconia on both the small fore- and hindwings on the right side, thus agreeing in every respect with the Royston specimens. This proves that Tutt had seen a gynandromorph identical with the Royston form, and called it ab. *inaequalis*, though doubtless both Pickett and Williams are correct in assuming that he had not seen one of the Royston specimens. Mr. Pickett's latest definition includes some specimens of ab. *inaequalis* and some which cannot come under this name.

I do not know whether this discovery makes any difference to the validity of var. *roystonensis*, but suppose that it does not do so.* I am quite sure it is correct to separate the small-winged specimens with blue scaling on the small wings from the other forms of ab. *inaequalis*, and also think that Mr. Pickett has taken a step in the right direction in grouping together all the females with inequality in the size of the corresponding wings.

I am, however, still doubtful of the wisdom of giving varietal or aberrational names to gynandromorphs, though I am aware that Tutt and others have done so. Mr. Pickett's new definition of var. *roystonensis* will probably be found to include few specimens which are not gynandromorphs, and exclude few, which are.

This note is written in no unfriendly spirit, but is intended merely to settle a point which has been the subject of some controversy.

Agriades coridon var. roystonensis from the Herts District, 1915.

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

During the end of May we had an air raid "somewhere in Essex" which greatly upset my nervous system. Being unwell for weeks from the after effect, I was ordered a complete rest and quiet, so the middle of July saw me off to Royston to catch the "Blues" to cure the blues. This holiday soon pulled me round again and I was able to work *Agriades coridon* as I had never worked it before. Here on these East Anglian heights everything was perfectly quiet (just as nature meant it to be); you would not know that any war was going on, not even the least suggestion of it. My holiday was the longest I have ever had

* As I understand the matter Mr. Pickett comes in as reviser of the inclusive name ab. *inaequalis* and excludes the local race at Royston under the name var. *roystonensis*.—H.J.T.

especially after *coridon*, and extended from their emergence until they had all disappeared; thus I was able to put further research work into var. *roystonensis*. I have fully described this new form in a previous issue (*Ent. Record*, vol. xxvi., p. 275), showing how different are its characters from those of ab. *inaequalis*. After examining some 60,000 *coridon* my total var. *roystonensis* amounted to 66 specimens. *Coridon* males were just emerging on my arrival, and by the third week were out in goodly numbers, and one was able to work for aberrations with the greatest delight. The first females were seen at the end of the third week of July, and they gradually became more in evidence each day. By the end of July the males were fully out and certainly in abundance. I say abundance, because their numbers here are usually so small compared to the great abundance of females, that when you do get a goodly number of males it makes you report them in plenty. Such was the case this season, and it led me to wonder in what proportion the females were going to be. They turned out, as I expected, in overwhelming numbers. The first ab. *semi-syngrapha* was seen at the end of July, and this form occurred more freely during mid-August. A great number of this form was taken each day, for during my stay some 32 collectors were counted, all more or less keen on *semi-syngrapha*, and from nearly all I was able to ascertain their captures each day, between them mustering from three to fourteen each, and as each captor stayed from one or two days to a week, roughly some 500 *semi-syngrapha* were taken, and many of these bordered on ab. *syngrapha*, the form with almost the whole of the four wings blue.

When the males were fully out it was a curious sight to see large numbers settling on every patch of sheep droppings, but no females were thus observed. By mid-August the males were going over, and a few stragglers only emerged during the third week, while by the end of August all males had disappeared. The weather during the whole of August was not conducive to butterflies, very few fine days, thunderstorms day after day with brilliant periods of sunshine between. August 10th was one of these days, dull and thundery all day. About 6 p.m. till 7 p.m. a severe thunderstorm broke with a cloud-burst. The whole town was flooded in a quarter of an hour; the rain simply came down the hills like rivers, as for shelter, an umbrella was of very little use, and I had to get under a small plantation of trees. The lightning was very severe and of the forked type, and if ever I had the "blues" I had it then. I must confess I was a "wee bit frighty," I had to kneel on the ground and bury myself under my umbrella. After an hour in this position I was indeed thankful when the storm gave over. I am not sorry now I went through that experience, for directly I emerged from my dug-out the sun broke through, and as if by magic the clouds vanished and it was the loveliest evening one could wish for. I ventured forth, and the sight of "blues" I shall never forget, they were hanging about in hundreds, mostly drying their wings. Searching for aberrations was commenced in earnest, and some beautiful forms were taken. I dropped on three or four *roystonensis* in one small spot, then went a good time before I saw any more, then I came on another three with a little time in between. I found they seemed to occur more in sheltered spots, for during my stay I would go nearly a whole day without seeing any, then I would drop on a sheltered spot and get three or four in as many minutes. I was thus

able to get more by working these sheltered corners. I did not come across any *roystonensis* paired, nor did I observe any attempts at pairing. This also applies during the past five years. The females were fully out by mid-August, and it was a sight to see them at rest. I dropped on a spot near Royston (a little farther afield), called "Therfield," where *coridon* were in countless thousands, indeed in all my experience I have never seen the females in such swarms, in the last week in August they simply had it all to themselves (for the males were all but over), they were flying in droves, it was a perfect treasure hunt for aberrations. By the beginning of September the females were quite worn out, and a few cold nights placed *coridon* out of reach for another season.

The following are some of my choicest captures:—

MALES.

Uppersides.—From whitish-blue to sky blue.

Many ab. *suffusa* and ab. *minor*.

Many approaching ab. *fowleri*. (Mr. Newman took a perfect ab. *fowleri*.)

Many males with slight red lunules over the black spots in the hindwings as in the females (ab. *suasa*).

Undersides.—Several perfect ab. *obsoleta* (all four wings minus spots).

Several ab. *obsoleta* (with lower wings minus spots).

Several ab. *striata*.

Two with ground colour of a darkish grey (easily passable as female).

FEMALES.

Uppersides.—Several approaching ab. *syngrapha*, with blue on all four wings, the upper wings with blue almost covering the whole area.

Several ab. *semi-syngrapha*, with prominent red lunules in margin of hindwings.

Many white rayed; this is a very pretty new form, the spaces between the nervures, from the edge of the forewings to the centre, contains whitish rayed markings.

Two of a lovely golden-brown or light khaki shade. (Another was also taken by Mr. Newman.)

Several with these golden patches on various parts of the wings.

Two with the red marginal spots joined up, forming a continuous red band.

Two perfectly black with no marginal markings. (This form is far rarer than one would expect.)

Undersides.—Two perfect ab. *obsoleta* (all four wings spotless).

Several ab. *obsoleta* (lower wings spotless).

Several ab. *striata*, long black dashes.

Several with ground colour of a blackish-grey.

Several with ground colour very light (equal to male).

Fourteen ab. *inaequalis* (normal wings all gynandromorphs).

Five splashed with blue on right side upper wing.

One splashed with blue on right side upper and lower wing.

One splashed with blue on right side lower wing.

Three splashed with blue on left side lower wing.

Four splashed with blue on right side upper wing.

Sixty-six ab. *roystonensis* (Gynandromorph and asymmetrical; one side with small wings; these smaller wings containing "androconia").

Thirty-two with both right side wings smaller and containing blue male androconia.

Twelve with both left side wings smaller and containing blue male androconia.

One with right side lower wing smaller and containing blue male androconia.

Two with left and lower wings smaller and containing blue male androconia.

Five with left and upper wings smaller and containing blue male androconia.

Thirteen with right and upper wings smaller and containing blue male androconia.

One with right side lower wing smaller and containing blue male androconia, and left side upper wing smaller and containing blue male androconia.

The last specimen I lent to Dr. Cockayne, for it is such a rare and curious form. He has given it a close microscopical examination and reports as follows:—"Unique specimen as far as my knowledge goes. Gynandromorph. Blue scales on left forewing and opposite hindwing, the blue scaled wings reduced in size; coarse hair scales and androconia with blue scales on small forewing and androconia on small hindwing."

As far as I was able to gather very few of these asymmetrical forms were taken by the other collectors, in fact unless you examine each specimen very carefully they are easily passed over, especially by the ordinary collector, who is not so keen on these misshapen "blues." I think all the known aberrations and variations have now been taken from this Herts locality, with an addition of several new forms.

I never get tired of the "Blues," and long for August to return as I am keener now than ever.

[CORRECTION.—On page 7 of the January number line 10 should read "during August 1914," not 1915.—C.P.P.]

The Upper Engadine in 1914.

By H. J. TURNER, F.E.S.

(Continued from vol. xxvii., p. 226.)

The morning of July 31st broke dull with slight rain, but by the time the early meal was over fine weather seemed to be foretold, and we started for what turned out to be one of the delightful days of a holiday in the High Alps. Our object was to traverse the Rosegg Valley from Pontresina to the glacier, picking up what could be found, but especially to keep an eye for *Brenthis thore*. Emerging from the station of the well-known village, we took the road south between the huge pine-covered bases of Piz Rosatsch on the right and Piz Chalchagn on the left, known respectively as Muottas da Celerina and Muottas da Pontresina. The tree level on the latter is a first rate spot for *Colias*

palaeno. The road here goes on the right side of the glacier stream for some three miles before it crosses to the footpath which keeps to the left the whole five miles, until it passes the moraine which there almost closes the valley, only a narrow gorge containing the stream and the road communicates with the huge basin, into the southern half of which runs the Rosegg glacier and its twin the Glacier da Tschierva. For collecting the road is much the better, open as it is to the pastures of the western side and those of the neighbouring stream with the many marshy spots free from trees, whereas the path is mainly hedged by trees and bushes, with scarcely an open space. One noticed the contrast of the two sides of this valley, that on the left being more or less thickly wooded a long way up, the other side almost bare.

Generally speaking insects were by no means common. *Erebia tyndarus* was perhaps the most abundant, usually rich in depth of colour with only a slight metallic green sheen on the forewings. The undersides of the forewings were very variable here, some were almost as dark as the coloration of the upperside, while others were quite light, but none were noted as being banded. A small specimen only had the merest trace of an eye-spot, ab. *caecodromus*. Most specimens were bipupillate with one eyespot white-centered. *Erebia melampus* was very varied in size and spotting of band of forewing. One specimen had no dots at all in the band of the upperside. *Erebia euryale* was the only other *Erebia* noticed, and that was, as noted elsewhere, very scarce this year. *Coenonympha pamphilus* was captured, a female small and typical in colour, with ab. *unicolor* of its close ally *C. satyrion*. One specimen of this latter species had the eye-spots in the submarginal white band of the underside of the hindwings reduced to mere black dots. It was while boxing a specimen of this species that I became conscious of a hissing noise at my side. To my surprise on looking down, I saw a huge adder gliding away among the stones. One expects to see such reptiles in lowland areas, but not in a narrow isolated valley, where for nine months of the year the snow lies almost continuously. I have never before seen an adder of so large a girth; unfortunately my spiked stick had been left in the road, so that all I could do was to hasten its departure instead of killing it. *Colias phicomone* was occasionally seen along the roadway, but was fairly common flying across the enclosed glacier basin where the sun shone bright and warm. One example taken, a female, had a very white hindmargin to the hindwings. "Blues" were drinking at all the sunny moist patches, but only in small numbers. The race of *Agriades thetis* was undersized, as it often is, high up in the Alps. The specimens were in good condition; one female had large spotting on the underside of the forewings, while the fringes of the males were not very distinctly chequered. No doubt they were only of the first brood, the opportunity at this elevation for a second brood being much too short. *Polygonumatus icarus* was very common, the females were well margined with orange. Here there seemed an evidence of two broods, for one set of specimens was in good condition while other specimens were much worn. It may have been that those taken nearer to Pontresina had emerged earlier than those taken nearer the glacier, which emerged later, but I did not note it at the time. I took a few *Albulina pheretes* in very good condition and very brilliant in colour. No females were taken, probably they had not yet emerged. *Aricia medou* was present, mostly

of the *alpina* form, although some had more than traces of the orange eye spots on the upperside. One example had a considerable suppressed suffusion of red-brown, which was only seen when the insect was held in a certain oblique position. A very worn male of *Cupido minimus* was met with. A few *Polyommatus semiargus*, in the form *montana*, small and dull in colour, were taken. One example had asymmetrical eye-spots on the underside. The right forewing had five eye-spots while the left had only three, the basal ones in each case being obsolete. *Plebeius argyrognomon* was the small *aegidion* form, and females were more in evidence than males. *Vacciniina optilete* was the only other "blue" seen. It was small and of the form *cyparissus*, which is usual in the higher situations. I had quite expected to meet with *Lycaena arion* var. *obscura*, but did not see a specimen during the whole of my stay in the Engadine. Not even a worn specimen of the much desired *Brenthis thore* was met with. Surely it was not too late for it on this elevated ground. Of the other *Brenthids* two species turned up; of course one was *Brenthis pales*, which was generally seen wherever butterflies were attracted. The forms noted were somewhat well-spotted, and not the form with very little spotting which is more usual at higher elevations than this. The female form was frequently var. *isis*. One female example was an extremely pale *napea* form, without fulvous on all wings. There were no examples of the *arsilache* form. The other *Brenthid* noted was the ubiquitous *Brenthis euphrosyne*, which seems to be met with at all elevations in the Alps, but never in any number, and often only an odd example. The specimen captured was only of medium size. Those taken high up are often of large size, although I have seen forms from Hyères, just above sea-level, quite as large, but this is exceptional. Wherever tall flowers were standing there one would meet with *Argynnis aglaia* and *A. niobe*, the latter mostly worn, the former quite fresh and in some numbers. Only two *Melitaea* species were met with, one a solitary specimen of *Melitaea dictynna*. This was a female in excellent condition, small, with great contrast between the intensely black markings and the brilliant rich orange ground. The other *Melitaea* was a very dusky female of *M. varia*, of which species no males were seen. In the *Hesperidae* odd examples of the *alveus* group were occasionally met with, and the var. *alpina* of *Urbicola comma*, with much darker upper-side suffusion of ground colour, occurred in the more sunny corners.

In the Geometers, *Odezia atrata* was often disturbed from grassy edges, *Entephria caesiata* was fairly common on the trunks of pine trees, and *Larentia verberata* occurred here and there. Noctuids were represented by *Plusia gamma*, *Hadena dentina*, and *Plusia hoehenwarthii*, the last two on flower heads and much worn. A very ordinary form of *Phragmatobia fuliginosa*, which might have occurred on our British Downs, turned up, while var. *chrysocephala* of *Adscita geryon* could be swept from low flowers. *Scoparia sudetica* was easily disturbed from the undergrowth, as was also the Tortrix *Aphelia osseana* (*pratana*), both species quite fresh. One or two specimens of *Botys aerealis* were taken.

In this alpine valley flowers are not so plentiful as in many high valleys, since the trees and undergrowth seem to dominate the vegetation to too great a degree. *Caltha palustris* flourished in some marshy spots, and the stately monkshood stood in groups amongst the fallen rocks in

all suitable spots. When the glacier basin was reached and the trees wanting, the gentians were well in evidence on all the more open ground. The solitary summer hostelry, now two miles from the glacier, was reached after midday. It was solitary, for only two other visitors did we see, rumours of the pending great war had already begun to reach this secluded region and people were disappearing as if by magic. Somewhat south of this spot what a grand view one gets. Standing on the western edge of the great basin now vacated by the fast receding glacier, we see the huge front of ice, quite a mile across from side to side, with its two arms extending east and west beyond the bases of Piz Tschierva and Piz Corvatsch. On the horizon Piz Rosegg, La Sella, Piz Glüschaint, and La Mouschin, all thickly snow-covered and continuous with the twin glacier, gleam in the brilliant sunshine. In the middle of this vast slope of many miles of snow stands, during the brief summer, the conspicuous green Alp of Agagliouls, sheep being driven over the glacier to feed on its slopes. This region, too, is famous as the last preserve of the chamois in the alps of Switzerland, and only on very special occasions are any of this slowly vanishing animal allowed by the authorities to be killed.

The return from this glorious spot was made by the path on the right bank of the stream, in view, practically all the way, of the steep green slopes of the Shafberg, and later of the long string of hotels, which has now practically replaced the few modest huts of the former village of Pontresina.

Before returning to the station, opportunity was taken to revisit the steep and narrow gorge of the Bernina-bach, as it cuts through the hard rocks at the upper end of the village to the meadows below, on its way to the wide and flat river plain of the Inn, in the Samaden district of the main Engadine valley. Butterflies were now over and dull skies prevailed.

(To be continued.)

NOTES ON COLLECTING, Etc.

THE DISAPPEARANCE OF PARARGE *ÆGERIA* AROUND LONDON.—*Pararge aegeria* seems to have disappeared around London of late years, for no one has included it in their lists of captures which our magazines so frequently publish. Twenty years ago one could meet with the species in numerous localities south of London in more than one brood. Several places in the Box Hill area used to produce it, and I have also met with it at Bookham. Its only occurrence of which I heard last year was a long distant one. Mr. A. E. Gibbs wrote me that he met with the first brood in some numbers at Sidmouth, in the beginning of May I believe. Possibly some of our readers in various places will give us a few notes on the recent occurrence of this pretty species, with dates and details as to the broods. *P. megaris* is another species that one does not find reported in our London Societies as occurring in the area of recent years. Mr. Gibbs and I met with several second brood examples at Royston, in August last year, but I had not seen it for some years till then, and not the first brood for many years.—H. J. TURNER.

WHERE DOES CHEMATOBIA BOREATA HIDE DURING THE DAYTIME?—I was interested in Mr. Page's note re the above (*Ent. Record*, vol.

xxvii., p. 280), as it tends to bear out my suggestion (*Ent. Record*, vol. xxv., p. 282) that the comparatively few individuals of a species one finds resting by day on tree-trunks and fences, as compared with the hundreds one often sees after dark by the aid of a lamp, at sugar, flowers, honeydew, etc., are really the exceptions, and that those places are not the general resting-places of the species. I have no experience of *C. boreata*, but the habit of *C. brumata*, which I have observed in the New Forest, will probably offer a solution of the conundrum propounded by Mr. Page.

While sugaring in the New Forest in late autumn, I have on more than one occasion been struck by the hundreds of *C. brumata* walking up the tree-trunks, whether sugared or not. Once I visited the spot next day to photograph a specimen, but was surprised at not being able to find a single imago at rest.

On the following evening I kept watch and found that they crawled up from the low herbage, under which they no doubt hide, and I am convinced that this and similar places are the natural resting-place of a number of species. Of course I know they ought not to do this, as they are so "protectively" coloured and marked to resemble the bark and fences on which we occasionally find odd specimens.

On another occasion, in mid-November with a heavy frost on the ground, I was sugaring in the New Forest with Mr. Tonge. We accidentally came across a male specimen of *Himera pennaria* hanging from a bracken stem, and shortly after a female, and as sugar was a failure and we both wanted a series of females, we started searching. As the bracken harvest had been gathered it was fairly easy work. We were soon busily boxing ♂ and ♀ *H. pennaria*, *Hibernia defoliaria*, *H. aurantiaria*.

Notwithstanding the frost the first and last species were there literally in hundreds, and this was one of those occasions when an interesting series of varieties could be obtained. We visited the spot the next day, but not a single specimen of either species was to be found at rest. I have had a good many years' experience of autumn work in the New Forest, and I only remember two occasions when *H. pennaria* have been found at rest in the daytime—one ♂ found by Mr. Tonge and one ♂ by myself, and both of which I photographed. Mr. Tonge's specimen, however, bore evidence of having been disturbed, as the antennæ were out, and it had no doubt been kicked up from the undergrowth. From observations in later years I should say that below the low herbage is their natural resting-place.

Ematurga atomaria certainly rest under the heather or grass. Some specimens can be found at rest on top of the heather after dark on a favourable night, but if they are disturbed, while it is still light, they slip down through the heather and lie on their backs. I have never yet come across *Taeniocampa munda* at rest, so when in the New Forest last spring I pillboxed a specimen at sallow and kept it until the next day in order to get it to pose on a tree-trunk for a photograph. I quite failed, however, to get it to do so, as each time I put it on the trunk it flew to the ground and wormed its way under pine needles, leaves, twigs, etc., until it was quite out of sight. *Scopelosoma satellitia* does the same thing, and I once found *Taeniocampa pulverulenta* (*cruda*) at rest on the ground under dead leaves.

Hay stacks appear to be favourite hiding places for Noctuid moths.

A year or so ago I was returning from the Downs at Folkestone in the twilight, when my attention was arrested by a Barn Owl, which was hawking round a haystack near a farm. I went over to investigate and was surprised at the number of moths flying round the stack.

On the following evening I returned from the Downs earlier and waited until it was dusk, when I had the satisfaction of seeing the moths actually emerging from the stack, which they used as their hiding-place by day. On another occasion, when on a bird photography expedition on the shingle beaches in Romney Marsh, I was spending the time before retiring for the night in wandering about in the twilight in search of anything of interest. I came across a stack of faggots which were being used in the construction of a breakwater, and was surprised at the moths that were flying round it. I was able to catch specimens of *Xylophasia monoglypha* (*polyodon*) and *Triphaena pronuba* as they walked out from among the twigs of which the stack was composed and they were no doubt using this stack as a hiding-place.—C. W. COLTHRUP.

RESTING ATTITUDE OF THE LYCÆNIDÆ, ETC.—In *The Entomologist's Record* for January 1915, page 16, a reference is made to Mr. Frohawk's suggestion that "the sleeping attitude of the *Lycænidæ* is with the head upwards, and that, although they take up their position in the early evening with head downwards, they turn round on the approach of darkness." He further suggests that "in the preliminary position the butterfly is safer from a fatal attack by birds, while when no necessity for such a position arises, as in the dark, the natural position is assumed."

I am sorry that, after careful observation, I cannot agree with this.

I spent a considerable part of my holiday last year photographing butterflies in Abbott's Wood, Sussex, and was able to observe their habits. What I believe to be the true solution of the head downward position is that they take up that position when they sun themselves in the late afternoon, and, as soon as the sun disappears, close their wings and seem to go into a state of torpor. Some go to sleep in that position, others move a little and turn round. They can be found in various positions long after dark.

They are equally conspicuous in both positions and no more safe from attacks by birds in one position than the other.

Rumicia phlaeas generally, but not always, sun themselves head upward.

Stalking *Melanargia galathea* and *Epinephele jurtina* (*janira*) with a half-plate stand camera is no easy matter, and it took me two hours, with much hard work and chasing, before I succeeded in getting two snaps of the former feeding on a lesser knapweed head. The duration of its stay on each individual flower lasted anywhere up to three minutes while it worked round the edge of it.

I eventually secured two photos of *E. jurtina* "sunning," I should say the most wary of our British butterflies, even after sunset.

E. tithonus was a much more civilised insect to photograph, and I cannot help thinking that its eyesight is not so keen as that of the last two species. While waiting for a specimen to expand I heard a rustle of wings, and, looking in the direction of the sound, was just in time to see a large dragonfly, *Aeschna grandis* I believe, strike at a butterfly and immediately drop it. The butterfly, a "ringlet," walked about

where it fell and I was surprised to find that in that short space of time the dragonfly had dexterously nipped off its body.—C. W. COLTHRUP.

[This ignores the word *fatal*. The question is not which is more conspicuous, but in which attitude an attack would be the more injurious, and as bird attacks would generally be from above, it would certainly be advantageous to the butterfly to be tail upwards.—G.W.]

SECOND BROOD OF *BRENTHIS SELENE* IN 1915.—On August 21st, 1915, I came across a specimen of a second brood of *B. selene* in Abbott's Wood, Sussex, somewhat smaller than specimens of the Spring brood.—C. W. COLTHRUP.

COLIAS EDUSA AND *COLIAS HYALE* IN 1914 AND 1915.—In 1914 I kept the usual look-out at Eastbourne, Brighton, and East Kent, in May, July, August, and September, but did not see a single specimen of either species.

On August 17th, 1915, I saw two specimens of *Colias edusa* on the railway bank between Polegate and Lewes, Sussex, and heard of others being seen, but a careful search in their usual haunts failed to disclose any others. *Colias hyale* was again conspicuous by its absence.—C. W. COLTHRUP.

EARLY EMERGENCE OF *HIBERNIA LEUCOPHÆARIA*.—On January 11th, 1916, I took a freshly emerged ♂ specimen of *Hibernia leucophaearia* off a tree-trunk at Midhurst, Sussex, where the honeysuckle was fully out in leaf, and further evidence of the abnormally warm and spring-like weather was afforded by my finding a queen wasp walking about the pavement at South Norwood on January 4th, 1916.—C. W. COLTHRUP.

SPIDERS ATTACKING MOTHS AFTER DARK.—One beautiful, still even- in June 1912, I was returning after dark from the Downs at Folkestone, where I had been examining specimens of *Agriades thetis* (*bellargus*) at rest, when my attention was drawn to the buzzing of wings, and on lighting my lamp I was surprised to find various species of moths, mostly common, swarming at flowers, one specimen of *Xylophasia polyodon* looking very grotesque as it clung to a flower of *Silene inflata*, weighing it to the ground. I suppose it was a night when sugar would have been a failure. Walking a little farther I came to a bed of nettles which was overhung by hawthorns and other bushes. Here there was a perfect pandemonium of buzzing wings, and, on turning my lamp on, I found both the nettles and overhanging bushes swarming with moths feeding on the honeydew. I suppose every common species out at the time was represented, but what interested me most was the way in which a number of members of a species of hunting spider were running over the nettle leaves, capturing the moths, stinging them, and laying them on their backs on the sticky honeydew, and going off in search of others, until the nettles looked a regular shambles. I was so interested that I quite lost sight of time, and arrived back in the small hours of the morning.

At Abbott's Wood, last August, I saw a grasshopper jump on to a platform connecting with a funnel-shaped spider's web, down which the spider was lying in wait. As soon as the latter felt the vibration it sprang out, stung the grasshopper, and carried it away down the "funnel," and proceeded to devour it. I put these two instances on record for what they are worth.—C. W. COLTHRUP,

CURRENT NOTES AND SHORT NOTICES.

In the January number of the *Naturalist* the following two notes occur on the naming mania so prevalent among some British coleopterists. That the criticism is justified the contents of these two notes clearly show.

THE "NAMING" MANIA.

"In *The Entomologist's Monthly Magazine* for December, Mr. Pool states that the insects standing in British lists as *Ptinus testaceus*, must all be referred to *P. pusillus*. Mr. Gahan adds that "Mr. Pool's note, as it stands, may lead to continued error. The *P. testaceus* to which he refers is not the *P. testaceus* of Olivier or Boieldieu, which is a species quite distinct from *P. pusillus*, Sturm. = *P. pusillus*, Boield., but is merely the species known to British collectors as *P. testaceus*. . . . What Mr. Pool has shown in his notes is that the female of *P. pusillus* has been wrongly identified in British collections as *P. testaceus* or *P. brunneus*." On the next page Mr. E. R. Newberry points out that "*Ochthebius poweri* is a variety of *metallascens*, Rosen. . . . In the Exchange List recently published the above note was forgotten, and the insect referred to a var. of *dentifer*, Rey, evidently in error." All these errors and corrections may be very interesting, but surely there is some fault or carelessness somewhere. On the very next page is the following note by Mr. D. Sharp: "*Meotica exiliformis* and *M. exillima*. Dr. Joy and I are agreed that these names apply to the same species; the explanation being that he is so much occupied that he altogether overlooked the description of *exillima*." It seems a pity that those who have not time to examine previous descriptions, should still have time to examine alleged "new species" which so soon after require correcting. ["*testaceus*" is the *Naturalist's* error."—H.J.T.]

In *The Entomologist's Monthly Magazine* Mr. Norman H. Joy points out that a species which he has described as *Gabrieus primigenius*, Joy, was previously named *G. velox* by Sharp. "*G. primigenius*, Joy, is therefore a synonym of *G. velox*." There has also been a mistake with regard to an illustration. We may be mistaken, but it certainly seems to us, in view of these frequent "corrections," that some of our entomological friends are much too Sharp in describing new species, and the result can only be that one's Joy will be turned to Sorrow!"

A pretty double wedding took place at St. Michael's Church, Bedford Park, on Wednesday, February 23rd, when the Misses Holloway, daughter's of Dr. Holloway, were married, the one to Captain Dollman (late of the Mammal Dept., Brit. Mus. Nat. Hist.), instructor in bomb-throwing, and the other to Hereward Dollman, F.E.S., Entomologist to the South African Company. The latter takes his bride back with him to Africa on the expiration of his leave in March. A number of the guests present were in "khaki" or "blue"; one of the former being Lieutenant Donisthorpe, I.C., son of our colleague, who was up on leave for the occasion. He has recently been promoted from 2nd Lieutenant, to be Lieutenant, and is now O.C. at the Army Wireless Station at Devizes.

We have received a "Separatum" from F. N. Pierce, F.E.S., with descriptions of two new additions to the British Tortricina. The first, *Peronea fissurana*, has been differentiated from *P. ferrugana* by the Rev.

J. W. Metcalf and himself, mainly by genitalic character. Among the very large number which have been examined three aberrations have been named *multipunctana*, n.ab., ? *brachiana*, Frr., and ? *tripunctana*, Hb. The second is *Halonota littoralana*, which has been obtained from Totland Bay, Isle of Wight, and E. Devon, on the undercliff, by Mr. Metcalf, and comes near *H. trigeminana*.

In the *Entomologist* for January, Mr. H. J. Burkill contributes a short article on "British Plant Galls" and includes a long list of species not hitherto recorded from the British Islands, with short notes on each. The Rev. F. E. Lowe gives an account of a visit to La Sainte Baume, Var, S. France, in 1914. Mr. W. J. Lucas summarizes the observations made in 1914 by the students who have been working the British Orthoptera.

In the *Scottish Naturalist* for January is a very interesting article by Miss L. H. Huie, "The Habits and Life-history of *Hylemyia grisea*, an Anthomyiid fly new to the Scottish Fauna." It is parasitic in the nests of the Hymenopteron *Audrena analis*. There are several text figures of details.

Professor T. D. A. Cockerell of the University of Colorado is still working away at the study of Fossil Insects. We have just received a separatum on "British Fossil Insects," being a detailed account of the series of English specimens now in the United States National Museum collected many years ago by the Rev. T. B. Brodie, mainly in the Isle of Wight. There are six plates in illustration.

In the *Canadian Entomologist* for January there is an article well worth reading on "Heliotropism in Butterflies." The writer, A. F. Winn, of Quebec, gives a series of observations made one hot afternoon on the action of a male of *Grapta comma* which continued to fly about near where he was resting on the beach of the lake.

- "1. Settled on the sand, head towards south, closed wings over back and inclined at an angle of about 60° with the ground, the tips of wings towards the west.
2. Settled on sand, head towards south, held wings out flat, shifted slightly so head pointed towards south-west.
3. Settled head towards west, wings closed and perpendicular.
4. Same position as no. 1, but did not orient.
5. Settled on sand, head towards west, then shifted towards north-west, raising up body as if pitching forward, the wings closed and vertical.
6. Settled on a log, head towards north, wings closed and vertical remaining in full sunshine for at least ten minutes, and was only disturbed when touched with an oar.
7. Returned to exactly the same spot on log, head northward, wings outstretched.
8. On sand, head towards west, wings closed and slightly leaning over towards south.
9. On the body of a small dead rock bass, head north, wings closed, then opened out flat and turned around facing south, and walked to the head of fish, and apparently inserted its tongue into the eye-socket of the bass.
10. On the bow of the boat, in the shade, wings closed, pointing north-west, head downwards; had to be stirred up.
11. Settled on the sand, wings outstretched, head towards west."

The butterfly was then driven away by the arrival of a boat with numerous passengers.

The writer comments as follows:—"The results of watching the habits of one single butterfly in one hour of its existence shows next to nothing, *as might be expected.*" The italics are ours.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

December 1st.—ELECTION OF FELLOWS.—Mr. K. S. Padmanabha Aiyar, Trivandrum, Travancore, India, and Major Harry Diamond Peile, I.M.S., Bannu, North-West Frontier Provinces, India, were elected Fellows of the Society.

ELECTION OF HONORARY FELLOWS.—Prof. A. Berlese, Italy, and Dr. L. G. Howard, U.S.A., were elected Hon. Fellows to fill the vacancies caused by the deaths of Messrs. Fabre and von Wattenwyl.

INSECTS FROM JAVA.—Mr. A. H. Jones exhibited on behalf of Mrs. Walsh a number of insects from Java, nearly all of which were taken by her in her garden and grounds at Soekaboemi.

BRITISH ALEURODIDÆ.—Mr. C. B. Williams exhibited a series of coloured drawings of the pupa cases of the British *Aleurodidae* executed by Mr. H. G. Osterstock.

NOTES ON BREEDING FROM A MELANIC RACE OF *BOARMIA GEMMARIA*.—Mr. R. Adkin exhibited several families of *Boarmia gemmaria*, and gave explanatory notes.

January 19th, 1916.—ANNUAL MEETING.—The Honble. N. Charles Rothschild, M.A., F.L.S., F.Z.S., President, in the chair.

The balance sheet was read by Dr. C. J. Gahan, one of the Auditors, and adopted on the motion of Mr. Stanley Edwards, seconded by Mr. Frisby.

The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. W. J. Lucas, seconded by Mr. C. B. Williams.

No other names having been received by the Secretaries in addition to those nominated by the Council as Officers and Council for the ensuing year, the latter were declared by the President, with the consent of the meeting, to be elected. (See page 17 *ante*.)

The President then delivered an Address, illustrated by slides shown in the Epidiascope, after which a Vote of Thanks to him was proposed by Lord Walsingham, seconded by Mr. W. J. Kaye, and carried unanimously, with the request that the Address might be published as a part of the Proceedings of the Society.

The President having shortly replied, Mr. J. Hartley Durrant proposed a Vote of Thanks to the Officers of the Society for their services during the past year; this having been seconded by Mr. A. W. Bacot and carried, the Treasurer and both the Secretaries said a few words of thanks in reply.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

January 13th, 1916.—DECEASE OF A MEMBER.—It was reported that Mr. A. C. Morris, of Norwood, had been killed in action in France.

A RARE FORM OF GYNANDROMORPH.—Mr. Leeds exhibited a rare form of gynandromorphism shown in a specimen of *Agriades coridon*, the upperside of both forewings showing male colour characteristics, the hindwings being completely female in colour, and females of the same species showing the range of ground colour on underside of hindwings.

LETTER OF H. DOUBLEDAY.—Mr. A. E. Gibbs, a letter of H. Doubleday written to Bernard Piffard, with particulars of the Hewitson collections.

ABERRATIONS OF *P. FLAVICORNIS* AND *G. BIDENTATA*.—Mr. Buckstone, bred small and dark suffused specimens of *Polyphoca flavicornis* from Surrey, and a bred semidiaphanous example of *Gonodontis bidentata*, together with short series of *Zygaena trifolii* from several Surrey localities, and read notes.

THE GENUS *MELANARGIA*.—Mr. A. E. Gibbs, the species and local races of the genus *Melanargia*, *M. syllius* and ab. *ivora*, *M. meridionalis*, *M. lachesis*, ab. *cataleuca* and ab. *canigulensis*, *M. ines*, *M. arge*, *M. iapygia*, var. *suvarovius* and var. *transcaspica*, *M. larissa*, and var. *herta*.

Mr. Curwen, *M. galathea* var. *procida* and var. *galene*, *M. titea*, and others.

Mr. Turner, the same species, and gave a short note on the variation in *M. galathea*.

Mr. Frohawk, a picked series of *M. galathea* to show range of variation in ground colour.

Rev. G. Wheeler, a mixed aberration of *M. galathea*, unique in being ab. *lugens* on the left side, but irregularly streaked and blotched with dirty cream colour on the right, and var. *lucasi* (*mauritanica*) from Algeria.

Mr. Platt-Barrett, the same species, especially the numerous races he was familiar with in Sicily and South Italy, and read a paper on the genus *Melanargia*. In the discussion Mr. Rowland-Brown suggested that the origin of the genus was in north Asia Minor and from one primitive ancestor, and pointed out numerous apparent relationships between some of the species and local races.

THE LONDON NATURAL HISTORY SOCIETY.

October 19th.—EXHIBITS.—Mr. C. Nicholson, specimens of *Geotrupes typhoens* from Epping Forest, and read notes.

Mr. W. E. King, *Epinephele tithonus* ab. *excessa*, and three *Aricia medon*, including two fine ab. *striata* forms.

Mr. C. Burkill, a specimen of *Achillea millefolium* galled by *Eriophyes* sp., found near Godalming, and only recorded previously from Central Europe and France.

PAPER.—Mr. Hugh Main read a paper entitled "Entomological Notes with a Camera in Switzerland," illustrated by lantern slides from his own photographs, and including a large amount of original matter.

CORRECTION.—Page 41, lines 28 and 29, "Twice that summer it had even been" should read "Since that summer it had ever been."—R. TEMPERLEY.

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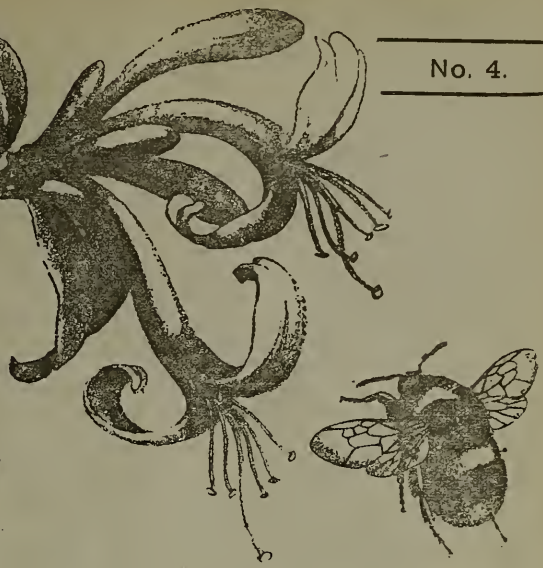
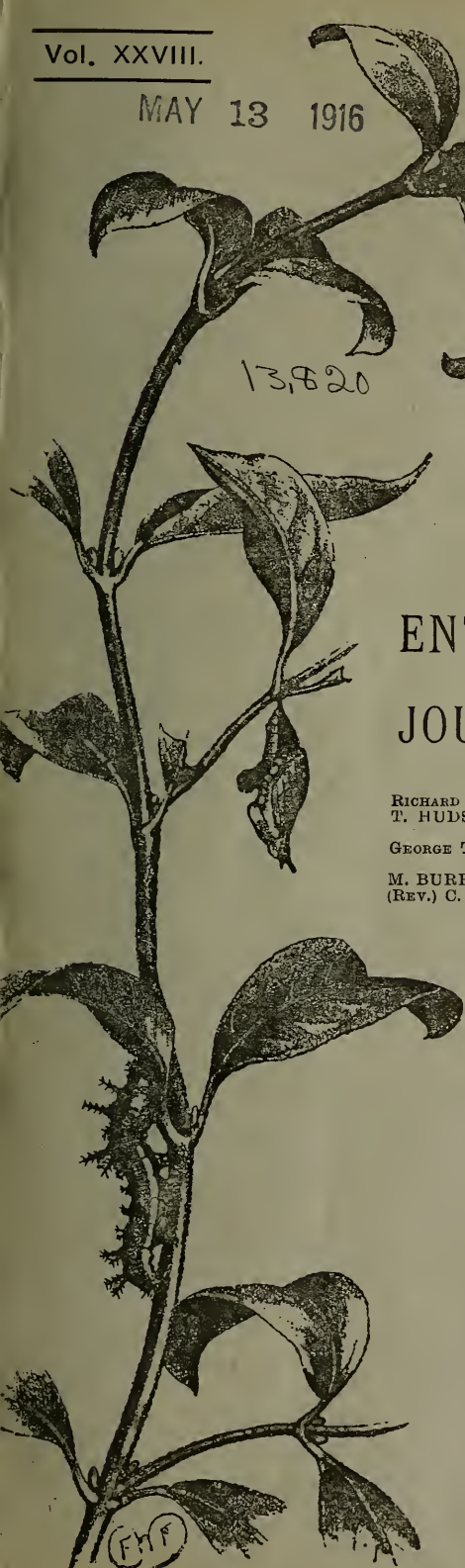
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The British Races of Butterflies: their relationships and nomenclature.

By ROGER VERITY, M.D.

[While in no way wishing to minimise the importance of the following intensive study of our native Lepidoptera by such a talented author as Dr. Verity, it should be specially borne in mind by our readers that we do not accept any changes of nomenclature which depend on the adoption of the specimens in the Linnean collection as "types," the National Nomenclature Committee having given a formal "opinion" adverse to this position. In this connection reference should also be made to Dr. Verity's original article, "Revision of the Linnean Types of Palæarctic Rhopalocera," *Jrn. Linn. Soc. Zool.*, vol. xxxii., p. 173, etc. (1913), and also to the following criticisms:—(1) Dr. Karl Jordan, *Jrn. Linn. Soc., Zool.*, l.c., p. 192; (2) Rev. G. Wheeler, *Ent. Record*, vol. xxv., p. 233 (1913); (3) G. T. Bethune-Baker, "Observations on Dr. Verity's Review, etc.," l.c., p. 251; (4) "Further Notes, etc.," l.c., p. 272; (5) Rev. G. Wheeler, "A Critical Examination of Dr. Verity's Paper, etc.," *Ent. Record*, vol. xxvi., p. 20 (1914); (6) Dr. Roger Verity, "Note in Answer, etc.," l.c., p. 170; (7) Rev. G. Wheeler, "A Note in Reply, etc.," l.c., p. 218. I may also add that Dr. Verity has kindly consented to forego the non-informational polynomial nomenclature so extensively used on the continent and so difficult for the reader to understand.—H.J.T.]

For more than a century English entomologists had nearly entirely confined their activity to the British Islands, but in late years a change has occurred, and many of them have taken an interest in the Continental Fauna; few, however, seem as yet to have taken up a study of the British races as compared to the nymo-typical one or to other Continental local forms. The consequence is that the former have nearly all been described and named by entomologists of other countries and in books or magazines published abroad.

Being myself responsible for some of these descriptions, my object in this note is to collect them together, as well as those of other authors which have come under my notice, for the use of English colleagues, in the hope they may find the subject interesting and take up the work in a thorough and exhaustive way, availing themselves of the splendid series of insects which have been collected in England, Scotland and Ireland, and which ought to furnish a perfect picture of the geographical variation of species in these countries. I have reason to believe that several species have produced different geographical varieties within the limits of the British Isles, and I think it would be interesting to fix them by an accurate comparison of extensive series from as many localities as possible. These, of course, often encroach upon one another, especially in the intermediate regions, appearing as individual variations, but this does not diminish the importance of the extreme and most highly characterised amongst them. *Coenonympha tiphon* seems to be the only species which has been thoroughly worked out, but several other species would be just as interesting, although their varietal characters may not be as striking at first sight; conspicuous characters are by no means those which furnish the most interesting data. By carefully and patiently training one's eyes to the

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look of a species one is very soon surprised to find what a number of varietal differences can be detected, which at first sight had passed wholly unnoticed, and in specimens which seemed identical with each other. These inconspicuous characters are very often found to be wonderfully constant in some localities, and they furnish an index to the existence of a distinct local race, although they may seem quite uninteresting to a superficial collector on the look-out for striking variations, who will much prefer a conspicuous accidental aberration for his cabinet.

The late J. W. Tutt, in his *Natural History of British Butterflies, their World-wide Variation and Geographical Distribution*, has done much in the way of preparing the ground for a systematic study of individual variation, but his nearly superhuman gift of patience and minuteness, by which he has put together such an enormous amount of data and observed and classified minute details, does not seem to have been accompanied by an equivalent power of synthesis. What I venture to suggest is that series from as many localities as possible should be worked out with Tutt's analytical method, that statistics should be drawn from them and then compared together.

Turning our notice again to the object of this note, it may be observed in a general way that a continental entomologist on examining British series of butterflies, is at once struck both by the prevailing tendency to melanism and by the extraordinary extent of individual variation. The first character is of course due to the northern latitude and gives to British races an arctic or alpine appearance; the second is probably due to insularity, for it can be observed at just as high a degree in the totally different warm-country races which inhabit the Mediterranean Islands. The cause may be dampness, for experimental breeding has shown to me that the most stable races, when bred from their ova in an atmosphere saturated with moisture, give out very marked individual variations, whereas ova from the same batch reared on the same food, in ordinary conditions, produce the same form as that observed at large.

The second object of this paper is to give an account of the latest work done on nomenclature in reference to British species. Many English entomologists are of a conservative nature and alterations grieve and irritate them; they think these changes complicate work to an unbearable extent, as names are but a conventional way of understanding each other, and might just as well be left standing as habit has fixed them. Unfortunately there are facts, besides the obvious one that correctness is always desirable, which oppose themselves to this easy way of reasoning, as the necessity of clearing up satisfactorily the literature of the past is made more and more pressing on account of the increasing minuteness of modern work. A few years ago it was sufficient to make out what species the author of its name meant to designate by it, nowadays instead not only must one fix on what geographical race he originally described his species from, but even what individual form. In consequence it becomes clear that, unless we can come as soon as possible to a satisfactory definite conclusion as to which author has the right of priority, we run the risk of setting out from the wrong point in working out variation, and thus of increasing the confusion in literature to a hopeless extent.

It must, however, be borne in mind that it is but a few years since the necessity of revising original figures and descriptions, has made itself felt, on account of mistakes made by early naturalists, and carried on by their successors, and that we are consequently now in the very midst of this work; we can, however, reasonably hope it will very soon be completed, and that the past will soon be settled on a correct basis. To hasten this happy day we must all contribute to point them out, and especially must not interfere with each other's work of revision, but take up readily every reasonable suggestion which may be made. It is with this aim that I have looked up all the latest suggestions with reference to British species, and I have endeavoured to summarise as shortly and clearly as possible the reasons for which they are made.

N.B.—The names of British species, races, forms, etc., are printed in thick lettering (those amongst them which are new are also mentioned in the headings of the paragraph which contains their description); new names of insects not occurring in Britain are printed in interspaced lettering.

I wish to thank Mr. G. T. Bethune-Baker, of Edgbaston, for the valuable information he has kindly given me concerning British races.

Papilio machaon—race **britannicus**, Spengel, *in litt.*, Seitz., "Gross-schmetterlinge der Erde," vol. i., p. 12, pl. 6d. (1907).

Lord Rothschild in his catalogue of the species of the genus *Papilio* [*Novitates Zoologicae*, vol. ii., p. 262 (1895)] places the English *machaon* under the heading of *sphyrus*, Hübner. In the same year Eimer, in his *Artbildung und Verwandtschaft bei den Schmett.*, vol. ii., p. 102, pl. vi., fig. 3, describes and figures the first generation from Sicily under the same name. Both these authors were quite correct, and had evidently examined Hübner's figure. Curiously enough, in fact, English *machaon* from the north and the first generation of *machaon* from the extreme south of Europe (Sicily) and from Syria, etc., differ from the single-brooded *machaon* of northern Continental Europe, to which Linnæus's nymo-typical race belongs, and from the very similar first generation of Central and Southern Europe by the same general characters, which are precisely those represented in Hübner's figure of *sphyrus*: broad short wings, black pattern very much developed, *i.e.*, antemarginal bands very broad, and nervulation of fore-wings heavily laden with black scaling; moreover, Hübner's specimen undoubtedly belonged either to a single-brooded race or to the first brood, as is clearly shown by the black abdominal band and by the frontal tuft of hair; we may safely conclude, however, that the latter hypothesis is the correct one, and feel pretty sure that the insect came from Sicily, as most specimens from this locality agree perfectly with the figure in every respect. *Maxima*, Blachier, from Morocco, and *joannisi*, Verity, from Nulato (Alaska) [the latter standing diametrically opposite to the more generally known *alaska*, Scud.], also agree, like *britannicus*, in a general way, with Hübner's figure, but differ constantly from it by some minor features.

It now seems nearly incredible how entomologists can have for years and years used the name *sphyrus* to designate the summer-brood of Southern Europe. Staudinger took no notice of Eimer's correct view and went on printing this mistake in the last edition of his

"Catalog." Eimer had proposed the name *aestivus* for the summer-brood from Asia Minor, and I subsequently suggested the name *sphyroides* for the same brood from Italy, which is somewhat different from the former ("Rhopalocera Palæarctica," p. 12); Seitz, in his "Gross-Schmetterlinge," repeated the same remark, but stated that the name *asiatica*, Mén., should be substituted for that of *sphyrus* for the summer-brood; this could not be done, *asiatica* designating a very distinct oriental race, transitional to *hippocrates*, Feld.

It has however so happened that I was wrong too in proposing the name *sphyroides*, for I have lately discovered that the Sicilian summer-brood has been named *aestivus* by Zeller, as far back as 1847, in a paper on Italian butterflies (p. 217), published in the "Isis" for that year, a paper which seems to have been very much overlooked in literature. Hence the name *aestivus*, Zeller, ought to be adopted. I hope I have now collected all the facts concerning the unfortunate name *sphyrus*, and brought it to a definite conclusion.

Having thus established the position of *britannicus* in the grouping of the *machaon* races and forms, I will add a few remarks concerning more particularly the object of this note.

The English *sphyrus* specimens differ from the Sicilian ones as follows:—This race generally is much smaller in size, although very large specimens do occur, and Seitz's figure is drawn from one of the latter; the tails of the hind-wing tend to shortness, and are often as short as in the alpine race *alpica*, Verity; the ground colour of the wings is of a pale primrose-yellow, sometimes so pale as to be nearly white (*pallida*, Tutt), whereas in Sicily it is generally of a richer yellow than typical *machaon*; the antimarginal band of the hind-wing tends to a peculiar shape, its hind-part becoming exceedingly broad, and containing an unusually large and brilliant orange ocellus; finally the inner margin of this band is not produced into sharp points, extending towards the cell, as is always the case in Sicilian *sphyrus*, and in *machaon* generally, but is simply undulated. Furthermore one may add that individual variation, carried to the highest possible degree in this species, is another feature of *britannicus*, so much so that next to the *sphyrus* form one finds, quite commonly, specimens of the form standing diametrically opposite to it, and resembling, by the reduction of all the black markings and consequent narrowness of the antimarginal band, the *aliaska*, Scud., *kantschadalus*, Alph., and *lapponica*, Verity, appearance. It would be interesting to compare series collected in different years in the different English localities of the species, and to find out whether the two forms always occur together, or whether they constitute local races; this, however, does not seem probable, according to the latest information received by Mr. Bethune-Baker from his correspondents.

I have figured two *britannicus* of the *sphyrus* form in "Rhopalocera Palæarctica"; the one on pl. lvii. from S. Bailey (Wicken), in the Tring collection, is the specimen with the broadest antimarginal band I have ever seen; I have given this extreme individual form the name *late-vittata*, as a contrast to Spengel's *tenuivittata*. It will be observed that although the band only just falls short of touching the discoidal lunule on the hind-wing, it does not in the least blend with it, whereas in *aestivus*, Zeller, whenever the band gets beyond a certain

width, it gives out two or three sharp points, which blend with the lunules.

This species affords an excellent example of the confusion which may ensue from not taking the trouble in due time to point out and correct mistakes. Had Hübner's figure been examined more carefully from the very beginning, and his name *sphyrus* not wrongly used for a century and a half, Zeller's name would have been used, instead of being entirely left out in literature, even by his own countrymen, and I should not have been led to create a useless synonym.

Pieris (Aporia) crataegi, L.—All the British specimens I have seen agree perfectly with the Scandinavian race in being rather lightly scaled and in presenting a wide translucent area at the end of each nervule along the outer margin; they sometimes, in point of fact, actually blend into a more or less continuous band; thus, British *crataegi* belongs to the nymo-typical race. I have described, under the name of *meridionalis*, the race of Central and Southern Europe, in which the scaling is more dense and in which the translucent marginal areas are greatly reduced or entirely absent. In some regions of the extreme south one meets with a very distinct race in which the outer-half of the nervules is covered by jet black scaling (*augusta*, Turati); the types are from Sicily, but I possess a specimen captured in the Island of Rhodes by an Italian officer, showing *augusta* has a wide range.

Pieris (Pontia) daplidice, L.—The specimens which are sometimes met with on the South Coast of England belong to the usual Continental summer form and thus agree with the Linnean types. The strong flight of this species and its migratory habits explain its very limited variability, distinct forms only occurring in Africa and Asia Minor, where a wide range of sea or great distance have prevented blending to a certain extent and permitted local causes to act on the species: *albidice*, Obth. (to which Staudinger makes the blunder of attributing the name *raphani*, Esp., whereas Esper's figure represents *P. helice*, L.!), *nitida*, Verity, *moorei*, Röber, *aethiops*, Joann and Verity, etc.

Pieris napi race *britannica*, Verity, "Rhopalocera Palæarctica," p. 332, pl. xxxii., figs. 4 and 5 (1911) and **P. napi** subspecies *vulgaris* race *septentrionalis*, mihi (forma *apicenudata* nom. nov.).

In my "Revision of the Linnean types of Palæarctic Rhopalocera" ("Linnean Society's Journal—Zoology," vol. xxxii., May 1913), I have, on page 177, described the Linnean specimen of this species and discussed the position it should, according to my view, occupy in this highly intricate group. It belongs to the Northern Scandinavian race, which is much more closely related to the alpine *bryoniae*, O., than to the widespread insect which is generally known under the name of *napi*. I consequently proposed the name of *vulgaris* to distinguish the latter from the nymo-typical one and chose the first brood of the neighbourhood of Florence (Italy) as typical of *vulgaris*, because amongst the races I know it is that which keeps most constantly distinct from the Linnean. The latter is generally small, the basal suffusion of the

wings is widespread and very black; the apical marking, too, is deep black and extends far back along the outer margin; on the under-side the neuration of the fore-wing is distinctly bordered with grey scaling, that of the hind-wings with very broad and very dark olive-green veins. The female sex is still more characteristic, exhibiting two well-marked forms: one with black bands along all the nervules and one with a deep yellow ground-colour and with very wide diffused bands of brown scaling, so broad as to blend together in extreme specimens and produce a uniformly brown wing (*concolor*, Röber). Very similar to this arctic *napi* is *bryoniae*, O., from the higher Alpine altitudes, differing from it only by minor characters.

In marked contrast with this group stands the well-known butterfly of Central and Southern Europe, including Southern Scandinavia, whose summer brood Esper has named *napeae* and which in the first generation, though more similar than the latter to *bryoniae* and the Linnean specimens of *napi*, can be distinguished from it by its larger size, more elongated wings, very reduced basal suffusion, shorter and often much lighter coloured apical crescent, shadeless neuration of the under-side of fore-wings, narrower, more sharply outlined and more vividly green veins of hind-wings and by the fact that the female sex never offers examples of the form with yellow ground-colour and ample brown suffusion; in most localities the yellow ground-colour never occurs either, but in some regions, such as Austria, specimens with a slightly yellow tinge are to be met with also in *vulgaris* (*flava*, Kane), and are more frequent in the second brood (*flavescens*, Stgr.).

Having thus clearly defined the two distinct groups of *napi*-forms which occur in Europe, it will be seen by a most superficial observer that in the British Islands corresponding forms are to be met with. It would be very interesting to make out whether they overlap in their distribution and, if so, whether they blend in transitional forms or fly together without mixing. Mr. Bethune-Baker, with whom I have lately been corresponding on this subject, has already set to work collecting series of this species from different parts of Britain, and I think he will very soon be able to clear up this point. All I can say for the present is that in the series in my possession two races are distinctly noticeable.

The form I named *britannica* belongs to the *napi-bryoniae* group, although it differs constantly from the continental races by the under-sides, which are of a much brighter sulphur yellow; besides it must be noticed that the female form with yellow ground-colour and brown markings is not produced by *britannica*, as far as I have been able to ascertain, this race not varying in this direction further than *flava*, Kane. This is probably due to the fact that *britannica* is in reality but a modified *vulgaris* and not a true arctic *napi*. An examination of the genitalia of the races of *napi* will probably give some clue as to the exact position each of them should occupy in this group. My "types" of *britannica* were collected in the south of Ireland (they are preserved in the Oberthür collection at Rennes), but a series from the northern coast of Scotland, in my own collection and for which I am indebted to J. W. H. Harrison, of Birtley, exhibit the same characters even to a higher degree, as might have been expected.

Turning our attention to *napi* from England and especially from

its southern parts, we find an entirely different insect from the one just mentioned. It is an unmistakable *vulgaris*, quite similar to the races of Central and Southern Europe, which only betrays its northern origin by the constant character of the underside (bright yellow ground colour). In the male the apical crescent is broken up into a series of triangular patches at the end of the nervules and is generally of a very pale grey colour. In the females it is of the same colour and in many specimens it is altogether lacking; these seem to be more frequent in England than on the Continent; in typical *vulgaris* from Tuscany, all the grey markings vary in extent and colouring in a more or less parallel way, but specimens with the marginal markings absent and the discoidal round spots and triangular costal patch standing out prominently, such as in some English ones (forma *apiculata*, nom. nov.), never occur.

In England *vulgaris* has two broods, but though the second one does show the *napaeae* characters to a certain degree, the difference between the two generations is far from reaching that which it reaches in the south of Europe, culminating in *meridionalis*, Stdgr.

In my English *napææ* the black markings of the upper-side are much deeper in colouring than in the first generation from the same locality and they are more sharply defined; on the underside the green veins are narrower and paler, but they do not disappear near the margin, as is the case in *napaeae* from the south of Europe.

The second British race of *napi* just mentioned does not seem to differ much from the ones which inhabit the northern parts of Central Europe, but it certainly has amongst them the one which differs most from my Italian *vulgaris*. I propose the name of **septentrionalis** for this northern *vulgaris* race of *napi*, laying stress on the fact it is smaller and slighter in build than true *vulgaris*, that it has a bright yellow under-side in most specimens, that many females exhibit a lack of the marginal pattern on upper-side, that the difference between the spring and the subsequent broods is much less marked than in the typical Italian *vulgaris*. My typical series is from Westcliff-on-Sea; other specimens from Epping Forest and other localities are slightly different.

An interesting experiment was made by Mr. J. W. H. Harrison, who bred *napi* sub-sp. *vulgaris* in the open in Durham, from ova laid in April in Tuscany by females collected by me for the purpose; the butterflies emerged in June and, comparing them with the Tuscan and the English *napi*, the following observations were made:—(1) The insects were small and slight in build, even more so than English specimens; (2) the underside had acquired the bright yellow colour which marks the specimens of the British Islands; (3) the upper-side had preserved the characters of the spring brood, whereas in Italy they would at that season have exhibited the characters of *napaeae*; but (4) on the underside the green neuration had acquired a distinct *napaeae* look, such as never occurs in specimens from a British stock, even in the height of summer and in the south of England. Thus in the latter instance alone does heredity seem to have acted, the other characters having been entirely modified by the influence of environment on the development of the individuals; the result was rather unexpected, as one might have believed that seasonal dimorphism would have been the last character to get fixed by heredity. It shows that experiments of this

sort should be taken up on a wide scale. I tried to breed English butterflies in Italy, but they invariably succumbed in this climate at an early stage, when kept in the open, and even chrysalids often dried up soon after arriving here, when sent at that stage of development, so that I never obtained any result.

Pieris rapæ, L.—The English race does not seem to differ from the nymo-typical Scandinavian one, being, like it, rather smaller and slighter built than the Central-European and Southern races. It may be noticed however that the individual form with no black markings on the upper-side, which occurs commonly in the spring in other countries, such as Italy, and has been called *leucotera* by Stefanelli ["Bull. Soc. Ent. Ital.," xxxii. (1900)], is not as frequent in the British Islands.

On the other hand seasonal dimorphism seems to be well marked; Stephens had noticed it as far back as 1827 and had described the spring brood as a distinct species under the name of *metra*, assuming the summer brood to be the nymo-typical one. As stated in my paper on the Linnean collection, the type of this species is of the first brood, so that the name *metra* must be dropped and the name *æstiva*, Zeller ["Isis," 1847] (given to the summer brood from Sicily, which does not differ in most specimens from that of other parts of Europe) must be exhumed; when I proposed the name *aestivus* in the paper just mentioned I did not know of the existence of Zeller's name.

(To be continued.)

Brenthis pales, its history and its named forms.

By H. J. TURNER, F.E.S.

Brenthis pales is one of the most interesting of the group smaller of Argynnid species. It is met with in all the mountainous regions of the Temperate Eastern Hemisphere as well as being found in the northern parts of Europe, in Scandinavia, Lapland, Northern Russia, and the Amur. That it is a species which has attracted considerable attention may be inferred from the fact that at least three dozen names have been bestowed by different writers to designate varietal and aberrational forms which they had met with and thought that they were able to differentiate.

The pre-Linnæan authors have no references which can with any certainty be said to suggest this species, and probably, until the time of Schiffermüller, it was confused with *euphrosyne* and *selene*, to which some of its forms have a passable similarity, particularly in the strongly spotted underside of the forewings.

In 1776 (5) Schiffermüller, in the "Sys. Verzeichniss Schm. Wien.," p. 177, very briefly described a small fritillary as follows:—

"Oraniengelber, unten roth und silberfleckichter Falter,"

which he named *P. pales*, and of which he did not know the larva. This description would do generally for *euphrosyne* and *selene* as well as for *pales* if one had not the specimen before one, but Schiffermüller evidently had *pales* before him, as he refers to the larvæ of *euphrosyne* as having a definite food-plant. It is evidently not *selene* as he adds that species in his appendix, p. 321.

The next author to take up this species was Esper, who, in 1778,

in his "Schm. Abbild-Beschr.," Th. i., Bnd. ii., plt. lvi. (cont. vi.), figs. 4 and 5, pp. 35-6, figured and described a species of small fritillary which he named *arsilache*.

In fig. 4, the upperside has fairly strong black markings on the hindwing, which latter in shape tends to be angulated. The underside of the upper wings show some of the markings of the upperside very faintly; the marginal markings are brownish-white and the ground deep orange-red, there being more concentration of markings towards the apex. The underside of the lower wings is a mixture of deep orange-red, bright yellow and silver, there being a series of silvery half discs on the hind margin in a setting of the deep orange-red, the bright yellow only coming down to two of the half-discs. The antennæ are long. The specimen is apparently a male, and was caught by Esper himself near Vienna.

In fig. 5, on the same plate, another insect is figured and called a variety of the last. It is said to be a ♂, and was taken at Neustadt by one of Esper's correspondents. To all appearances the figure is a ♀; its body is stouter, the apex of the abdomen has a female appearance, the shape of wing is more rounded, and there is no tendency to angulation in the hindwings, which are uniformly curved, as invariably is the case in the females; finally the antennæ are short. The uppersides of the forewings are well marked with black, as is the hindwing, while the hind margins of both wings have a continuous band of black and of orange-red markings. On the forewings the transverse discal series of black markings are continuous and well emphasised. The disc of the hindwing has a few well defined black markings which are united into an irregular line. The underside of the lower wing has white blotches on the costal portion of the disc and on the submargin, the rest of the area being covered by a mosaic of red, silver and yellow. There is no silver at the margin, which has yellow lunules bedded in a red band, with a silver spot above each bedded in yellow. The underside of the forewings has very strong black markings scattered over it, with brown and white streaks in part of the marginal red band.

In the letterpress Esper says that the species is very nearly related to *euphrosyne*, but that the spots are differently arranged and much smaller. The black markings of the upperside show through on the underside of the forewings. The spotting of the hindwing underside is very variable in different specimens, there is no black whatever in the mixture of red, yellow and brown. In the figure (5) which he calls a variety of *arsilache* he says that the wings are larger, the body bolder, there are less silvery markings and that the original was a ♂. He expresses a doubt as to whether the form deserves specific rank. There is no reference to Schiffermüller's *pales* of the "Verz. Wien."

Thus Esper is actually, although unwittingly, the first reviser of the species *pales*, W.V., and definitely names the form *without* the strongly black marked undersides of forewings as *arsilache*, at the same time calling the form so marked a *variety* of *arsilache*. Was he aware of the *pales* of Schiffermüller? [Mr. Wheeler says (*in lit.*) "This is, I think, quite a mistaken deduction." See notes appended to Hübner's remarks.]

In 1779, Engramelle and Ernst in their "Pap. d'Eur.," part i., vol. ii., p. 245, described, and on plt. lx. (sup. vi.), figs. 21 a.b.c.d. (bis) and a.b.c.d. (tert) figured "Le pales grande et petite species."

The figures, which are very fair, are as follows:—

21a. (bis) is of a somewhat pale ground, and in marking and shape about like the insect we are now accustomed to call a typical *pales* ♂.

21b. (bis) is an underside of a female with the spots of the upperside faintly visible through, but not marked out in black.

21c. (bis) is a larger ♂ with larger spotting, with the marginal markings of all wings more coalesced and deeper in colour.

21d. (bis) is an underside in which the black markings of the upperside show very strongly through to the underside where they are marked out in black. The markings of the hindwings are also stronger and brighter.

These four figures Ernst names *pales* the "grande species."

21a. (tert) a strongly marked ♂ which is much clouded with a dark suffusion and is much darker than the ♀.

21b. (tert) a clouded underside with the spotting not too deeply marked on the forewing.

21c. (tert) a ♀ of a duller ground less distinctly marked; the markings of unsatisfactory definition giving the appearance of wear.

21d. (tert) an underside with a clouded appearance similar to the last. These four figures are termed the "petite species," and are named *arsilache* as representing Esper's species.

Ernst and Engramelle apparently did not understand the species. The "grande species" which they call *pales* includes both the forms of Esper, while the "petite species" which they call the *arsilache* of Esper, is no such thing, but possibly represent a form one could place under the much later name *napaea*, and an intermediate form.

In 1780 Bergstrasser, "Nomencl. Besch. Ins. Graff. Hanau-Münz.," vol. iv., p. 31, considered Engramelle's "dia major" as *euphrosyne*. He said that *pales* is distinct from *euphrosyne* and can be no other than *pales*.

An examination of Bergstrasser's figures 1 and 2 on pl. 42 in the British Museum (S. Kensington) copy of the above work shows an apparent male of pale general coloration, with ill-developed and sparse spotting on all wings. The underside is generally pale, on the forewings the markings are ill-developed and sparse. The underside of the hindwings is about that of normal *pales* of poor intensity. The hindwings are not angled. There are appended in the Museum copy the M.S. names *euphrosyne* and *selene*, both are certainly wrong.

References are sometimes made to plate 84, figs. 6 and 7 of Bergstrasser, but this is no other than *euphrosyne*. In Werneburg's "Beitr. Sch.-kund.," there is another reference, to plate 132 of Bergstrasser, but as these later plates, 97-144 (?) are not included in the Brit. Mus. copy of the work, nor did any one there know of their existence, no examination of this reference could be made.

In 1781 Knoch, "Beitr.-Insekt.," vol. i., p. 73, pl. 5, figs. 3-4, are a description and figures of "*arsilache*, Esp. (H.S.)." This is according to Werneburg, "Beitr. Sch.-kund.," vol. i., p. 127, but as I have been unable to see a copy of Knoch's work I can offer no opinion on the figure as to whether it is the form with non-spotted underside of forewing (Esp.).

Schneider, in 1787, in his "Sys. Besch. Eur. Schm.," p. 187, treated of *P. arsilache* and compared it to *selene*, but says it is smaller. The ground of the underside is paler and the spots are duller. He

says that Esper's fig. 5 is only a var. of his fig. 4, and that specimens from Sweden are quite comparable to those of warmer lands. He notes that the red-brown of the underside is in some varieties dark red. He apparently considers the form with more or less unspotted underside forewing as *arsilache*.

Fabricius, in "Mant. Ins.," vol. ii., p. 63 (1787), in describing *pales* gives *arsilache* as a synonym, and does not differentiate any variation. In the appended larger description he says of the underside of forewing "subtus anticæ fulvæ lunulis punctisque aliquot nigris maculisque duabus flavis apicis."

This is copied verbatim into the "Ent. Sys. emend. et auct.," of Fabricius, p. 257, in 1793.

Borkhausen, in 1788, in his "Nat. Eur. Schm.," vol. i., p. 43, in some detail described *arsilache*. He states that the underside of the forewings has the markings of the upperside, only quite washed out, and as it were showing through, but says nothing as to two or more forms. He gives the fig. of Esper, plt. 56, fig. 1, *pales*, as being synonymous, and refers in the same way to Bergstrasser, plt. 42, figs. 1-2, plt. 84, figs. 6-7. He says that *arsilache* comes very near both *selene* and *euphrosyne*, but that its wings have a different shape, the forewings are longer, the hindwings broader and more angular. The black spots are somewhat smaller, less in number, and have a different position. The hindwings on the underside have more red-yellow mixed with brown. The silver spots are more in number than in *euphrosyne*; there are usually twelve. They have for the most part a different position and arrangement, the middle one is especially varied in length. The ground colour is the same. The spots of *euphrosyne*, between the middle and outer bands, are in this species almost blind eyes, and the single spot between the middle and the hind band is quite wanting. The thorax is furnished with very long hairs, which extend almost half way across the wings. This butterfly has never been met with except in the neighbourhood of Vienna. Thus Borkhausen agrees with Esper in calling the more or less non-spotted underside form *arsilache*.

From Gmelin, (Lin.) "Syst. Nat.," vol. i., pt. 5, p. 2335 (1788). I quote, as the then current opinion, "*Pales*. P. alis subintegris fulvis: basi maculisque nigris, posterius subtus brunneis flavo argenteoque variis." = Esp. *P. arsilache*, plt. 56, figs. 4 and 5. Habitat in Austria, Diæ affinis et æqualis.

This "improved" edition of Linnæus "Sys. Nat." says nothing about the spotting of the forewing underside, but cites Esper's *arsilache* and the *pales* of Schiff. as identical.

De Villars, "Ent. Lin.," gives the following in vol. ii., p. 59 (1789). "*=pales*, W.V. P. P. arsilaché corpore piloso, alis dentatis fulvis, nigro punctatis; inferioribus maculis, 12 argenteis, reliquis flavis, fasciaque marginali ex ocellis."

Subsequently in vol. iv., p. 414 (1789). *=pales* W.V., he adds "Magnitudo et affinitas *P. dia*. Alæ supra omnes, fulvæ et basi maculisque plurimis nigris. Subtus anticæ fulvæ lunulis punctisque aliquot nigris maculisque duabus flavis apicis. Posticæ basi maculis argenteis, tunc brunneæ puncto parvo argenteo, tunc fascia magna, sinuata, obsolete flava, et in hac maculæ duæ argenteæ, altera in medio, altera ad marginem exteriorè, demum brunneæ maculis aliquot fere

obsoletis argenteis et denique margo flavo varius punctis sex vel septem argenteis."

This edition of "Ent. Lin." is a compilation from various sources, and probably the author knew but few of the objects of which he gave descriptions. In the two descriptions quoted he more or less mechanically combines the Latin diagnoses of Linnæus, Fabricius, etc., into a paragraph without digesting it.

In the 2nd vol., pt. 1, of his "Beitr. Gesch. Schm.," 1790, plate 1, figs. A (a. b.), Hübner figured a remarkable insect, which he named at the foot *arsilache*. In the short letterpress concerning it (p. 7) he named it *cybele*. It is an extremely fine aberration of *pales* with much confluent spotting on the forewings, both upper and underside, the underside being emphasised in depth of colour quite as much as the upper, but the hind marginal markings are much as in an ordinary form of *pales*. The hindwings upperside are very black-suffused with conspicuous round, clearly cut spots on the hind margin, and a larger round discoidal spot of the ordinary *pales* ground colour. The underside of this wing has some confluence, and the markings as portrayed are definite in shape without the usual more or less suffusion of shading. In the text Hübner refrained from writing a description, stating that the figures are sufficient.

This aberrational name seems to have dropped out from our nomenclature entirely. There is, I think, no doubt as to the figure representing an extreme aberration of *pales*.

In 1791, Thunberg (or Becklin), in part 2 of his "Diss. ent. sist. Ins. Svec.," p. 34, referred to three forms of *pales*.

Var. *a*, he says, from Sweden, agrees exactly with the description of *pales* in Fab., "Mant. Ins.," vol. ii., p. 63.

Var. *β* from Norlandia and Smolandia, he describes as more hairy above; the forewings towards the hind margins broadly spotted with fuscous; the hindwings on the upperside with larger markings, which are confluent on the margins (*punctis majoribus cum marginalibus confluentibus*).

Var. *γ* hindwings above from the base almost to the margins black and less hirsute, from Lapponia. (This form is thought by some authors to be *chariclea*, e.g., Herbst).

According to a reference in Ochsenheimer (1806), in 1793, Borkhausen, "Rhein. Mag.," vol. i., p. 265, dealt with *pales*, but I have not seen this work.

In 1794 Schneider, "Neu Mag. Lieb. Ent.," pt. v., p. 588, named Thunberg's var. *γ* of *pales* as a distinct species, *chariclea*. This work I have not been able to consult, and therefore cannot give an opinion on the statement.

De Prunner in "Lep. Pedemontana," p. 43 (1798), used the name *arsilache*, and says it is the same as *pales*, Schif., W.V., and as the "*pales grande et petite espèce*" of Engramelle. He says that the wings are fulvous below with black spots and that the lower wings have 12 silvery spots. This short description is simply an adaptation from other authors.

In 1799 Hübner, in "Sam. eur. Schm.," gave six figures on pl. 7, of the *pales* forms; 34, 35, he calls *pales*, 36, 37, *arsilache*, and 38, 39, *isis*. They are generally excellent figures, upper and undersides, and presumably males. The *pales* is a male well spotted on upperside,

with the spots only very faintly and in part reproduced on the underside. The *arsilache* is a male with less strong spotting on the upperside, but with the spotting strongly reproduced on the underside forewings. It is a large insect. The *isis* is doubtfully a male, of deeper fulvous coloration of grand colour, and the underside only very faintly shows dark markings in forewing; in the hindwing underside there is a large increase in the yellow and yellow-orange markings, and the forewings below have the same colour very distinctly marked at apex.

The two figures Hübner called *pales* are distinctly the form to which Esper had given the name *arsilache* in 1778. On the other hand, the two figures Hübner calls *arsilache* are equally as distinctly the form which Esper designates as a variety of his *arsilache*. Probably this inversion of what had been the practice for 21 years in the application of these two names, was established by the prestige of the work of Hübner without investigation into what had been done before.

I have asked Mr. Wheeler to comment on the above, and he has kindly sent me the following note:— [From all this evidence it would seem to result that we are quite correct in following Hübner, who is the first to definitely separate the two forms. Esper includes *both* under *arsilache*, and others later used *pales* and *arsilache* indiscriminately. Esper's inclusion of both forms under *arsilache* can hardly be said to admit of his being "first reviser," a position which is apparently Hübner's, for the name *arsilache* was not available for the *pales* form, which was already named by Schiffermüller, but was available for the form which he included as a variety, which had not been previously named. Hübner was therefore quite right (though probably unconsciously, and still more probably without caring whether he was or not) in calling the one form *pales* and the other *arsilache* as he did on pl. vii.—G. WHEELER.]

I am afraid that I do not agree with Mr. Wheeler's interpretation of the facts as expressed in the above note, although I am *absolutely in agreement with him* as to the continuance of the custom of using the name *arsilache* in the Hübnerian sense as expressed in figures 36, 37 on pl. vii., for the form of *pales* with strongly emphasised black spotting on the underside of the forewings. My argument for the retention of the name *arsilache* in the above sense is based on the fact that it has been so used unchallenged for more than a hundred years. It seems to me simply idiotic in the extreme to reverse the multitudinous references in our literature to this form under the name *arsilache*. We have an excellent National Nomenclature Committee, and its decisions will doubtless be accepted by at least ninety-nine out of every hundred of our brother entomologists. The odd man can be ignored.

Most subsequent writers give the name *arsilache* to the form with strongly marked forewing underside. As will be seen below, Herbst and Jablonsky in the following year called the form with weakly marked underside forewing *pales*, but they give *arsilache* as a synonym, possibly they did not consult, or were ignorant of Hübner's work when the figures were being prepared.

Herbst and Jablonsky in "Natursys." (1800), vol. x., p. 119, pl. 272, figs. 1-4, described and figured *pales* (1 and 2), and *pales* var. (3 and 4). There seems little difference between the two uppersides

(1 and 3), except that in fig. 1 the spotting is somewhat more pronounced and coalesced than in fig. 3, while there is less black suffusion towards the base of the hindwings in fig. 1. The undersides of the two, however, differ more; in fig. 2 there is only one small white spot on the underwing, while in 4 there are many such spots; the amount of silver markings is just the opposite in the two specimens. There are very definite black markings in the disc of the forewing underside in both specimens, somewhat more pronounced in *pales* (2) than in *pales* var. (4). It is noteworthy that fig. 1 has a deep marked, chequered fringe, while fig. 3 has a very uniform fringe. This is possibly an error, as there is no difference in the upperside fringe appearance. In the text *arsilache* is given as a synonym of *pales*.

The above notes on the figures were made from the copy in the library of the Entomological Society of London. In my own copy of the plates of this work the white mark on the underside fig. 2 is wholly wanting, while in fig. 3 the fringe is chequered as in fig. 1. However, in fig. 4 the fringe is practically uniformly brownish.

On the same plate (272) are two figures, an upper and an underside, figs. 5 and 6, named *chariclea*. They are certainly a form of *pales*, deeper in colour, with more intense black markings, with the same distribution of spotting, and comparable in size and shape. The markings on the underside forewing are very strongly pronounced, and the form is quite that which we at the present time consider to be *arsilache*, Hüb. This was the confirmed opinion of Ochsenheimer in 1806, "Schm. Eur.," vol. i., p. 66, who saw no distinction whatever between these figures and an example of Hübner's *arsilache* from Russia, which he had before him as he wrote. At the same time, Ochsenheimer says that he cannot express an opinion on Thunberg's var. γ as he does not know it in nature.

In 1804 (3), on pl. 110, Hübner gave other figures, 563, 564, of the upper and undersides of a *pales* form, to which he applied the name *isis*, used previously by him for figs. 38 and 39 on pl. 7. In these, the fulvous ground colour is deep and rich, the black markings are intensified in size and depth of colour, both on fore- and hindwings, and on the latter there is more basal suffusion. There is a tendency for the black markings to run together, or, at least, they touch in most points of approach and the veins are emphasised. The insect is larger than either of the previous figures and is apparently a female. The underside forewing has the same rich fulvous ground as the hindwing, and the black markings are very sparse in number. There appears to be a suffusion of a green tinge over the whole of the underside of the hindwings.

Comparison of these figures 563 and 564, with the previous figures 38 and 39, will show that the forms represented are quite distinct, and that, therefore, the more recent figures do not represent the form originally named *isis*. This was pointed out by Hoffmannsegg, who in 1804, in "Illiger's Mag.," vol. iii., p. 181, etc., contributed an article on Hübner's figures. On p. 186 he says, plt. 7, figs. 36, 37, *pales* var. = *arsilache*. On p. 196 he calls the fig. 563, 564, on plt. 110, by the name *napaea*. He accepts figs. 38, 39 on plt. 7, as *isis*. He states that figs. 34 and 35 on plate 7, *pales* are the *pales* of Fabricius and Schiffermüller, but the *arsilache* of Esper, Borkhausen, and Herbst.

It must be noted here that Schiffermüller did not indicate the character of the underside forewing in his description of *pales*, while Fabricius gives *arsilache* as a synonym of *pales*, presumably considering it to be identical.

In 1805 Laspeyres, in "Illiger's Mag.," vol. iv., p. 1, etc., continued his critical notes on Schiffermüller's "Verz." of 1776. To his remark that Hübner appears to make three species of the three forms of *pales* (*pales*, *arsilache*, and *isis*), Hoffmannsegg appended a note (p. 48) that *pales* and *arsilache* of Hübner's figures appear to be forms of the same, but that *isis* seems to be distinct (apparently referring to figs. 563 and 564 on pl. 110). The forms illustrated by these figures are distinguished by the paler or more dusky upperside turning to greyish, and on the underside the hindwings are always coloured as in *pales*, mostly brownish, purple coloured, very greenish-straw-yellow, and they also appear to have much feebler emphasised and less sharply defined markings. In addition, the apex of the forewing on the underside is more widely clear yellow. The specimens came from South Switzerland. They can in no way be confused with the form *isis*. We have named them *napaea*—H (Hoffmannsegg).

Latreille, "Hist. Nat. Crus. Ins.," vol. xiv., p. 94 (1805), refers to *pales* of Fab. as follows, "*Ailes fauves*, spotted and dotted with black, one or two *taches rouges* on the forewings; the hindwings of a red-brown below with silvery spots."

In 1805, on pl. 121, Hübner gave another figure of a *pales* form, figs. 617-618, an extreme aberration. The upperside is rich fulvous in ground colour; forewings with basal area dark, central area and centre of costa a mass of dark colour, the marginal area with a dark band from apex to anal angle, no spotting at all. The hindwings are wholly dark except a submarginal band of fulvous crossed by emphasised veining with a fine marginal black line at base of fulvous fringes. The underside of forewings is uniformly fulvous, with somewhat lighter interspaces showing up the darker veining. The hindwing underside has a similar radiate character, but more emphasised by there being blotches of white colour between the final portions of the veins; there are two large silvery coalesced blotches at the base and a distal band has a green suffusion. The size is that of a small *pales*.

Hoffmannsegg, in "Ill. Mag.," vol. v., p. 180 (1806), in an addendum to his article on the Hübnerian names of the "Schm. Eur.," says that since Esper has a species named *napaea* his own name of *napaea* for *isis*, on Hübner's plate 110, will not stand, and he therefore proposes the name *dirphya* for the figures he has called *napaea* in vol. iv., l.c., p. 48 (563, 564).

This substitution has never been accepted and one rarely meets with a reference to it.

Ochsenheimer, in "Schm. v. Eur.," vol. i., p. 63 (1807), after minutely distinguishing this species under the name *pales*, said that on the underside the forewings are cinnamon coloured, with obscure and similar black markings showing through from the other side, and which are *only distinct in the female*, with sulphur-yellow brown-red mixed apex. After also minutely describing the markings on the underside of the hindwing of *pales*, he goes on to say that the connection of *pales* with *arsilache* is not improbable. *Pales* is smaller, its forewings more pointed. The markings on the underside of the hindwings of *arsilache*

are more distinct and more clearly defined, but he says nothing about the underside of the forewings of *arsilache* as differing from those of *pales*.

I believe that most of the specimens of *arsilache* taken by me near Campfer, in 1914, are females. Males were flying near but never close on the margin of the water, and were always with very faintly showing or absence of the black markings on the undersides of the forewings.

(To be continued.)

SCIENTIFIC NOTES AND OBSERVATIONS.

A NOTE ON THE CIRCUMSTANCES OF THE ACT OF PAIRING IN SOME DIURNAL LEPIDOPTERA.—While looking up some old records a while ago, I came across a short paper by M. Donzel in the *Ann. de la Soc. Ent. de France* for 1837, in which he makes observations "Sur l'Accouplement de quelques Genres de Lépidoptères diurnes." Starting from a few casual observations, the writer came to the conclusion that the circumstances of the act of pairing might, if investigated carefully, furnish generic characters of considerable importance, and undertook an extended series of observations on the butterflies as to which sex carried the other. In the genus *Pieris* (s.l.) he found that with *brassicae*, *rapae*, and *daplidice*, it was invariably the male which bore the female, and inferred that *napi*, *callidice*, and *chloridice* would act similarly. He felt sure that *crataegi* would act differently, and later on he proved that in this species the female always carried the male, thus to his satisfaction strongly supporting his previous contention that this species was not a member of the genus *Pieris*.

The writer then sums up the results of his observation as follows:—

Genus *Thais*: The female carries the male in *medesicaste* and *hipsiphyle*=*polyxena*.

Genus *Colias*: The male carries the female in *edusa*, *hyale*, etc.

Genus *Thecla*: The female carries the male in *acaciae*, *spini*, *ilicis*, etc.

Genus *Argus*=Lycænids: The male carries the females in *coridon*, *escheri*, *adonis* (*thetis*), *meleager*, etc.

Genus *Argynnis*: The female carries the male in *daphne*, *aglaia*, etc.

Genus *Melitaea*: The female carries the male in *athalia*, *didyma*, etc.

Genus *Satyrus*: The female carries the male in *cordula*, *megaera*, *jurtina*, *nephele* (*pamphilus*), etc.

He quite anticipated that in the genus *Vanessa* as then constituted, *cardui*, *atalanta*, and *prorsa* would act in a different manner to *antiopa*, *polychloros*, etc., and should be generically separated.

It is pointed out that if similar observations could be made with the Heterocera they would, no doubt, be extremely suggestive. However, since the time of the natural flight of most of this group is at night, it was practically impossible to observe their habit with certainty, while on the other hand, of many species when paired, both sexes are so inert that they will undertake no flight at all.

While at St. Moritz in 1914, I met with several cases confirmatory

of M. Donzel's observations. *Aglaia* and *niobe*, the female carried the male. In *palaeno* the male carried the female. In *maera* and *goante* the female carried the male. My notes say that in the case of *aglaia* the pairing lasted 24 hours.—H.J.T.

NOTES ON COLLECTING, Etc.

PLUTELLA DALELLA, STT., NOT IN EPPING FOREST.—On page 22 of the present volume there is a report of a meeting of the London Natural History Society, held October 5th, 1915, in which it is stated that a series of this species from Epping Forest was exhibited. As it seemed unlikely that *Plutella senilella*, Zett., = *dalella*, Stt., would occur in Epping, I wrote to Mr. J. E. Gardner, who most kindly informed me that the moths he exhibited were those known as *Cerostoma vittella*, L., and *C. sequella*, Cl.—ALFRED SICH.

CURRENT NOTES AND SHORT NOTICES.

In a recent number of the *Bull. Soc. ent France*, Abbé J. de Joannis has written an interesting and important article on "The *Carpocapsa* of the chestnut." Réaumur speaks of this larva in the second volume of his *Memoires*. Zeller states that he is unable to recognise the species of Réaumur. C. von Heyden named the species *Carpocapsa reaumurana*. Heinemann described the species under this name in *Die Schm. Deutschl.* Staudinger in his *Catalog* of 1871 included it as distinct, but in 1901 he mentions *reaumurana* as a variety of *splendana*, with the note "larv. in fruct. *Castaneae vescae*, variant, al. ant. plerumque unicol. fusco-plumbeis." In 1845 Guenée had quite satisfied himself that there was only one species, but Heinemann, on the other hand, was equally satisfied that there were two, and describes *reaumurana* as having the abdomen reddish-yellow at the base, while *splendana* has the abdomen wholly gray. M. de Joannis has had a large number of examples, many bred from chestnuts, before him, and is quite satisfied that no such distinction as Heinemann expressed is apparent, and can find no basis for suggesting the existence of two species, although there exists, in some races, as pointed out by Herrich-Schaeffer, considerable variation from the typical form of *splendana*, Hb. A plate is included with the notes to show the range of this variability in both males and females, from very strongly light banded forms through many gradations to those obscurely marked and of nearly uniform coloration.

We have recently been reading a book published a year or two ago, entitled "Hampstead Heath. Its Geology and Natural History," written by several authors. Chapters on the Topography, Geology (Prof. Rudler), Plant Life, Birds, Mammals, etc., were interesting until we came to that on Insects. Printers errors are annoying, but *Coenonympha* (!) *urticae* was not one of them, nor were *Coenonympha cardui*, *C. atalanta* and *Lycaena thumasa*. It is strange to find *P. gamma* for our old friend with the common name *gamma*. But the gem is a note on *P. betularia*. "During the last twenty years the dark double *dagaria* has practically replaced the light *betularia*." As for the matter of the chapter the "tyro," as Stainton used to call an incipient entomologist, might perchance find something of use to him. There is a useful Bibliography to the whole work.

The Rev. C. R. N. Burrows informs us that he has deposited the Type specimens of *Hydroecia crinanensis*, Burrows and *H. asiatica*, Burrows, at the British Museum (Natural History), and the Co-types at the Hope University Museum, Oxford, these deposits consist of the wing parts and the mounted genitalia of both sexes. Accompanying each are similar sets of *H. nictitans*, Bkh., *H. lucens*, H.S., and *H. paludis*, Tutt, and Mounts of the sexes of *H. americana*, Spe. Mr. Burrows has also been able to deposit specimens of *H. crinanensis*, thanks to Mr. J. E. R. Allen—and of *H. asiatica*, thanks to Dr. T. A. Chapman. The whole illustrate Mr. Burrows' Paper "On the *nictitans* group of the Genus *Hydroecia*, Gn," read before the Entomological Society of London, December 6th, 1911, and printed in the Transactions of the Society for 1911-12, p. 738. Dr. Chapman writes that he deposited the Type specimen of his *H. burrowsi*, described in the Entomologist's Record, May 15th, 1912, at the Natural History Museum, soon after his description was published.

In the January number of the *Ent. News* are some very excellent comments on labelling. After remarking that it has become a recognised practice to fully label all new forms as "type" specimens, the editor goes on to say, "It is probably much less common to mark material which, without being typical of new taxonomic forms, is the basis of published figures illustrating either whole structures or details of anatomy. Yet this also is very important and highly desirable, as it will enable a later investigator, examining that material, to explain, in many cases, why two writers on the same subject have reached divergent conclusions. The converse of this practice is also desirable, *viz.*, that the legends or explanations accompanying such published figures should indicate the exact place in a given lot of material from which the illustration has been made. For example, in connection with a drawing based on one section of a microtome series, it should be stated on which slide, in which row on the slide, and in what position (number) in that row that section is to be found. One of the many good offices rendered by the late Prof. John B. Smith to entomology was to mount in balsam the preparations of the mouth-parts illustrated on plates v-x. accompanying Dr. G. H. Horn's memoir "On the Genera of *Carabidae*." Horn had left these upon pinned cards labelled with the generic name. Smith transferred them to standard microscopic slides, each one of which is labelled. As long as these slides (now at the Academy of Natural Sciences of Philadelphia) are in existence, it will always be possible for the students of the ground beetles to comprehend Horn's results. It is to be hoped that all entomologists will follow the example set by the recent State Entomologist of New Jersey."

In a recent number of the *Journal of Economic Entomology*, New York, is another important contribution by P. J. Parrott and his collaborators on the connection of Tree-crickets with bark disease. The results of their investigations and experiments are summarized as follows:—

1. The crickets fed readily on diseased areas of apple and raspberry canes, even when foliage and plant-lice were abundantly supplied. A large proportion of the pellets of excreta contained spores of one or other fungus, in some cases of both.

2. When crickets were starved for two days before feeding, spores passed through the intestinal canal in about six and a half hours.

3. When crickets were fed normally, spores were noted in the excreta four days after diseased wood was removed from their diet.

4. Cultural tests of spores taken from excreta showed that they had passed through the intestinal canal of the crickets quite unharmed.

In this study it must be remembered that infection might take place

1. As a result of wounds produced by the gnawing of the bark by the female as the initial step in the act of oviposition.

2. By means of the ovipositor, the adhesive substance discharged at the time of deposition, serving to collect and to hold the spores, which may later be left in the holes during the drilling process.

3. By the introduction of spores in the oviposition wounds on account of the remarkable habits of the insect, which employs its excreta to close the openings in the bark after the deposition of the egg.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

February 2nd, 1916.—ELECTION OF FELLOWS.—Messrs. Frederick Laing, Natural History Museum, Cromwell Road, S.W.; Robert Latta, D.Phil., Prof. of Logic, University of Glasgow; Arthur Raymond Palmer, Ingleholme, Norton Way, Letchworth, Herts, and Yelseti Ramachandra Rao, M.A., Assistant Govt. Entomologist, Agricultural College, Coimbatore, India, were elected Fellows of the Society.

NOMINATION OF VICE-PRESIDENTS.—The President announced that he had nominated Dr. T. A. Chapman, Dr. C. J. Gahan and Commander J. J. Walker, as the Vice-Presidents for the coming year.

PROPOSED ALTERATION OF BYE-LAWS.—The Secretary read a notice, signed by the President and six members of the Council, that a Special Meeting should be called to consider alterations in the Bye-laws.

RESOLUTION ON THE CLOSING OF THE NATURAL HISTORY MUSEUM.—Mr. G. T. Bethune-Baker proposed the following Resolution:—"That this Society would view with deep regret the closing of the Natural History Museum." This was seconded by Mr. H. Rowland-Brown, and carried unanimously.

"MOTHS OF THE LIMBERLOST."—Mr. E. B. Ashby exhibited a beautifully illustrated book entitled *Moths of the Limberlost*, by Mrs. Gene Stratton Porter.

MECHANICAL STAGE FOR MICROSCOPIC EXAMINATION OF PINNED INSECTS.—Dr. H. Eltringham exhibited a new mechanical stage for examining pinned insects.

CIDARIA SUFFUMATA FROM SOUTH-WEST YORKSHIRE.—Mr. G. T. Porritt exhibited the three forms of *Cidaria suffumata* as it occurs in South-West Yorkshire.

ANTS FROM THE FRONT.—Mr. Donisthorpe exhibited two ants taken at the front—*Myrmica rugulosa*, Nyl., ♀, taken by Mons. Bondroit at Ramscapelle (Yser), December 14th, and *Messor barbara* var., winged ♀ taken in the fire trenches at Gallipoli on December 21st, 1915, by Lieutenant Noel S. Sennett. He also showed specimens of the "Argentine Ant," *Tridomyrmex humilis*, taken at Enfield and Eastbourne.

MIGRATION OF LIBYTHEA LABDACA AT FREETOWN, SIERRA LEONE, MAY

6TH, 1915.—Mr. A. W. Bacot exhibited specimens of the butterfly *Libythea ladbaca* and read notes.

CROSS BREEDING OF *PEDICULUS CAPITIS* AND *P. HUMANUS*.—He also exhibited a box containing recently hatched lice resulting from a pairing between *Pediculus capitis*, ♂, and *P. humanus (vestimenti)*, ♀, and remarked that there was no difficulty in obtaining pairings between the two insects, in either direction.

The following Paper was read:—

“On the Pairing of the Plebeiid Blue Butterflies,” by T. A. Chapman, M.D., F.Z.S., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

January 27th, 1916.—ANNUAL MEETING.—The Report of the Council and the Balance Sheet were read and adopted. The election of the members nominated as Officers and Council for the ensuing year was declared. (See vol. xxvii., p. 282.) Votes of Thanks were passed to the President, Treasurer, Secretaries, and other officers.

ORDINARY MEETING.—Mr. Hy. J. Turner, F.E.S., President, took the chair.

A FOSSIL DRAGONFLY.—Mr. Edwards exhibited Brongiart's *History of Fossil Insects*, and called attention to the plate illustrating the huge dragonfly *Meganeura moneyi*, two feet in expanse.

THE SPECIES OF *CALIGO* IN TRINIDAD.—Mr. Kaye, the three species of *Caligo* occurring in the Island of Trinidad, *Caligo braziliensis* sub-sp. *minor*, *C. ilionens* sub-sp. *saltus*, and *C. teucer* sub-sp. *insulanus*, and remarked on the confusion in identification which had hitherto existed.

BIRD (?) CAPTURE OF *P. MACHAON*.—Mr. Brooks, a *Papilio machaon* in very good condition, found in the fens impaled on a thorn, presumably by a shrike.

VARIETY OF *S. SEMIRUBELLA*.—Mr. Stall, a series of *Salebria semirubella* from Surrey, including ab. *icterella*, with the snow-white costa.

NOTES ON THE EARLY SEASON.—Several members remarked on the early appearance of *Hibernia leucophaearia*, larvæ of *Arctia caja*, *Callimorpha dominula* and *Abraxas grossulariata*, and the breeding of *Tephrosia crepuscularia* and *Dimorpha versicolor*.

PAPER.—Mr. R. Adkin, *Polygonia c-album* taken at Eastbourne on September 18th last, and read a Paper, “Autumn Butterflies at Eastbourne, and some other Notes.”

February 10th, 1916.—FASCIATION OF THE ASH.—Mr. Edwards exhibited a fasciated branch of ash from Blackheath.

A GYNANDROMORPH.—Mr. Newman, hawthorn in almost full leaf and fully opened catkins of sallow. Also a gynandromorph of *Polygonia c-album*; it was considered unique.

ABERRATIONS.—Mr. Sperring, an irregularly banded *Argynnis adippe* from Swinley woods, and a specimen of *Amorpha populi* with a bright orange-red inner marginal blotch on hindwing.

DRAWINGS OF BRITISH NEUROPTERA LARVÆ.—Mr. C. B. Williams, coloured drawings of the larvæ (enlarged) of the British Neuroptera *Coniopteryx tineiformis* and *Semidalis aleurodiformis*.

LIFE-HISTORY OF *G. SPINIGER*.—Mr. Main, the larva and burrows of *Geotrupes spiniger* in one of his observation cages.

VARIATION IN *S. SEMIRUBELLA*.—Mr. H. J. Turner, a series of *Salebria semirubella* (*carnella*) with *ab. sanguinella*, *ab. icterella*, and a dark form, and read notes on the variation.

HYBRID ORCHIDS.—Mr. Kaye, sprays of the following hybrid orchids, *Odontoglossum jasper*, *O. triumphosum*, and *O. penultum*, all of them exhibiting the remarkable phenomenon of complete fusion even in the first, which was a tertiary hybrid.

CANADIAN BUTTERFLIES.—Mr. Moore, *Polygonia californica*, *Papilio daunus*, etc., from N. W. Canada.

VARIATION IN *H. PALUSTRIS*.—Mr. B. S. Williams, eighteen specimens of *Hydroecia palustris*, from St. Annes-on-Sea, showing complete gradation of ground colour from pale ochreous, through red to fuscous grey, with white to orange stigmata.

THE EARLY SEASON.—Messrs. Sich, Frohawk, Newman, and others spoke as to the early season.

BRITISH *O. DISPAR*.—Messrs. R. Adkin, H. A. Leeds, and B. W. Adkin exhibited series of bred and British captured *Ocneria dispar*. Mr. R. Adkin read a paper entitled "*Ocneria dispar* in Britain."

February 24th, 1916.—The meeting was devoted to an exhibition of lantern slides.

Mr. Hugh Main exhibited a series illustrating the parasites of *Orgyia antiqua*.

Mr. Sperring, a long set of colour slides kindly lent by the Paget Company.

Mr. Dennis, various botanical and topographical slides.

Mr. Colthrup, several sets of slides lent by members of the Nature Photographic Society.

March 9th, 1916.—ABERRATIONS OF *P. BRASSICÆ* AND *M. THALASSINA*.—Mr. Newman exhibited, on behalf of A. Horne, Esq., bred specimens of *Pieris brassicæ* from Aberdeen, with a very distinct pink tint over all the wings, and a Noctuid presumably a form of *Manestra thalassina*, but only two-thirds the usual size, and with the outer one-third of the forewings with confused markings.

ABERRATIONS OF *A. GROSSULARIATA*.—Mr. G. T. Porritt, half a dozen fine aberrations of *Abraxas grossulariata*, including (1) a lead and yellow coloured specimen with a white star on one wing, (2) *ab. varleyata* with a black body, (3) with the yellow band of forewing much emphasised over the black.

DWARFS IN BRITISH BUTTERFLIES.—Mr. R. Adkin, dwarf specimens of *Pieris rapæ* 33mm., *P. napi* 38mm. and 39mm., *Euchloë cardamines* 32mm. and 34mm., *Melitæa athalia* 35mm., *Aglais urticae* 38mm., *Epinephele jurtina* 37mm. and 38mm., *Polyommatus icarus* 22mm., and *Agriades coridon* 30mm. and 32mm.

EXTREME SIZES IN BRITISH BUTTERFLIES.—Mr. Frohawk, extreme specimens of *Pyrameis atalanta* 47mm. and 76mm., *P. cardui* 45mm. and 72mm., and *Vanessa io* 47mm. and 73mm., and remarked on the sporadic dwarfing in *Lycaena arion* and the exceptionally small size of *Dryas paphia* in 1892.

CANADIAN INSECTS EXHIBITED.—Mr. Burnett, *Euvanessa antiopa* and the large water-bug *Beniciscus griseus* from Canada, near L. Winnipegosis.

SEXUAL DIMORPHISM IN *EURYPHENE*.—Mr. Edwards, species of the

African genus *Euryphene* to show the extreme sexual divergence, including *E. arcadius*, *E. sophus*, *E. phranza*, *E. cocalia*, etc.

A CURIOUSLY MARKED STOAT.—Mr. Frohawk, a stoat which had been killed in the transition stage of the alteration of its fur from winter to summer colour.

THE LONDON NATURAL HISTORY SOCIETY.

November 2nd.—EXHIBITS, Dr. Cockayne, a living ♀ Mantis from Mouros Bay, near Cape Finisterre, and three N. American Coliads, *Colias eurytheme*, *C. philodice*, and *C. eurydice*.

Mr. L. W. Newman, a long series of *Pieris napi* from Ireland, including dark ♂s and ♀s, and a pale yellow form.

Mr. F. J. Hanbury, two specimens of *Gonepteryx rhamni* marked with orange, one at the tip of the forewing and the other on the hindwings at the tornus.

Mr. H. B. Williams, series of *P. napi* and its Irish form, *Colias hyale*, *C. edusa* with its abs. *pallida* and *helice*, and a long series of *Euchloë cardamines*, including abs. *citronæa*, *minor*, *turritis*, *quadripunctata*, *dispila*, *ochrea*, etc., the Irish form of the species.

Mr. E. V. Shaw, a series of *E. cardamines*, including large and small spotless forms in both sexes, a ♀ with the orange patch heavily rayed with black, a ♂ with the orange patch rayed with white between the veins (*andrinde*), and two ab. *turritis* from Caterham.

Mr. J. A. Simes, European Coliads, including *C. edusa* ab. *helice*, *C. hyale*, *C. chrysotheme*, *C. palaeno* and var. *europome*, *C. aurorina*, and var. *heldreichi*, etc.

Mr. A. W. Mera, a cabinet drawer of *Pieris rapae* and *P. napi*.

Mr. C. H. Williams, specimens of *Aporia crataegi*, *Pieris brassicæ*, *P. napi*, *P. rapae* (including a ♀ with two spots in hindwing), three *Pontia daplidice* and *Euchloë cardamines* ab. *dispila* ♀.

Mr. W. E. King, a very varied series of *Hamearis (Nemeobius) lucina* from Horsley.

PAPERS.—Short papers were read by Mr. J. A. Simes on "Some European members of the genus *Colias*," by Mr. L. W. Newman on "Breeding *Pieris napi* and its Irish form," and Mr. H. B. Williams on "The Life-history and variation of *Euchloë cardamines*."

November 16th.—The resignation of the Secretary, Mr. H. B. Williams, on his enlistment in the army was announced.

EXHIBITS.—Mr. W. E. King, a long and very varied series of moths from the Chingford district.

Dr. Cockayne, *Selenia* hybr. *parvilunaria (bilunaria × tetralunaria)* and the reciprocal hybrid and read notes.

Mr. A. W. Mera, a series of *Gonodontis bidentata* showing all the named forms.

Mr. G. T. Porritt, a black form of *Cymatophora* from Sunderland.

December 7th.—NEW MEMBERS.—Mr. W. H. Bell, Hillcrest, Sylvan Avenue, Wood Green, N.

EXHIBITS.—Dr. Cockayne, long series of crosses between *Diaphora mendica* and its var. *rustica*, and read notes.

Mr. L. W. Newman, on behalf of Mr. G. B. Oliver, a number of varieties of *Coenonympha pamphilus*, including one with the underside

of the hindwings of a unicolorous rich brown without any markings, and one which showed patches of upperside coloration on the underside of the left hindwing. Also a fine variety of *Pararge aegeria* with abnormally pale markings.

Mr. W. E. King, a male *Epinephele jurtina* with irregular pale blotches on the right side.

Mr. Bacot, living examples of *Pediculus capitis* and *P. humanus* (*vestimenti*), and read notes on their habits.

Mr. Burkill, galls of *Biorhiza aptera* from roots of oak in Richmond Park; *Eriophyes fraxini* on ash from Derbyshire; and the rare *Callirhytis glandium* from *Quercus lucumbeana*, a hybrid oak, in Kew Gardens.

OFFICERS AND COUNCIL FOR 1916.—*President*: Dr. E. A. Cockayne, M.A., M.D., F.R.C.P., F.E.S. *Vice-Presidents*: A. Bacot, F.E.S.; Rev. C. R. N. Burrows, F.E.S.; M. Greenwood, Jnr., M.R.C.S., L.R.C.P.; F. J. Hanbury, F.L.S., F.E.S.; A. W. Mera; L. B. Prout, F.E.S. *Librarians*: W. E. Clegg and A. L. Mera. *Curators*: S. Austin; C. S. Nicholson, F.L.S.; H. Worsley-Wood. *President of Research Section*: E. B. Bishop. *Secretaries*: R. W. Robbins and J. Ross. *Members of Council*: H. S. Burkill; D. E. Digby; J. B. Hall, F.E.S.; L. W. Newman, F.E.S.; V. Eric Shaw, F.E.S.

December 21st.—NEW MEMBERS.—Mr. C. Flowers, 4, The Avenue, Chingford, and Mr. E. Kay Robinson, Warham, Glamorgan Road, Hampton Wick.

EXHIBITION OF THE LYCENIDÆ OF 1915.—Dr. Cockayne, *Polyommatus icarus* ♀ with splashes of very bright blue scales near apex of right forewing, no androconia; *Agriades thetis*, showing asymmetry of colour and markings; *A. coridon*, asymmetrical, deformed and dwarf specimens.

Mr. Pickett, a very long series of *A. coridon* from Royston, including many fine aberrant forms and 66 gynandromorphs.

Mr. W. E. King, a long series of *A. coridon*, including abs. *marginata*, *sub-suffusa*, *unicolor*, *aurantia*, *albolunata*, *roystonensis*, *castanea*, *impuncta*, *striata*, *costa-juncta*, etc., and gynandromorphic specimens from Royston and Bedfordshire; *Polyommatus icarus*, a very fine series of upper- and underside aberrations.

Mr. C. H. Williams, long and striking series of *P. icarus* and *Agriades coridon*.

Mr. G. T. Porritt, *Abraxas grossulariata* abs. *nirosparsata* and *nigra*, and intermediate forms.

The President delivered his Annual Address, choosing for his subject "Insects and War."

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

November 15th, 1915.—LANTERN SLIDES.—Mr. Hugh Main, B.Sc., F.E.S., sent a set of Lantern slides illustrating "A Naturalist's Holiday in Switzerland," with copious notes in explanation. The slides dealt with the imposing scenery in the neighbourhood of Meiringen and with the life-histories of *Cicindela campestris*, the tiger beetle, *Myrmeleon formicarius*, the ant-lion, and *Lampyrus noctiluca*, the glow-worm;

there were a number of slides showing various Lepidoptera in their natural day-time resting places.

PHOTOGRAPHS IN NATURAL COLOURS.—Dr. J. Cotton exhibited photographs in natural colours of landscapes and flowers taken in the neighbourhood of Liverpool.

BRITISH TORTRICES, ETC.—Mr. F. N. Pierce exhibited long series of the Tortrices, *Ephippiphora pflugiana*, *E. cirsiana* and a possible new species allied to the latter. Mr. W. Mansbridge shewed a series of varieties of *Peronea ferrugana*, from Delamere Forest, where this season it had been commoner than usual; also a series of *Ematurga atomaria* bred from a female captured in Delamere Forest shewing a wide range in variation.

December 20th.—ANNUAL MEETING.—Exhibits were as follows:—
COLEOPTERA:—by Mr. F. N. Pierce, an army biscuit completely riddled by a small beetle (*Ptinus*, sp. ?); by Mr. R. Wilding, series of the very local sand-hill beetles *Anisotoma ciliaris* and *A. furva*; he also contributed notes upon the habits of these insects.

LEPIDOPTERA:—by Mr. W. Mansbridge, a long series of *Lycaena icarus* from Delamere and the Crossby sand-hills, including var. *icarinus* and underside variations with enlarged and confluent spots. The recently acquired collection of Lepidoptera was on view and it is expected to be of great usefulness to the members of the Society.

(9) BITUARY .

Geoffrey Meade-Waldo.

The very unexpected death of Geoffrey Meade-Waldo came as a shock to his many friends, especially perhaps to the Fellows of the Entomological Society of London, from whose meetings he was seldom absent. He had been a member of the Council since 1914, and was a most regular attendant to the last, having been present, apparently in his usual health, at the Council meeting on March 1st, while before the next meeting on March 15th, he was dead and buried. He was a universal favourite and will be greatly missed. Educated at Eton and at Magdalen College, Oxford, and devoted to Natural History from boyhood, he had added much to his knowledge by somewhat extensive travel, having been in France, Switzerland, and Morocco, and, during a scientific voyage in the "Valhalla," so far east as Borneo and the Malay Peninsula. He received an appointment in the Natural History Museum at South Kensington in 1909, and was in charge of the Hymenoptera, on which order his later papers were written, both in the *Annals and Magazine of Natural History* and in the *Transactions of the Entomological Society of London*, his last paper in the latter, on the Ethiopian species of *Odynerus*, having been published about a year ago. His earlier papers, published in the *Entomologist*, were on the Lepidoptera, and much of our earliest knowledge of this order in Morocco is due to his visits there, the fruit of which is also frequently to be found in specimens in the National Collection. He was also an ornithologist, and indeed an all-round student of nature, and his death at the early age of 32 has cut short a career of no ordinary promise.—G.W.

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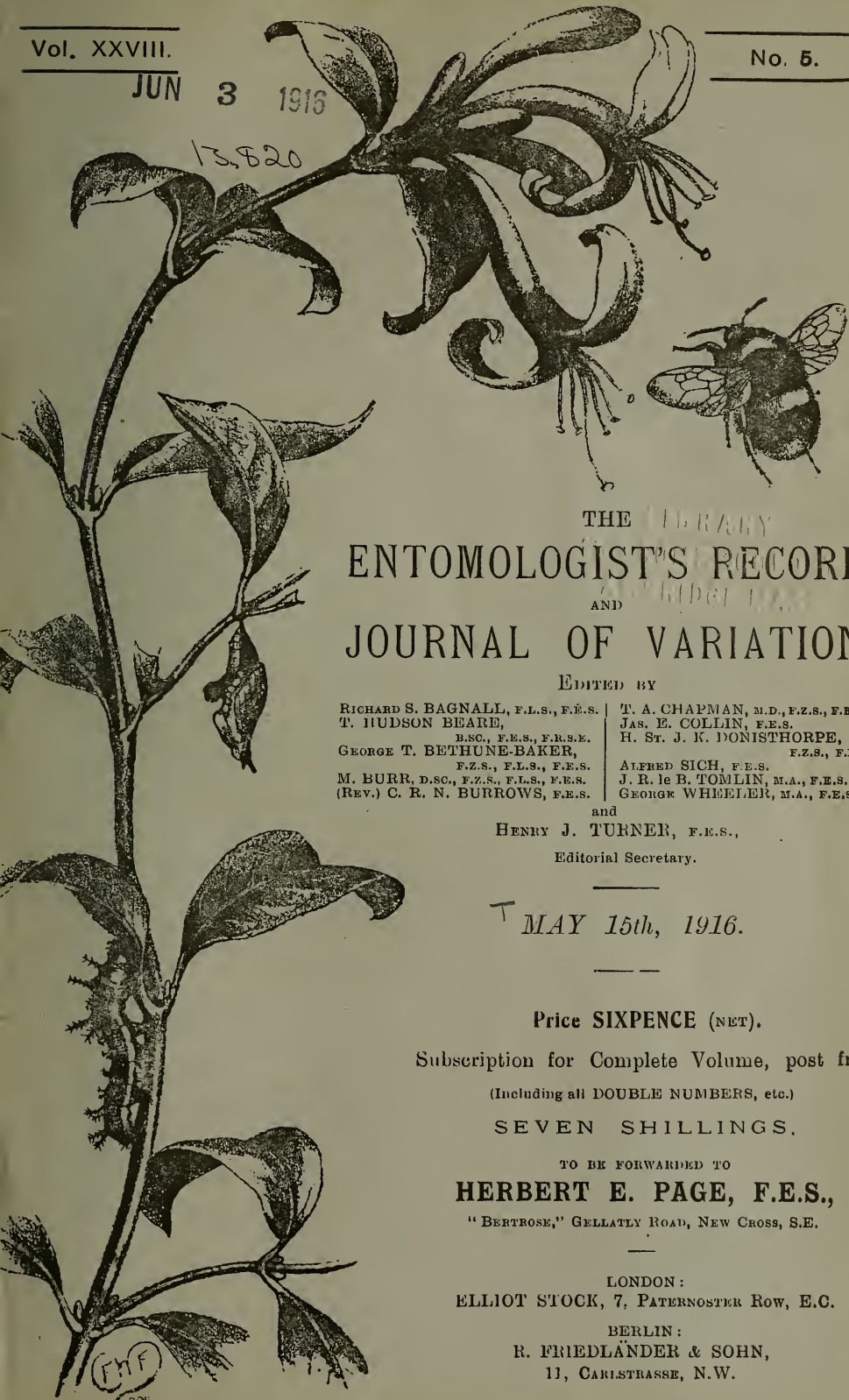
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The British Races of Butterflies: their relationships and nomenclature.*

By ROGER VERITY, M.D.

(Continued from page 80.)

Pieris brassicae, L.—What has been said of *P. rapae* can be repeated exactly of this species. The migratory habits of *P. brassicae* have probably contributed in maintaining the lack of variation observed in the whole of Europe. Seasonal dimorphism is, however, well marked in the whole of its range. Stephen's name *chariclea* is but a synonym of the nymo-typical spring brood, and the name **lepidii**, Röber [Seitz, *Gross-Schmetterlinge*, p. 45 (1907),], must be used to designate the summer brood.

The beautiful individual form of the spring generation, with the apical crescent completely suffused with white scaling, so as to give it a pale grey look, which contrasts sharply in the female, with the black spots of the disc, is certainly very rare in the British Islands, if it occurs there at all, for I have never seen a British specimen of it. It is fairly common in the South of Europe, and Oberthür has figured it from a Spanish specimen and named it *vazquezi* in his "*Etudes de Lépidopt. Comparée*," vol. ix., fig. 2207 (1914). In *Rhopalocera Palaearctica* I had figured it without giving it a name, as I considered it the culminating form of the spring brood variation. It would be interesting to have records of its existence in the British Islands.

Euchloë cardamines race **britannica**, Verity, *Rhopalocera Palaearctica*, p. 190, pl. xxviii., fig. 8 (1908).

The variation of this species in Europe culminates in three distinct forms; the northern, the southern, and the alpine, corresponding exactly to the three forms of *Anthocharis crameri*, Butler (*belia*, auct.), and which have been named sub-sp. *occidentalis*, Verity, true sub-sp. *crameri*, Btl., and sub-sp. *simplonia*, Freyer. In the first the green markings of the undersides are very wide-spread, greatly reducing the extent of the white spaces, and the green is mixed with black scales, thus being very dark; in the second it is much lesser in extent, giving the impression of irregular transverse bands on a white ground-colour, and it is mixed with bright yellow scaling; in the third, or alpine form, it has a peculiar diffused look, and it extends along the nervules longitudinally, especially towards the outer margin. In *cardamines* the two latter forms have been named, race *meridionalis*, Verity, which includes race *turritis*, O., in the extreme south, and race *montivaga*, Turati and Verity. The nymo-typical Linnean form belongs to the first and is Scandinavian.

The British *cardamines* differs from it in some specimens, which have a peculiar appearance of their own, not observed on the Continent; but they are mixed with specimens quite similar to the Linnean race. In the extreme specimens of the former, such as the one I have figured (*l.c.*), the wings are more elongated and narrower, and the apical black crescent extends enormously both in width and in length; on the upperside it reaches the posterior angle

* We must again call attention to the fact that we do not accept Dr. Verity's Nomenclature.—H.J.T.

MAY 15TH, 1916.

of the wing, tapering to a point; on the underside it is generally sharply truncated on the second cubital nervule; the marginal black dots at the ends of the nervules of the hindwings are very conspicuous. In Britain one meets with dwarf specimens in which the orange patch is very much reduced; they have been named ab. **hesperides** by Newnham [*Ent. Rec.*, vol. v., p. 97, 219 (1894)].

Leptidea sinapis, L. (form **transiens**, mihi, and form **bivittata**, mihi).—As I point out in *Rhopalocera Palaearctica*, page 343, Billberg, author of this generic name, spelt it correctly, but subsequent writers took it up as *Leptidia*, and the mistake has been carried on up to the present day. It will be good when the original descriptions are all cleared up so that literature can be freed from these mistakes.

Leptidea sinapis has two well defined seasonal forms; in the spring brood the underside of the hindwings is nearly entirely greyish-green, with only a few spaces of the white or yellowish ground-colour; the apical patch of the upperside is, moreover greyish, diffused, and wide-spread; in the summer brood the underside is white or yellowish with only two greyish bands across the hindwings; the apical patch has less extension and is of a deeper black colour.

The Linnean description applies equally well to the two broods, and Hübner named the spring one *lathyri*, so that the summer brood was generally considered the nymo-typical one. But unfortunately this has turned out incorrect on examination of the specimen left to us by Linnæus, so that the name *lathyri* ought to be dropped and another name given to the second brood; **bivittata** might be chosen as a simple descriptive name.

L. sinapis does not vary much in Europe; race *pseudoduponcheli*, Verity, from the South of France, and race *major*, Grund, from the Adriatic coast, are the only two distinct races. Individual variation tends towards the male form *diniensis*, Boisd., and the female form *erysimi*, Borkh., in which the markings disappear entirely on the undersides in the former, and on both sides in the latter. These get more and more abundant southwards during the summer; it would be interesting to have records of their capture as British aberrations.

The British race is quite similar in both generations to the nymo-typical one; it is a little smaller than the one from the South of Europe; a careful comparison also shows that the dark bands on the underside of the hindwings in the summer broods are more diffused than in Italian specimens, thus differing a little less from the spring brood than in the latter region; form *transiens*, mihi; "types" from the New Forest in July.

Colias hyale, L.—The specimens of this species collected for me near Braintree, in Essex, in August, 1900, are very similar to the late autumn specimens of Southern Europe; they are very small in size, of a very pale yellow with the discoidal spot of the hindwings large, but very pale too (more dark yellow than orange), and that of the forewing very large as compared to the size of the butterfly; the black shading at the base of the wings is very wide-spread; the black marginal border very wide, its inner half nearly reaching the hind margin, as well as its outer one, and the yellow spaces being limited in extent;

on the underside the hindwings are *suffused abundantly* with green scales and the row of black spots across the wings is very conspicuous.

In Italy there exists a marked difference between the spring brood and the following ones; the former, which I have named **vernalis** in *Rhopalocera Palaearctica*, is very much like the autumn one just described, but it never has the broad black marginal band of the latter.

My English specimens also have narrower and more pointed wings than Italian ones. Compared with a series of *C. hyale* from Cassel (Germany) the difference is quite trifling, so that we cannot talk of local races, but the species is evidently very sensitive to climate, and individuals which develop in the autumn in the south belong to the same form as those of the single or of the summer brood of Northern and Central Europe. The Linnean specimens are obviously of this form, so that the beautiful large and very brightly coloured summer generation of Southern Europe might be distinguished from it by the name **calida**, mihi, taking as the "types" of it the male and female from Tuscany, figured by me in *Rhopal. Palaearctica*, pl. xl, figs. 31 and 36.

Colias croceus, Fourcr. (*edusa*, Fabr.)—The late W. F. Kirby was the first to point out in his *Synonomic Catalogue of Diurnal Lepidoptera* (1871), that this name has the right of priority over the name *edusa*, Fabr., which had been generally adopted for the species, but it has been entirely ignored until quite recently, when Röber took it up in Seitz's *Gross-Schmetterlinge*.

C. croceus does not seem to be a true sedentary British species, its presence in England being due to migration, which the strong flight of the species greatly favours. I know of no local form produced by the few generations which sometimes survive in the British Islands, but specimens similar to the spring-brood form of the South of Europe (**vernalis**, Verity) seem to occur there in summer.

Gonepteryx rhamni, L.—The Linnean specimen is a male of the northern race: small, light yellow, discoidal spots so small and pale as to be quite inconspicuous. British specimens agree with it perfectly, thus differing markedly from the large, brightly-coloured race from Southern Europe, in which the discoidal spots are orange coloured; the latter I have named *transiens*. A still more distinct race occurs in Africa and Asia Minor: *meridionalis*, Röber.

Apatura pseudoiris, Verity (*iris*, auctorum), *Linnean Society's Journal, Zoology*, vol. xxxii., p. 180 (1913).

I refer those who may be interested in this point to my original exposition of the case, which has obliged me to rename this species, the name *iris* having been intended by Linnaeus to stand for its ally, generally known under the name *ilia*, Schiff.

I am not acquainted enough with the English *pseudoiris* to make out whether it is in any way different from the Continental races.

Limnitis camilla, L. (*sibilla*, L.)—The carelessness of early entomologists and of their successors created and carried down another misnomer to the present day. Nobody had taken the trouble apparently of reading over Linnæus's descriptions of the insects he named *camilla* and *sibilla*, until Stichel was wise enough to do so, and

found, as he observed in the *Entom. Zeitschr., Stutt.*, vol. xxi., p. 29-35 (1907), that the first entomologists who took up the Linnean nomenclature applied the two names without discovering whether the two descriptions really referred to the two European species generally so named. But the truth is that the description of *camilla* applies well to the insect generally known under the name *sibilla*, and found also in Britain, whereas the description of *sibilla* is actually very sibylline and cannot be applied to any insect we know of, having perhaps been drawn from some abnormal specimen of *camilla* itself; anyhow the name *camilla* has the right of priority on the one hand, and thereby refers to the British species on the other, so that there exists no doubt concerning it, and it should be adopted; the name *rivularis*, Scopoli, should designate the other species from the South of Europe.

L. camilla from Britain does not differ, to my knowledge, from the Continental one; if anything, it is larger and has wider white bands on the wings. There exists no specimen labelled either *camilla* or *sibilla* in the Linnean collection at Burlington House.

Polygonia c-album, L. (gen. vern. forma **carbonaria**, mihi).—The Linnean specimen of this species belongs to the form with the markings on the underside very dark, nearly black. In Italy this form invariably appears and entirely represents the species in late autumn, then hibernates and appears again on the wing in the early spring; the other brood flies in June and always has the underside either light brown or rich chestnut colour; the black markings of the upperside are, moreover, more limited in extent in the latter brood, and culminate in the very conspicuous **hutchinsonii**, Robson, in which they are excessively reduced, the ground colour being of a lighter fulvous and the wings much more obtusely angulated; this form never under any circumstances makes its appearance in the autumn and spring brood. I have insisted on this point as, curiously enough, there have been divergences in the assertions of observers on the subject [*Entomologist*, vol. xxix., page 358]. It would be well to make sure by new observations whether the black and the brown forms do occur together in both broods in the British Islands. Mr. Bethune-Baker's experience is that they are often bred from the same batch of *ova*, but artificial breeding in unnatural conditions may have results different from those which occur in nature; at high altitudes in the Maritime Alps I have found the different forms mixed together, but in Tuscany they are always restricted to one generation. Tutt's name **pallidior** may be used for specimens of the summer brood not so extreme in markings as *hutchinsonii*, and **variegata**, Tutt, for those with a particularly bright, marbled underside.

I wish to draw attention to the mistake commonly made by entomologists when talking of the summer brood of this and allied genera as "second brood"; this expression is correct concerning the vast majority of butterflies, but in this particular case the summer brood is in reality the first of the year, the second emerging in the autumn, and no imagines actually emerging from the chrysalids in the spring, when only hibernated specimens are on the wing.

A very distinct form of the hibernating brood, which occurs commonly in England, as well as in other parts of Europe, has the underside uniformly black with a shiny surface, the pattern scarcely

being detectable at all, whereas in the typical Linnean specimen this latter stands out well on a lighter ground colour; it might be distinguished by the name of **carbonaria**, mihi. The British race of the species does not differ much from the Continental ones even when compared with more southern forms; if anything, the pattern of the upperside stands out more boldly and the black markings are slightly more extended.

Vanessa io, L.—This species varies so little, both as regards individuals and geographical races, that a slight difference only appears when one compares specimens from Sardinia and Sicily with Continental ones, the latter being slightly larger and more brightly coloured (*sardoa*, Stdgr.).

Vanessa urticæ, L.—Insular variability is here exhibited to a high degree: in Italy individuals are nearly all exactly alike, exhibiting a very bright ground colour and comparatively restricted markings, in the British Islands one meets instead with a most extensive range of variation, from specimens very much like the afore-mentioned to the small, dark **polaris**, Stdgr., and to the aberrations which have been produced artificially in more exaggerated degrees than are ever found in nature.

Vanessa polychloros, L. (race **pulchrrior**, mihi).—The specimen in the collection of Linnæus belongs to the small individual variety in which the ground colour is pale and yellowish, and contains wide diffused areas of more or less clear yellow scaling; the blue lunules are pretty nearly obliterated on the forewings, and reduced in size and brightness on the hindwings; the underside differs strikingly from the more common form by the lighter ground colour of the outer half of the wings and by the presence of whitish areas along the costal margin of the forewings.

This form occurs more frequently in the north of Europe, and Mr. Bethune-Baker informs me that in the New Forest and elsewhere in England it is found in quite a good percentage of specimens, and that the English race is in a general way quite different from those of Southern Europe; it is exceptionally rare in the south, where, on the contrary, a large race, with a vivid reddish ground colour and very dark undersides largely predominates; I suggest distinguishing the latter by the name **pulchrrior**, taking as typical the race from the neighbourhood of Florence (Italy), which seems to be one of the most different from the small northern Linnean form. Most British specimens, although they are, on an average, somewhat smaller, are transitional to *pulchrrior*; the form known under the name of **pyromelas**, Fr., is even smaller than the nymotypical one, but it has a very vivid, bright red colouring, no yellow scales appearing at all, whilst the underside is remarkably black, nearly as in *V. io*; I think it is met with in Britain as an aberration.

Vanessa antiopa, L. (race **oreta**, mihi).—The specimen left to us by Linnaeus is, like the preceding, of a rather unusual form: small, with a narrow marginal band. It is very likely of American origin, as Linnaeus quotes America as the habitat of this species, as well as

Europe, showing he had received it from that country. If it be thought useful in future, when analysis has made still further progress, to distinguish the larger and brighter form by a name, *creta* would be a suitable one.

British specimens generally have a white margin instead of a yellow one. This is probably due to the fact they are immigrants, carried to England by their powerful flight, which have got discoloured by age. In Europe no specimen emerges from the chrysalis with a white border, but hibernated specimens always lose the yellow colouring, so that the so-called (see *P. c-album*) spring brood invariably exhibits this character. In the south, larger individuals are met with than in the north, and I chose the large Tuscan race, with wide clear marginal bands, as my type of *creta*.

Pyrameis atalanta, L.—Northern specimens of this species, as well as alpine ones, tend to have broader wings, wider crimson bands and larger apical white spaces than southern ones, which culminate in *italica*, Stichel, exhibiting such narrow bands as to be very often split up in two or three parts, and a tinge which is also less crimson, being of a warmer tone of red. The British race agrees with the Linnean specimen.

(To be continued.)

Gynandromorphism in a Mongrel Brood of *Lymantria dispar* and its race var. *japonica*. (With one plate.)

By P. A. H. MUSCHAMP, F.E.S.

I raised a certain number of larvæ of different degrees of mongrels of *Lymantria dispar* and its var. *japonica* this summer, and had the good fortune to obtain from one batch of eggs a fine lot of more or less gynandromorphous males. While rejoicing in my good fortune, I was far from surprised at it, for, according to logical conclusions drawn from Dr. Schweitzer's able writings on this subject in the *Transactions of the Zürich Entomological Society*, one out of every four batches of eggs from this particular degree of mongrelisation should give all gynandromorphous males. My moths were doubly welcome, firstly as a proof of the truth of Dr. Schweitzer's theory, secondly for their own sweet sakes.

A few words about the larvæ, these were all of them—pure breeds and mongrels—very healthy and active and good feeders. I fed them on oak, after trying a couple of families on poplar, which indeed they did not refuse, but ate reluctantly. I raised them in the house, as there are no oaks in my garden, nor indeed in my immediate neighbourhood. I devoted a whole room to their cages, and found that they were hardy enough to survive in the very uncertain temperature we have been accorded this year, and an atmosphere that I unduly but daily filled with tobacco smoke, for the mortality after the first day or two was practically nil—as a matter of fact, in my successful family I may say that there were no deaths in the larval state, so far as I could see, and I looked into the matter very carefully. From every batch of eggs I received a certain percentage more males than females; in the family about which I am writing 60 per cent. of the whole number of moths were females. There was a certain mortality among the pupæ,

about as many males as females dried up, but in almost every case the moths appear to have been fully developed, the wings coloured, etc. This mortality amounted to about 8 per cent. for all insects raised except for a small family of *japonica*, in which it was much higher—about 40 per cent. I do not know how to account for this, as my large pupæ breeding-case was in excellent order, all the different compartments being equally moist.

There have been in all 84 males, four of which—one thoroughly and three slightly—gynandromorphous—I sent at once to friends in England; the other 80 are on the table before me as I write. They vary in every possible degree between the normal insect and an insect with apparently female wings, thorax, and abdomen: all are small, however, and have male antennæ. I opened the abdomens of all the seven male insects that died in the pupal state, and found that one of them had a rudimentary row of ova, but all had normal male genitalia. In spite of this fact, I had but few couplings, though most of the males appeared most assiduous in their attentions; something seemed to be amiss, still there was nothing abnormal in any of the coupling organs in the specimens I examined.

From the family to which I here beg to call attention I obtained 127 females and 84 males. The females are on the whole rather large, and a few of them have the dark colouring of the var. *japonica*, one at least might pass for a thoroughbred *japonica*; several on the other hand are very small indeed, one being rather smaller than the normal male with a narrow male-like abdomen, but with female antennæ and genitalia. I need hardly say that, as all the larvæ hatched out together and were fed together, this last mentioned moth could hardly be a result of bad feeding. Of the 84 males all have male antennæ, and, in all that I have examined, complete male genitalia. In three males out of every five the abdomen is thicker than in the normal male, in a few cases the abdomen is very thick, and I suspect several must possess rudimentary ova as was the case with one of the seven which I broke up. The abdomen is sometimes normal in colour, generally with a few tiny tufts of white scales; sometimes the white scales predominate; in extreme cases all scales are apparently greyish white. The ground colour of the wing varies from the dark uniform brown of *japonica* male, hindwings having no pattern of any description (only one specimen, No. 34), to a pale *dispar* yellow-brown, several (*e.g.*, No. 11), have very dark markings on the gray ground colour. As for the gynandromorphous markings on the wings, they vary as much as it is possible to do so. Two seem perfectly normal male *dispar*, the other 82 mix the brown and the white in stripes, spots and patches in a delightfully irregular patchwork fashion. I will describe a few by way of example. To begin with, the two I have quoted above, Nos. 34 and 11. The first mentioned possesses two fine white stripes on the left upper wing, strongly contrasting with the almost black wing, other wings normal. The second has a broad white stripe and a white triangle on the right forewing, white spots on margin of left hindwing, two stripes running into one another, and two white spots on right hindwing and a few white scales on the abdomen. No. 1 (I have ticketed them all in order of birth) has central area of left forewing white ($\frac{1}{3}$ of whole), about the same amount of white on right forewing, but situated nearer the upper margin, left hindwing white with a

thickish brown stripe, right hindwing brown with a broad central white stripe, thorax and abdomen pale, latter thick. No. 2 has two big white patches on the left forewing, a big blotch of white on right forewing, covering about $\frac{1}{4}$ of the wing, four fantastic white stripes cover about $\frac{1}{2}$ of the left hindwing. Nos. 47, 58, 76, 79, and 80 have all four wings with a few brown spots and stripes, 76 being a fine large moth with a very thick white abdomen and thorax. No. 50 is a most variegated moth. Left forewing white stripes and patches on grey ground, right forewing white and abnormally large, the two hindwings are covered with alternate stripes of white and dark brown. Abdomen and thorax whitish brown, considerably thicker than normal. When the white colouring occurs at the apex of the forewing this is sometimes pulled out to a point, as it were, and thus becomes abnormally long, as in Nos. 10 and 65. No. 59 is a pigmy with no white patches or stripes, but with all the scales so pale that several of the females are dark by comparison. Four are badly crippled, one very badly. The whole series look very much like a partial patchworky reversion to a prehistoric form of *dispar* male rather than examples of partial gynandromorphism spread over a whole family, though, indeed, when one has read through Dr. Schweitzer's excellent article, one is quite convinced that they are really pure cases of gynandromorphism. But what is gynandromorphism? Does it display an unsettled struggle between male and female cells occurring in occasional insects? Is it not rather in this as in every isolated case a question of predominance of either the male or the female cells which should exist in every single insect, or indeed in every living thing born of male and female parents? A negro girl marries a white-skinned man and bears him a mulatto son and daughter, either of which may be either a simple mongrel, or "favour" either parent, irrespective of sex. The son is as much his mother's son as his father's child. In his cellular construction there should be, normally, a fairly equal proportion derived from either parent. We are not at all astonished when we find a female child resembling her father in all but sex. The male or female cells would seem to dominate according to an undiscovered, but probably not undiscoverable, law, and not necessarily in the same measure in every part of the organism. As a general rule certain primary and secondary organs are found in combination, generally because they are more or less dependent on one another; but this is evidently not a rule without exceptions.

Tutt (*British Lepidoptera*, vol. ii., p. 46), says that the modification of the sexual organs is the primary cause of the secondary sexual appearance, and whenever the organs are modified the secondary sexual characters as represented by wing shape, antennæ, colour, etc., follow as a natural response to the stimulus afforded by this modification of the actual sexual organs. Now what Tutt has said here is true in many, if not in most, cases of gynandromorphism that I have had the pleasure of examining; but it does not seem to be true in certain cases, and if collectors were more ready to sacrifice their cases of gynandromorphous insects on the altar of the microscope, would possibly prove false in a very fair percentage. May I refer to a case of gynandromorphism about which I wrote in these pages (vol. xxvi., p. 242-3, vol. xxvii., p. 155 and plate vi., fig. 5a), the case of an *Epinephele lycaon*. Now the wings and wing structure in this butterfly

were absolutely uninfluenced by the fact that the abdomen was full of ova and the genitalia crippled. Thus in these *dispar* moths the genitalia are in every specimen that I have examined male and uncrippled; these moths were, in spite of their thickened abdomens, most attentive to the females, and if I have but few batches of eggs, it may be fairly argued that the excited conduct of the males and their failure to pair at once made me fear for the condition of their wings, and therefore I was only too ready to condemn them to the poison bottles; as a matter of fact I have a batch of ova from the union of a very thick abdomened male and a female of the same batch, and these seem to be fertile. Then, too, out of seven male abdomens which I broke up only one had rudimentary ova. I might therefore conclude that a great majority of these mongrels exhibit cases of colour gynandromorphism, *i.e.*, the colour of scales, and hair of wings and body are modified either in parts—seemingly determined by the law of hazard—or altogether. Against this conclusion, however, an objection may be raised, *viz.*, the frequent thickening to a more or less marked degree of the abdomen. In certain specimens the abdomen is so broad that had I taken them in nature and displaying normal colours, I should certainly have examined the abdomens for traces of gynandromorphism, yet in six specimens out of every seven that I have thus examined, there are, we have seen, no signs of gynandromorphism, simply a thickening of the Malpighian organs and a mass of liquid matter; possibly then an admixture of imperfectly developed sexual organs internally. But if the latter, then according to the observations of Tutt and other authors, the ova should not be fertile. This is not the case, for the parents of a large number of the larvæ I raised this year were also partially gynandromorphous, *if this be gynandromorphism*. At the same time this partial gynandromorphism seems to *reduce* the possibilities of a fertile union. Thus the proportional percentage of difficulty in procuring fertile ova may perhaps be compared with the percentage of gynandromorphism remarked in the individual moths. *Dispar* mongrels having a simple stripe or blotch of white on one or two wings coupled as freely as pure-bred moths, those having more white and broader abdomens coupled with difficulty, and only one, having a very broad abdomen and nearly white wings, succeeded in coupling at all in the twelve hours I accorded them. One absolutely white male I left in the company of two females, one a sister and one a pure-bred *japonica* for two days, but no union was effected.

(To be concluded.)

Notes on the Micro-lepidoptera of South-West London.

By ALFRED SICH, F.E.S.

(Continued from p. 33.)

Argyresthia glaucinella, Zell.—Richmond, 1909. This small species I find usually at rest on the bark of oaks. Here it is not confined to trees of large size as has been suggested. Most of my specimens were taken in a small wood, planted in 1830, where the trees, as oaks, are still young. Some authors have mentioned horse chestnut as a food plant besides oak. This should probably read Spanish chestnut.

Argyresthia semifusca, Haw.—Two specimens out of a mixed hedge

at Ealing, August 20th, 1907. In the hedge there was whitethorn, sloe, oak, and beech. I believe the food plant of the larva is yet to be discovered. As far as I am aware this species has only been taken in England.

Argyresthia ephippella, Fab.—Chiswick, 1915. Very conspicuous when at rest on the dark stems of cherry trees. It flies round the trees in the late afternoon. On one occasion I saw a large number flying over and settling on some elm bushes. They evidently came from an adjacent orchard to enjoy the warmth, as the sun was shining hotly on the elms. This species here, as elsewhere, seems to be very constant in its markings.

Argyresthia nitidella, Fab.—Chiswick, Kingsbury, 1915, Richmond, Wimbledon. Very common in hedges and on the stems and leaves of thorns. On August 8th last a hedge on one side of a lane near Kingsbury was, to use the only suitable expression, almost alive with this species. They were mostly worn. This is a variable moth, and there is one very striking aberration: *ab. ossea*, Haw. The type is in the British Museum, and may be described as follows:—

Ground colour of forewings white with a slight ochreous tinge. There is a trace of the median streak and the fascia is visible on the dorsum. Apical cilia dark brown with a pale line at the base, preceded by a distinct dark brown line at the edge of the wing.

Specimens of this form occur without any trace of markings and look very different from the ordinary *nitidella*. I took one at Wimbledon in 1905 and another, marked like Haworth's type, at Richmond, 1909.

I have seen specimens connecting the aberration with the typical form. In the *Zoologist* for 1849, Appendix p. v., Stainton described, as a new species of this genus, a moth which he named *purpurascetella*. He remarks that this new species approximates so closely to *A. nitidella*, that he at first took one of his two specimens for a variety of that species. His finest specimen, the one he described, he beat out of birches with *A. retinella*, near Carron in Stirlingshire. The second specimen he took at Sheffield from a hawthorn hedge, "along with *nitidella* and *ephippella*." In the *Insecta Britannica*, p. 188, he again describes this insect, and remarks, "I do not feel quite confident that it is distinct from *nitidella*." In the *Manual* published five years later he omitted it. In consequence of Stainton's own remarks, subsequent writers naturally considered the insect, named *purpurascetella*, to be an aberration of *A. nitidella*, but this is not the case. Mr. J. H. Durrant and the writer have examined Stainton's type specimen, which is in the British Museum, and find that it is a rather small specimen of *Argyresthia spiniella*, Zell., under which it must sink as a synonym. When Stainton wrote he did not know the *spiniella* of Zeller, but considered it, doubtfully it is true, to be the *semitestacella* of Curtis. The Sheffield specimen is still smaller and worn. Why Stainton should have connected these specimens with *nitidella* remains a puzzle.

Argyresthia retinella, Zell.—Combe Wood, Wimbledon, Richmond, 1914. Not rare among birches. It varies much in the extent of the

dark markings. In some specimens these only take the form of numerous short strigulæ. In others the strigulæ are concentrated, forming a dark triangular mark with the base running along the costa to about two-thirds, and its apex just reaching the dorsum. Beyond this on the disc is a patch of dark scales running into the apex of the wing.

Argyresthia cornella, Fab.—Chiswick, Kingsbury, 1915. Not rare on the stems and leaves of apple trees, and sometimes on crab, which was doubtlessly its original food plant. It varies much in the shape and amount of the dark markings.

Argyresthia goedartella, L.—Chiswick, 1915, Wimbledon, Richmond. The imago may be taken abundantly by shaking the branches of birch trees. It is also easy to breed by gathering distorted birch catkins or by finding the full-grown larvæ crawling down the trunks. At Chiswick and Richmond it also occurs on alder. The imagines appear darker than those from birch. This species is excessively variable. Sometimes the forewings have an uniform golden appearance, but in most cases the usual markings may be noted as being of a deeper tint. These suffused forms occur in this district with the type.

Ab. *literella*, Haw.—Type in British Museum. This is a form in which the golden markings are much more slender than usual, and to the unaided eye do not appear to reach the upper edge of the wing, but by means of a strong lens three of them may be traced to the costa. Wood gives a good figure in his *Index*, fig. 1310. I have never taken this form, of which only two specimens appear to be known. Stephens had Haworth's specimen in his collection and took another in Darent Wood in 1846. Stainton himself captured a specimen among alders at Lewisham near the end of July, 1861 (*Ent. Ann.*, 1862, p. 132).

Argyresthia brockeella, Hb.—Chiswick, 1914. Richmond. Common among birches. The larva also occurs in distorted catkins. As a rule the moths of this genus do not wander far from the vicinity in which they were bred, but I once took a quite fresh specimen of this species at rest on a hawthorn growing in the open. Possibly some birch catkins, containing a full-grown larva, had been thrown down at the foot of the tree. This species also varies considerably. I have specimens in which the forewings are coppery golden with the markings hardly perceptible. There is a well marked aberration which is connected with the type by intermediate examples.

Ab. *aurivittella*, Haw.—Type in British Museum. The golden markings form a longitudinal dentate dash continuous from the base to the apex of the forewing, but only touching the costa at the base and the dorsum at the anal angle. There is a white dot at the apex and the rest of the wing is white. Wood, *Index*, fig. 1311. I have not taken this aberration, but possess half-a-dozen specimens from the late Dr. Mason's collection. Unfortunately they are all without data. Staudinger and Rebel, *Cat.* 1901, wrongly place this aberration under *A. goedartella*.

Blastotere atmoriella, Bankes.—I have not yet taken the imago in this district, but have found traces of the larval borings at Kew.

Cedestis farinatella, Dup.—Wimbledon, Richmond, 1910. The imago may be shaken out of Scotch pine. It is not difficult to find the larvæ in May; the whitened needles betray their presence.

(To be continued.)

The Upper Engadine in 1914.

By H. J. TURNER, F.E.S.

(Continued from page 65.)

August 1st early showed signs of a brilliant day, so we were up betimes for an hour or two of collecting before breakfast, as we intended later in the forenoon to gain if possible some definite knowledge of what was happening, of which portentous rumours had already reached us. The Suvretta road was again our early walk, and again most of the species seen on the morning after our arrival a week before were still in abundance, with some additions. A female of *Chrysophanus hippothoë* was taken of almost a uniform brown upperside, there being only a faint vestige of red on the disc, whilst the discoidals on the upper wings were big square black spots. A welcome addition was also a pair of *Brenthis ino* among a few somewhat small pine trees in and around an old quarry, at the extreme of the tree limit where there was very prolific, rough, flowery growth, apparently never cut, a spot which I always found to be much favoured by insects of most orders. *Loweia dorilis* was represented by a female somewhat large, dull in colour and worn. A male of *Latiorina orbitulus*, with a white ringed, staring discoidal on the forewings, was taken. *Polyommatus eros* males were increasing in numbers; later on it became absolutely abundant. *Zygaena purpuralis (pilosellae)* appeared from those seen to be of a small, obscurely marked, thinly scaled race. *Odezia atrata* put in an appearance, but nowhere did I at any time meet with it in any number. *Zygaena achilleae* was also scarce, or I did not hit its habitat, at any rate it only turned up as odd examples. An example of *Phycis ornata* was taken, and *Aphelia argentana* was seen as white spots dotted here and there at rest. This was the first day of *Pieris rapae*; it seemed to be in thousands everywhere and of a good size. Of course everywhere *Argynnis niobe* and *A. aglaia* were most obtrusive, but no striking aberration was met with in spite of a constant search.

Turning left from the hotel door took us almost immediately into collecting ground, turning to the right took us into the village, now almost a town, with its shops and huge caravansaries. This morning we found the place transformed from its usual peaceful quiet into a place of bustling activity. Everybody seemed on the move, piles of luggage, serious faces, groups of visitors and groups of natives reading the public notices with which all available walls, etc., were covered. Our friends were due to go on to Innsbruck *viâ* Sargans and Feldkirch, and we went on to the station with them. Here was congestion of luggage and passengers. Still with all that before us neither we nor our friends realised the gravity of what was going on, thinking that the trouble was all far eastern. Little did our friends know the turmoil that they were entering by going into Austria. We subsequently heard that

their train from the Arlberg tunnel to Innsbruck was full of turbulent soldiers called to the colours. Luckily they had only three days of hostile treatment, kept practically as prisoners at the hotel, and under suspicions and veiled threats. Glad were they to get back to Bâle in the middle of the next week, although that was far from being a haven of rest, for the town was full to overflowing with bewildered travellers of all nations, as well as with swarms of mobilized Swiss soldiers. It was stated that people slept in the streets. One of our friends looked over the bridge on to the river and was promptly arrested and charged with taking notes, and it was only with difficulty that he was able to give satisfactory proof of his *bona fides*.

Returning from the station we saw from the public notices that war had been declared, and that consequently the Swiss army was to mobilise on August 3rd, on which day, on the open plain of the Inn, 10,000 men were to assemble near Bevers, and that from that time the railways would be under the control of the military. A glance around the village of St. Moritz Bad showed us hotels being closed and barricaded up, visitors turned into the streets, waiters and attendants, German and Austrian, going to a man, all work of every kind at a standstill. Returning to the hotel at midday we found commotion. Although only a small one, the "Westend" had a cosmopolitan set of visitors, Germans, Austrians, Russians, Roumanians, Italians, Swiss, English, French, Dutch, etc., and these were all more or less on the move. Ourselves certainly less on the move, for although we saw the panic, neither Mrs. Turner nor I yet thought of turning homeward. I shall long remember the remark of a German gentleman, whose wife had been in tears for the past day or two, turning to us as he went from the dining-room, "It's well to live in England now." He felt the bitter curse of compulsory militarism.

The afternoon was the first clear opportunity I had had to pursue another of the objects for which I went to St. Moritz, to get some of the form of *Brenthis pales* known as var. *arsilache*, Hb., which Mr. A. H. Jones had taken some years previously around the small lakes in the woods lying between Campfer and St. Moritz Bad. Our way took us past the beautiful cemetery through the wood covering the old moraine to the lower Campfer Road, through pines and heather, and near one of the jumps made for the "skiers" in full view of the great Suvretta Hotel. *Pieris brassicae* was here and there putting in an occasional appearance with large individuals. *Erebia tyndarus* was flying, and the larvæ of a *Zygaena* sp. were noted. *Hesperia comma* was near the lower road, and among the heather were numerous examples of *Thamnomoma brunneata* (*pinetaria*), a species which in Britain only occurs far north. Zyganids, Blues, Hesperids, and Coenonymphas were sitting about the flowers as we passed across the road and streams. A short search brought us to a small lake surrounded by woods, the margins very marshy, and the whole gradually filling up, and in process of becoming a peat bed. Several other similar small "Sees" were subsequently met with, but none of them except the first produced *Brenthis pales* var. *arsilache*, Hb. On only one small area of the swampy ground on one side of this lake was the butterfly to be taken. Even on this spot all the specimens taken in numerous visits were captured settling or flitting from flower to flower, or plant to plant of the marsh cinquefoil, *Comarum palustre*, in an L-shaped

line, some 100 feet along the waterside of the extreme edge of the vegetation. This, of course, meant that I had to stand in the water to get them. I tried to find where they came from, but failed to see them approach from an outer area at any time, and those missed seemed to sink away one could not see where. These *arsilache* forms were most elusive, whereas the ordinary form of *pales*, mostly, I believe I am correct in saying all, males, were flying swiftly around. They were quite scarce, never at any time did I see more than two at once, and often five, ten, or fifteen minutes between my individual captures. No other species of Lepidoptera were noted while around this lake, but on coming away through the woods towards St. Moritz Bad a single *Erebia euryale* was met with, and no others seen. The scarcity of this usually very abundant *Erebia* in every spot or corner in which I collected, was most remarkable.

August 2nd was another of the beautiful days, and I quote two terse phrases from my note-book; "Insects in thousands," and "The first day of flies." The fore-noon was spent in the road that for weeks became a more or less usual walk one part or other of the day, the road leading to the Suvretta Thal. All species noted there before were as a rule in large numbers. Perhaps *Erebia tyndarus* was the most abundant. The one *E. epiphron* v. *cassiope* captured was probably a stray from the stony pastures far up on the slopes of Piz Nair. *E. euryale* was still very scarce. *E. melampus* was noted and probably in abundance. The object to-day was to get more *Brenthis ino*, but it was very scarce, or I failed to trace its headquarters, only one or two specimens were obtained among the few scattered trees some half way along the road. *Brenthis pales*, of course, were all examined. The females were large, in fact larger than one would expect at over 6,000ft. up. They were very yellow on the underside, hindwing well marked with silvery white, the form *isis*. Not one was of the *napaea* form with dark suffusion and purple sheen, like those found in more moist localities less exposed to the sun. All the thistles were now tenanted with such countless numbers of *Argynnis aglaia* and *A. niobe*, that it was quite easy to pick your specimens with finger and thumb. It was on this day that I obtained the beautiful aberration of *A. aglaia* (*niobe*?) previously described [See Proceed. S. Lond. Ent. and N.H.S. (1814-15), p. 133], on some thistles growing in the deserted garden of a villa formerly used by Prince Henry of Prussia.

"On the upperside the usual black markings are symmetrically run together and extended in area to form an irregular transverse black banding across all four wings, the submarginal orange lunules barely and most indefinitely defined, the black veining, wherever it is at all apparent, widely emphasised, and the usually wide band of orange inside the lunules only marked by small unconnected remnants. On the underside the forewings have the black spots run together to form a very irregular transverse band, no remnants of black lunules on the hindwings, and no trace of silver at the apex of wing; on the underside of the hindwings the basal silver spots are united radially into three large silver blotches, the middle transverse row of silver spots are completely suppressed, and the silver lunules of the outer margin are more or less extended basally into streaks, with only a slight indication of black scaling to the outer edge of these last silver spots."

Below this villa was a rough wall some four ft. six ins. high, with a made channel of mould along the top, in which grew abundance of the beautiful alpine snapdragon, *Linaria alpina*, and along the foot of this wall was a stream of ants which I traced for many yards in both directions, without finding either the nest or the destination, except that one end of the stream was lost in the garden of the villa. The species was a small one, but the ants were in great numbers. The form *eris* of *A. niobe* was in the majority, as usual in the Alps, but the typical silvery underside form was well represented, of differing degrees of development of the silver. Some of the females of *A. aglaia* were rich in colour and with much admixture of black scaling on the hindwings. The undersides of the hindwings also varied considerably from bright vivid green to a rich greenish-brown. The silver on the underside of the forewings was also well developed near the apex, one example having six well developed silver spots in the marginal row and four in a second row, two of which were quite well emphasised. The "blues" were quite a feature of this road. *Agriades thetis*, a few, *Latorina orbitulus*, an odd one, *Polyommatus eros* in swarms, *Aricia donzelii*, a couple, *Aricia medon* var. *alpina* and *Plebeius argyrognomon*, I noted among others. *A. thetis* was a small race. A male taken was of the *punctata* form, with a somewhat curiously aberrant underside of the forewings, in which a number of the spots were doubled by a small, separate and distinct white-circled black dot on their innerside. The blue of this example was more that of *icarus* than of typical male *thetis*. *P. eros* was the great drinker at the moist spots in the road; some had well-defined spots on the margin of the upperside of hindwings=*punctata* of *thetis*. Of *A. donzelii* I subsequently found the headquarters, which was not on this road at all, but on the slopes above the upper Campfer road, where *Geranium sylvaticum* grew in abundance among the pine trees. *Plebeius argyrognomon* contended with *P. eros* for the moisture in the road, so that it was often difficult to tell which species predominated. Some examples showed scarcely a trace of the red on the underside marginal markings, which were very dull brown. One example had a wide marginal black line at base of fringes. In some specimens there was a decided diminution of silver, and the eye-spots were very ill-defined and dull. A single *Urbicola comma* was taken. This was a species which was certainly rare here, for no where did it occur in more than in single examples. There were three species of *Zygaena*, a small form of *Z. purpuralis*, a few *Z. achilleae*, and a six-spotted *Zygaena*, probably small *filipendulae*. *Colias phicomone* were racing across the road from slope to slope, and all the *Heodes hippothöe* were by this time in rags. The flowers were still very dominant in the pastures only partially cut, and on rough ground the smaller pink gentians were still to be found in quantity as well as one of the wild pinks.

Among the Heterocera were plenty of *Acidalia flavolaria* and *Cleogene lutearia*, a few *Xanthorhoe sociata*, a good number of *Noctua festiva* and *Agrotis ocellina*, and a sprinkling of *Aphelia argentana*.

August 3rd was the day of the great mobilisation at Bevers; 10,000 men assembled and were equipped and distributed along the frontiers during the next few days. From this time it became quite impossible to go any long outings, no conveyances could be obtained, the trains were all taken over by the military, and we were isolated from the

world. Attempts to communicate with home by telegraph were destined to be failures, and worse than all money was not circulating and no change could be obtained. Some 200 or 300 visitors remained in St. Moritz, many of them each day henceforth endeavouring, but in vain, to get change at one or more of the banks when or if they opened for one short hour. No one, not even the wealthy Americans, could get the necessary "coppers" to use the tram between the Bad and Dorf, which henceforth usually ran empty.

Pieris brassicae was to-day out in abundance, and all the tall thistles on the steep banks along the upper Campfer road were well tenanted by them with a few *P. rapae* only. *Colias phicomone* were well out, and one could now get a few *C. palaeno* in the Alpina, where I rarely went for at least three weeks without seeing it, although netting a specimen was another thing. A nice white form of the female fell to my net this day, and shortly afterwards a single specimen of *Brenthis ephrosyne*, somewhat small. *Agriades thetis* was met with, but I have never come across this species at all common in any part of the Alps. *Adscita geryon* var. *chrysocephala* was now very common. One of the *Brenthis pales* taken had a very red underside hindwing, but although somewhat suffused it could not be called *isis*. A species I was always looking for was *Pieris napi*, but not a single specimen was seen during the whole of my stay. A specimen of *Nemeophila plantaginis* was a very nice form. The black area was much extended on all the wings and the usually yellow areas were almost pure white and much restricted, that on the hindwing consisting of only the large zigzag submarginal band. There was just a slight suggestion of yellow on the costa of the forewings.

In the afternoon I strolled down to the little lake near Campfer, and after some time secured a few more of the *arsilache* form of *B. pales*. Practically nothing else was seen again on this visit, except that several species of dragonfly were careering wildly over the lake.

(To be continued.)

The Disappearing *Pararge aegeria*.

Rev. C. R. N. BURROWS, M.A., F.E.S.

I have been much interested in the note in the issue for March of this year, on the disappearance of *Pararge aegeria* from the London district. I have somewhat carefully collected such records as are available to me, and find that not only in the London district, but in other localities also, the growing scarcity of this species has been noticed for many years. Harwood (*Entom.*, 1874, p. 129) writes of the Colchester district, "This species is quite rare in this part of the country now," and questions whether the general impression conveyed by books of that era, that the insect was "common everywhere" was ever justified. In the same magazine (1875, p. 20) Clifford tells the same story, mentioning, it would appear, Middlesex, Kent, and Hertfordshire. He says that even at its best, "in point of plentifulness it would be far below such a species as *A. ephrosyne*."

Jenner Weir (*Entom.*, 1887, p. 71), in a paper, "Notes on the comparative rarity of Rhopalocera once common in the neighbourhood of Lewes," says, "This species is yearly becoming rarer. Mr. Stanton Hillman, of Lewes, informs me that he has not seen one for years. In

my younger days it was common." Professor Meldola (*Entom.*, 1911, p. 146) discusses, "What has become of the British *Satyridæ*?" He says, "In the late sixties and early seventies, *P. aegeria* used to sun itself every year on the southern wall of our garden at Leyton, and was fairly common in the Forest. I have not seen it in the latter district for more than 20 years."

In the *Entomologist's Record*, 1895, p. 229, C. Fenn, speaking of the gradual disappearance of Lepidoptera from South-Eastern London and its neighbourhood—Lee, Lewisham, Eltham, Bexley, Chislehurst, etc., says, "*P. aegeria* . . . seems to have quite disappeared from the Lee, Eltham and Bexley district."

The destruction of woodlands, and the work of the suburban builder, are given as possible causes of this disappearance, but it may well be that there are other agencies at work. Was *P. aegeria* ever "common everywhere"? Ince (*Entom.*, 1887, p. 236) says that in Monmouthshire the species is not common. Pearce (*Entom.*, 1890, p. 230) says, that near Portsmouth, "it is local and rarely common." Robertson (*Entom.*, 1893, p. 131) says that at Swansea "it was scarce in 1892." Grove (*Entom.*, 1895, p. 151), of Guildford, says, "local, not common." Imms says (*Entom.*, 1898, p. 43), of Birmingham district, "getting scarce." Kemp says (*Entom.*, 1899, p. 260), at Swanage it occurred "in one wood only." Forsyth says (*Entom. Record*, 1905, p. 87), at Witherslack, "now extinct."

It would appear, therefore, that even in the West of England the tenure of this insect was somewhat precarious.

Again, the life-history is somewhat unusual. It is stated to have normally three or even four broods in the year. Some entomologists affirm that it may be stated to be continuously brooded during the open months of the year. It is stated to hibernate normally in the pupal stage. It may be that uncertainty of climatic conditions would threaten a delicately balanced constitution, and that in the eastern part of England these conditions endanger the race at a certain period. An unusually warm spell of weather in the winter might tempt the imago to emerge too early—a repetition of these conditions might well be ruinous. It is evident that the western parts of England suit the constitution of the insect, for it still maintains itself there.

For it appears from the records that it is from the eastern portions of England that this disappearance has been most marked. It has I believe been suggested that there is a continuous general shift of insect life from east to west, following the sun. This might apply to day-flying species, which would be enticed westward day by day.

There arises now the question whether the insect was ever general in the eastern and south-eastern counties of England. I have extracted from the *Entomologist*, the *Entomologist's Record*, etc., a number of records which, allowing for carelessness or inadvertance on my part, may serve to show that perhaps this part of the country never was closely covered by *P. aegeria*.

Of 129 records (rejecting as far as may be duplicates) I find between 1856 and 1913 only 18 distinctly eastern localities, and some of them are a little favoured by inclusion, *viz.*, S. Osyth, near Eastbourne, near Ely, Chinnor, Amersham, Monkswood, Lincoln, Guildford, Dover, Reigate, Dorking, Felixstowe, West Suffolk, Buckinghamshire, Hastings, North Kent, Loughton, West Surrey.

I myself took the insect freely at Loughton, near the "Robin Hood," May 15th to August 29th, 1871, after which I left the neighbourhood, and England. I find it in my Brentwood list, 1884-90, but it is absent from my records of Rainham, 1890-97, and I have never seen it at Mucking, 1897 to the present date. I collected for some years the woods near Ipswich, but never saw it there, unless my diary fails me.

I may add, that during my 18 years at Mucking I have not seen *P. megaera*.

NOTES ON COLLECTING, Etc.

ABERRATION OF *PLEBEIUS AEGON*.—A striking aberration of *Plebeius aegon* male was exhibited at the Entomological Society of France on February 23rd. On the upperside both fore- and hindwings have a whitish submarginal band; the discoidal spots are formed of white lunules; the general tint is of a clear violet; the whitish band includes a series of black submarginal spots. On the underside, the arrangement of the spots and lunules is the same; the submarginal spots are bordered interiorly with orange-yellow spots; the basal area is bluish; the ground colour is greyish. On the lower wings, near the base, is a series of circular white blotches.—H.J.T.

SALE OF THE COLLECTION OF MESSRS. F. H. AND E. A. WATERHOUSE.—On April 18th there was sold at Stevens's Rooms the collection of British Lepidoptera formed by the above named gentlemen; and especial interest attaches to the sale because it was the first one of any importance that has taken place since the war broke out, and consequently afforded an indication of the influence of this event on prices realised. The specimens were many of them old, and almost without exception data were wanting. Lot 2 was an amazing one; it was described in the catalogue as "*Colias erate?* caught by Frank A. Baley on Wimbledon Common, August, 1892." The query did not seem to lie with the species, for as far as I could see it was a genuine male *C. erate*; but it most certainly was a query how it got to fly on Wimbledon Common. I believe the nearest locality to London in which *C. erate* occurs normally is the vicinity of Constantinople, where Mr. P. P. Graves turned it up a few years ago. It is not, however until the Russian Steppes are reached that it becomes really abundant. The male of this species can certainly fly very strongly, but a flight of some three thousand miles seems improbable, to say the least of it, in the case of a non-migratory species, which I believe *C. erate* is. The price reached was 11s., about twenty times the value of a Russian specimen, and about a twentieth of the value, one would suppose, of a true Britisher. Of course the *bona fides* of the Messrs. Waterhouse is unquestionable and unquestioned. It is to be remembered that 1892 was a *C. hyale* year; but it is not possible that any form of this species should be mistaken for the male of *C. erate*. Two specimens of *Euvanessa antiopa*, taken in Yorkshire, fetched 22s. each; but one believed to be taken in Suffolk, with other species, only fetched 3s. A fine variety of *Pyrameis atalanta* only fetched 14s. There were three specimens of *Chrysophanus dispar*. A fine male and female, which realised £5 and £6 6s. respectively; and a male underside which changed hands at 40s. only. A good underside aberration of *Agriades thetis*, with other specimens, reached 16s., and a fine streaked *Polyom-*

matus icarus, with some others, was sold for a similar amount; but lot 32, a spotless aberration of the same species, only fetched 7s., and a streaked *A. thetis*, with others, was sold for 4s. Lot 35, comprising three aberrations of *A. coridon*, realised 11s. Mr. E. A. Waterhouse was the discoverer of the Cornwall locality for *Lycaena arion*, and there were a number of this species in the collection from there; they only realised about sixpence each. The lot of the collection was no. 45, an aberration of *Arctia caja*, with forewings entirely buff and without markings, probably an unique form. The specimen was not in good condition, with torn fringes, and the antennæ were missing. Mr. Janson secured it for the very good price of ten and half guineas! Lot 124a, including one fine streaked ab. of *A. coridon*, two black *Limentis sibilla*, and some bleached *Epinephele jurtina (janira)*, and others, reached 18s. In the same sale were included 79 varieties of *Abraxas grossulariata*, bred by the Rev. G. H. Raynor, which brought in a sum of about £37. There were four very fine ab. *iochalca*, which fetched 20s., 22s., 52s. 6d. and 52s. 6d. per specimen; an example of *centralipuncta* reached 26s.; a very extreme *lacticolor*, 53s.; an *albipalliata*, 20s.; a fine female *hazeleighensis*, 40s.; and examples of the *lutea* form, 21s.; the remainder of the lots sold for a few shillings per specimen only. There were a few lots of books. A fine copy of Hewitson's "Exotic Lepidoptera" fetched fourteen guineas; a copy of Hofmann's "Gross Schmetterlinge Europas" was cheap at 20s.—W. G. SHELDON (F.E.S.), Youlgrave, S. Croydon.

BUTTERFLIES OF MARTIGNY.—In Mr. Earl's very interesting account of the butterflies he found at Martigny I see he was surprised at taking there two *Chrysophanus hippothoë*, and speaks of this butterfly as a high altitude insect, mentioning 5000ft. to 6000ft. It may be of interest to state that I have taken *C. hippothoë* between Aigle and Sepey at 2700ft., at Cornaux above Montreux, 2600ft., at Eclépens 1370ft, and at Yverdon 1300ft. (approximate heights). At the first two places they were common; at Eclépens two ♂s, and one ♀ was also taken on the far *Apatura* road by Mr. B. Warren, but not the same year; at Yverdon one ♀ on lakeside road to Yvonand. As was Mr. Earl surprised at finding this insect at Martigny, so was I at finding it at these last two mentioned places. It would be very interesting to know if they occur commonly in this region or anywhere else at about this lower altitude. As to the Montreux region, I believe they occur commonly at the heights I have named, and probably flourished much lower down in the past, disappearing as the lands were drained and cultivated.—R. TEMPERLEY.

[I used to take it at Veytaux at about 1,550ft.; from 2,000ft. to 4,000ft. is about its usual range, above this the mountain form *eurybia* is more usual, but Mürren is an exception, where even in the Blumenthal, well over 6,000ft., the typical form occurs.—G.W.]

CURRENT NOTES AND SHORT NOTICES.

In the *Irish Naturalist* for February, the Rev. W. H. Johnson gives lists with notes of the *Ichneumonidae* and *Braconidae* taken by him in Armagh and Donegal. There are but few students who take up the study of this "other order," and Mr. Johnson is to be congratulated upon the work he is doing in this part of the British Isles, where

observers in the past have been so few and far between. Of course the publication of the series of volumes on this group by Mr. Claude Morley has much facilitated the study of Ichneumonids by those who are remote from centres where opportunities for comparison are obtainable.

From the February number of the *Entomological News* I quote the following remark for what it is worth. The writer, Ernst Schwarz, of St. Louis, U.S.A., is giving notes on *Catocala titania*, and amongst his observations he says, "At 8.30 that evening (June 25th), I observed the male courting the female, much like a sparrow, trying to make itself attractive by many peculiar antics, such as running from one side of the female to the other, with wings half extended, exposing the beautiful colour of the hindwings. In all these performances the wings were vibrated violently."

Dr. Hancock of Chicago, has an important article on the Biology of the Orthoptera in the *Ent. News* for February, entitled "Pink Katy-dids and the Inheritance of Pink Coloration." After stating the chief points in the life-history of the *Amblycorypha*, and the views of others who have carried on series of experiments and observations, the writer deals with the question under the following heads. (1) Experiments in crossing the pink and green forms of the Katy-did. (2) Source of the Material for the Experiment: The original pink female. (3) The first successful experiment in crossing this female with a male of the normal green form. (4) Eggs laid on the ground. (5) Unexpected length of time required in hatching these 1912 eggs; some two years others three years in hatching. (6) The pink and green progeny of 1914; more pinks than greens: alternative inheritance. (7) Colour of the 1914 progeny: greater individual differences in the males. (8) The belated 1915 progeny: hatching from 1912 eggs which passed through the rigours of three winters. (9) Habits of pink Katy-dids; their eggs and how they are laid. In the summary of his conclusions the writer points out that (1) The pink and green forms freely cross. (2) The progeny showed two types; the sexes were about evenly divided in the two forms. (3) The pink and green colours both hereditary and not dependent on absorption of colouring matter with the food. (4) Egg-laying in the ground, a habit different from that of other Katy-dids. (5) The remarkable endurance of physical conditions in remaining two and three years in the oval stage.

The *Scottish Naturalist* for February has a short appreciative notice of Mr. Donisthorpe's *Ants*, and considers it a work of the first importance. In *Science*, for March, Prof. Wheeler has a very generous and appreciative review of the book. The *Journal of Economic Biology*, the *Naturalist*, and *Knowledge* all notice the work, and in the *Times* literary supplement, on February 17th, was a long and very favourable review.

In the *Ent. News* for March we see that a Bill has recently been introduced in the House of Representatives "To discontinue the use of the Fahrenheit thermometer scale in Government publications." Let us hope that after the war Great Britain will not only follow this example, but go further and adopt a decimal coinage, weights and measures.

An announcement has been made of the publication of "The Invertebrate Fauna of Nottinghamshire," under the authority of the Nottingham Naturalists Society, to mark the fact that the Society has

completed the fiftieth year of its existence. Material has been collected from many sources, and the editorial part will be in the hands of Professor J. W. Carr, M.A., F.L.S., F.E.S., of University College, Nottingham. From specimen pages perused there is not only a list of species, but localities, habits, and other notes are copiously given, and each section will be introduced by general remarks on its characteristics, economy, etc.

It is announced in the daily papers that another area has been bequeathed for the preservation of the fauna and flora. The late John Frederick Cheetham, formerly M.P. for Stalybridge, has left the woodland adjoining his house "Eastwood," near Stalybridge, to be set apart as a sanctuary or reserve for the district. It was a matter of great interest to those Fellows of the Entomological Society of London who were present at the Annual Meeting, to learn from the Address read by the Hon. N. C. Rothschild, what a number of these areas already exist in this country and throughout the world.

In the *Ent. Mo. Mag.* for March, Mr. F. W. Edwards, B.A., has an article endeavouring to put straight the names of several common British Diptera, which had become almost hopelessly tangled owing to incorrect application, or long persistent failure to consult and compare the work of the original authors with the gradual acquisitions of knowledge.

In the *Naturalist* for March, Mr. J. W. H. Harrison, B.Sc., introduced the Neuropteran, *Aleuropteryx (Helicoconis) lutea*, as a species new to Britain. His specimens were captured by himself in July last year while beating larches and birches at Wolsingham, Co. Durham. This species has previously been recorded from Sweden, Finland, N. Siberia, and subalpine districts in Austria.

In the *Ent. Mo. Mag.* for January, Mr. E. Meyrick announces a species of Lepidoptera as new to Britain. A specimen of *Depressaria hepatoriella* was taken in Scotland by the Rev. J. W. Metcalfe, and identified as this species by Mr. Meyrick. It is related to *D. cincella*, and occurs from the Carinthian Alps to Lapland, and has been reported from Holland, but is noted as being very local wherever it occurs. At the same time, Mr. Meyrick reports the occurrence of a New Zealand species of *Lyonetiidae*, *Dryadula pactolia* on more than one occasion in the cellars of Mr. C. G. Clutterbuck, of Gloucester. It is suggested that this species may have been imported among ferns received at a neighbouring nursery.

We regret to announce the death of Wm. Brooks, of Grange Hall, near Rotherham, who was run over by a motor-bus and instantaneously killed some weeks ago. He was known as a collector of British Lepidoptera. In the "Entomologist," 1884, page 233, is a note from him announcing *Callimorpha hera* from Devonshire. For the next two or three years, he alone regularly announced his captures of this species and gave the precise locality as Star-cross. The authenticity of these records were, strange to say, considerably doubted at the time, until our old friend, Mr. J. Jäger, in 1886 and subsequent years, not only captured long series, but with Mr. G. Porritt and others, obtained larvæ and bred the species in numbers. More recently Mr. Brooks bred *Manduca atropos* in large numbers, and many of our collections contain fine examples of this species of his breeding.

In the *Entomologist* for March, Prof. Fred V. Theobald, M.A.,

describes two new species of *Aphidae*, both found in ants' nests by Mr. W. C. Crawley, near Porlock, in 1915. *Macrosiphum myrmecophilum* was found with *Donisthorpea nigra* (*Lasius niger*) at Porlock, it had been previously found in Co. Kerry with the same species of ant by Mr. Donisthorpe. *Hyalopteroides pallida* is the type of a new genus, *Hyalopteroides*. This species was discovered at Porlock Weir, in a nest of *Donisthorpea nigra* (*Lasius niger*). Numerous figures of details are given in the text.

Mr. W. J. Lucas, in an article in the March number of the *Entomologist*, gives a summary of the observations on British Orthoptera in 1915. The same writer has two papers, one on "Cockroaches" and another on "Crickets," in the "Proceedings of the South-London Entomological and N.H.S.," for 1915, now in the press, which added to his previous papers in the same series, will be useful to those taking up the study of the British representatives of this order.

The month's article on "Popular and Practical Entomology," in the *Canadian Ent.* for February, is an account of our old friend (enemy) of the chalk hills, *Depressaria heracleana*, which appears to be even too abundant on the farms of some parts of N. America. Although the species has been known so well for so many years, Stainton's remarks, "N.H. Tin.," vol. vi., p. 112 (1861), as to its oviposition have apparently held good. "The egg of this species is no doubt deposited in spring on the undeveloped umbels of *Heracleum sphondylium* by the hibernated female." In more than 55 years we have succeeded at length in reaching the following stage, "The eggs are small, more or less rectangular in outline, with rough edges, measuring .32-.40 mm. in length, and .17-.19 mm. in width. They are pearly white in colour and ribbed longitudinally." ("Can. Ent.," xlviii., 37).

Mr. F. H. Woolley Dod has another of his numerous articles on the *Noctuidae* of Western Canada in the *Canadian Entomologist* for March. With his many years of field-work, his knowledge of this group is not only extensive but deep, and his writings are gradually clearing the muddle in which most of the groups of this family were merged by the ignorance from want of material and first-hand knowledge of previous workers. By the way, Mr. Woolley Dod is now stationed in London in the Canadian contingent, and our local Societies might extend their welcome to him at their meetings.

We have received a long "Phenological Report on First Appearances of Birds, Insects, etc., and First Flowering of Plants in Dorset in 1914," by our correspondent, Mr. W. Parkinson Curtis, F.E.S., reprinted from the "*Proc. Dorset N.H. and Ant. Field Club.*" This is not a mere mass of figures, but full of very interesting details on most of the data, which could only have been obtained by many hours of close observation on many occasions. When the author forwarded the report, he wrote promising us another article containing an account of his further observations on the question of Birds attacking Insects.

In No. 2 of the present year's issue of the *Bull. Soc. ent. France*, is a note on the Time of Emergence of various species of Lepidoptera, by J. de Joannis. The writer urges the possible usefulness of such data if sufficient be obtained. Will our readers please note.

The South-London Entomological and N.H. Society has recently issued its Annual List of Fixtures for 1916-17. We note that there will be some half-a-dozen Field Meetings during the year. On May

20th to Wisley, on June 12th, a whole day (Whit-Monday), to High Wycombe, on July 22nd to Box Hill, on August 12th, a whole day, to Royston, Herts, on September 9th to Westerham, and possibly a date in October for a Fungus Foray.

The Annual Congress of the South-Eastern Union of Scientific Societies is announced to take place on May 24th, 25th, 26th, and 27th, at Tunbridge Wells, where it was initiated just 21 years ago. The President-elect is the Rev. T. R. R. Stebbing, M.A., F.R.S., who was the first President of the Union. A glance through the list of fixtures shows a varied and extended series of events, consisting, in addition to the various business meetings of the delegates, of papers, lectures, and discussions, morning and evening, with visits to places of interest each afternoon. We are sorry to see no item in the programme of entomological interest, and very little to justify the title of "South-Eastern Naturalist," which the capital annual volume of the Union bears. We wish the Union a successful gathering.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

March 1st, 1916.—**ABERRATION OF ARCTIA CAJA, AND A BRITISH LATERNA NODICOLELLA.**—Mr. J. H. Durrant exhibited a fine variety of *Arctia caja*, L., ♂, with dark fuscous hindwings; also a specimen of *Laverna nodicolella*, Fuchs, taken at Westerham, Kent, June 24th, 1915, by Mr. P. A. Buxton. This species had not been recorded as British.

BUTTERFLIES FROM WAIGEU.—Mr. G. Talbot, on behalf of Mr. J. J. Joicey, several species of Rhopalocera from Waigeu, and contributed notes.

A HAWK-MOTH FOUND IN THE STOMACH OF A FISH IN SUVA HARBOUR, FIJI.—Prof. Poulton, a specimen of *Chromis erotus*, Cr. (*eros*, Boisd.), from the stomach of a fish, kindly sent to him by Lieut. L. H. Mosse-Robinson; also eighteen *Danaïd chrysippus* captured between November 3rd, 1914, and February 15th, 1915, at or near Sa. Isabel, on the north coast of Fernando Po.

A BEE BEARING POLLINIA ON ALL ITS LEGS.—Mr. G. Meade-Waldo, a South African carpenter bee (*Xylocopa hottentota*, Smith), the tarsi of all three pairs of legs bearing the pollinia of some Asclepiad flower.

A CURIOUS OLD ENTOMOLOGICAL BOOK.—Mr. Hamilton Druce, a book he had lately come across entitled "The indigenous insects of the region of Petersburg," by John Cederjhelm, published at Leipzig in 1798.

A BRITISH (?) SIREX JUVENCUS.—The Rev. F. D. Morice, a specimen of true *Sirex juvenicus*, ♀, F., from Wakefield in Yorkshire; also a series of photo-micrographs to illustrate specific characters in the ovipositors or "saws" of various Cimbicids.

CELLS OF VARIOUS HYMENOPTERA.—Mr. Neviuson, the cells of various species of the genera *Odynerus*, *Eumenes*, and *Osmia*; also examples of *Cimbeæ* and its allies, in illustration of Mr. Morice's exhibit.

PUPAL PADDLES OF MOSQUITOES.—Mr. A. Bacot, a series of lantern slides showing outline camera drawings of preparations of the anal fins or paddles of mosquito pupæ; also a slide showing outline of eggs of *Eretmopodites quinquevittatus*, illustrating the remarkable range of size.

The following Papers were read:—

"On Specific and Mimetic Relationships in the genus *Heliconius*, L.," by H. Eltringham, M.A., D.Sc., F.E.S.

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

March 15th, 1916.—DEATH OF A MEMBER OF THE COUNCIL.—The death was announced of Mr. G. Meade-Waldo, a Member of the Council.

ELECTION OF FELLOWS.—Mr. Ralph Headley Moore, B.A., Heaththorpe, Plymouth, Devon, and Lieut. F. W. Sowerley, R.N.D., Cleethorpes, Lincolnshire, were elected Fellows of the Society.

PROPOSED ALTERATION OF BYE-LAWS.—The proposed alterations in the Bye-laws, being in the hands of all Fellows present, were taken as read for the third time.

LEPIDOPTERA FROM GALLIPOLI.—Mr. D. A. J. Buxton, who was present as a visitor, exhibited a small collection, mostly butterflies, taken on the Gallipoli Peninsula, where he was stationed from April to October, 1915.

PINK-TINTED *PIERIS BRASSICÆ*.—Mr. L. W. Newman exhibited on behalf of Mr. Arthur Horne, of Aberdeen, two pairs (a part of a series) of *Pieris brassicæ* bred by himself from wild Aberdeenshire larvæ, the ♂s especially showing a decided pink coloration all over the wings.

AFRICAN RHOPALOCERA.—Mr. G. Talbot, on behalf of Mr. J. J. Joyce, exhibited several interesting African Rhopalocera.

SECOND GENERATION OF HYBRID *PEDICULUS HUMANUS* AND *P. CAPITIS*.—Mr. A. Bacot exhibited specimens of *Pediculus humanus* (*vestimenti*), *P. capitis*, and the 2nd generation of hybrids resulting from a pairing between *P. capitis* male and *P. humanus* female.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

March 23rd, 1916.—NEW MEMBER.—Mr. E. A. Syms, of Wanstead, was elected a member.

EXHIBIT OF S. AMERICAN RHOPALOCERA.—The Rev. F. M. B. Carr, a large number of species of Lepidoptera taken at Tolina, some 6000ft. high in the Colombian Andes, including species of *Morpha*, *Papilio*, *Catagramma*, *Mechanitis*, *Danaüs*, *Peridroma*, *Coloenis*, *Dismorphia*, *Heliconius*, *Hymenitis*, *Megalura*, *Dynamine*, etc.

ABERRATIONS OF BRITISH LEPIDOPTERA.—Mr. Carr also showed aberrations from N. Staffordshire, including dwarf *Euchloë eardamines*, dark forms of *Hydriomena impluviata*, a series of pale and dark forms of *Tephrosia crepuscularia*, with one example having three dark wings and one pale wing, and a series of *Adscita geryon*.

Mr. Leeds, *Acronicta leporina* type and var. *bradypporina*, a black banded form of *Agriopsis aprilina*, an extreme dark form of *Xylophasia monoglypha*, *Dicycla oo* from Hunts, including ab. *renago*, etc.

A STRIKING ABERRATION OF *RHAGIUM BIFASCIATUM*.—Mr. Stallman, a living specimen of the beetle *Rhagium bifasciatum* with the elytra devoid of dark pigment, pale and unicolorous. It was not an immature specimen, and was taken at Leith Hill.

EXHIBIT OF PAPILIOS.—Mr. Edwards, several species of the genus *Papilio* from S. America.

UNUSUALLY LARGE AND SMALL SPECIMENS OF LEPIDOPTERA.—Mr. Curwen, a box of European Lepidoptera showing extremes in size.

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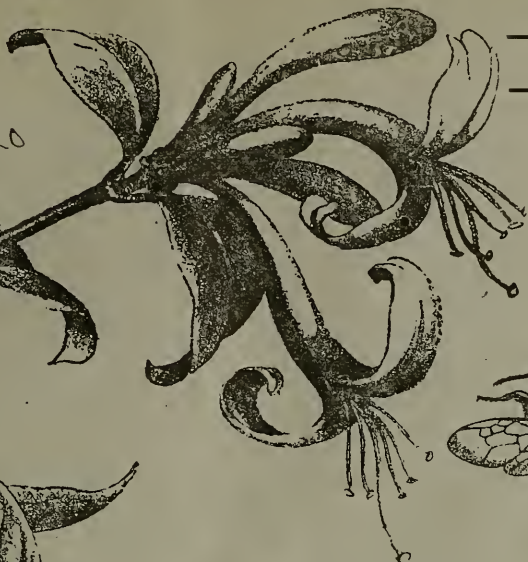
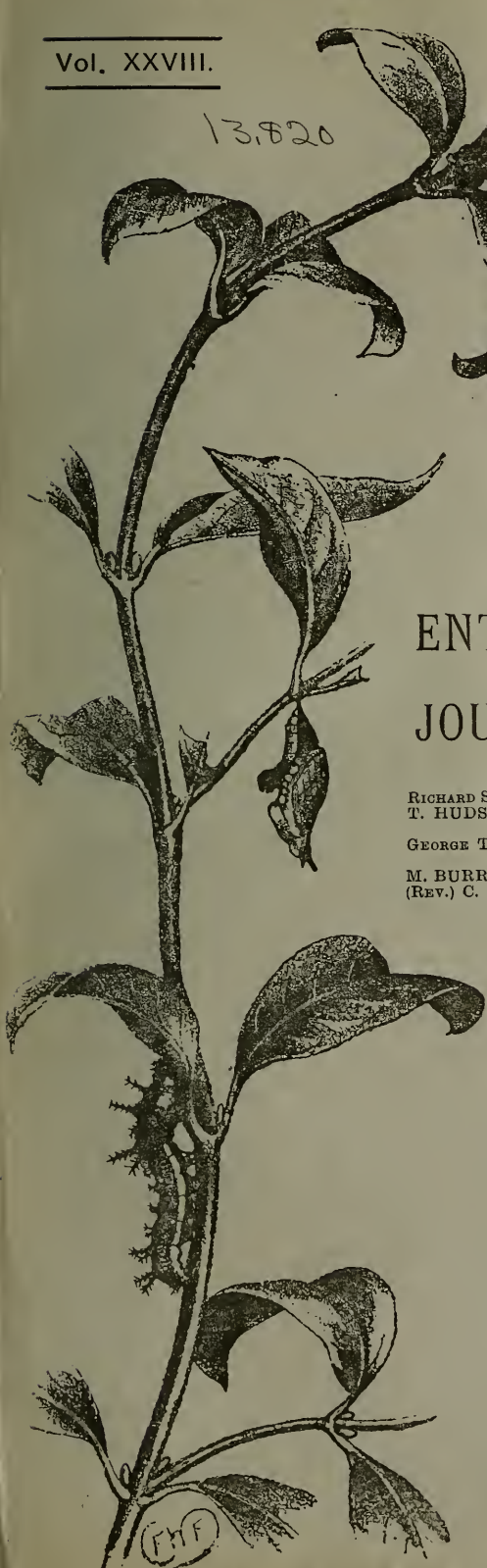
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Epitritus wheeleri, n. sp., an Ant new to Science; with Notes on the Genus Epitritus, Emery.

By H. DONISTHORPE, F.Z.S., F.E.S.

♂ *Pale reddish-yellow, head, thorax, and petiole rugose, post-petiole and gaster shining. Clavate hairs very sparse, except on the gaster; round white squamiform hairs all over head and thorax.*

Head cordiform, longer in proportion to its breadth than in *E. emmae*, but shorter than in *E. clypeatus*; *cheeks* with one distinct long clavate hair; *clypeus* triangular, reaching between the antennæ as far back as their insertion, longer than in *E. emmae*, but a little shorter than in *E. clypeatus*; *mandibles* long, somewhat hollow on their innerside, furnished with a pointed tooth in the centre of its upper edge, and two longer teeth at the apex, one proceeding from the upper and the other from the lower edge; *antennæ*: *scape* broadest near middle, internal border rounded and arched, but not angled in the centre (as is the case in *E. clypeatus* and less so in *E. emmae*), with three round white squamiform hairs placed along the edge, between the base and the centre; *funiculus* with the last joint very long, second joint broader and longer than the first, but hardly broader than the last, first joint longer than broad.

Thorax: *prothorax* with one distinct long clavate hair placed at each humeral angle; *epinotal spines* sharp, somewhat obscured from above by two hairs, one clavate, the other squamiform. *Petiole* elongate anteriorly, nodiform posteriorly and higher than the post petiole; *post petiole* considerably broader than the petiole, with a thin layer of whitish spongiform membrane at the junction with the gaster, and a thicker layer at the sides and beneath; *gaster* long oval, longitudinally striate at the base. *Long*, 1.6mm.

Described from a single worker taken by Dr. R. C. L. Perkins, at Honolulu (Oahu), Hawaiian Islands, who dug it up at the root of a tree in company with *Monomorium* and *Cardiocondyla*. I have named this ant in honour of my friend Professor Wheeler. Very few species of the genus *Epitritus* are known, they are all small yellow hypogæic ants of obscure habits, and little is known about them except that they are found under deeply embedded stones, and at roots of trees, etc. They probably often accompany other ants, on whose brood they prey, and are all extremely rare, no doubt on account of their subterranean existence. They have only four-jointed antennæ, the lowest number possessed by any ant.

The genus *Epitritus* (Haliday *in litt.*), was described by Emery [*Bull. Soc. Ent. Ital.*, 1, 136 (1869)], for the reception of a single species *E. argiolus* (Haliday *in litt.*), which was first taken in Italy by A. H. Haliday.

The following are the species known previously, from the descriptions of all of which *E. wheeleri* differs considerably:—

1. *Epitritus argiolus*, Emery.—*Bull. Soc. Ent. Ital.*, 1, 136-7 (1869). Occurs under deeply embedded stones; Italy, France, Corsica.

2. *Epitritus emmae*, Emery.—*Bull. Soc. Ent. Ital.*, 22, 70 (1890). West Indies: Havana, St. Vincent, St. Thomas.

3. *Epitritus eurycerus*, Emery.—*Termes Fuzetek*, 20, 581 (1897). New Guinea.

4. *Epitritus clypeatus*, Szabó.—*Arch. Zool.*, 1 (1909). Singapore, New Guinea.

E. clypeatus, Szabó, var. *malesiana*, Forel.—*Zool. Jahrb. Syst.*, 36,

JUNE 15TH, 1916.

83 (1913). Sumatra; found in the earth-carton nest of *Hamitermes dentatus*, Hav.

5. *Epitritus mandibularis*, Szabó.—*Arch. Zool.*, 1 (1909). German East Africa.

6. *Epitritus marginatus*, Santschi.—*Voyage Alluaud et Jeannel dans l'Afrique Orientale*, Hym., 114, Tf. 21 (1814).

The disappearing *Pararge aegeria*.

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

The subject I chose for a presidential address at the last annual meeting of the Hertfordshire Natural History Society was "Hertfordshire Satyrid Butterflies: Some disappearing Species: With a short study of *Pararge aegeria*, L." I have consequently been very greatly interested in the Rev. C. R. N. Burrows' article in the last issue and in the various notes which have appeared with regard to this insect. In my address I dealt at some length with the eight Satyrid species which are recorded in our county list as occurring, or having occurred, in our county. They are:—*Pararge aegeria*, *P. megaera*, *Aphantopus hyperantus*, *Epinephele tithonus*, *E. jurtina*, *Satyrus semele*, *Coenonympha pamphilus*, and *Melanargia galatea*. Of these eight species three, *P. aegeria*, *S. semele*, and *M. galatea*, are, I fear, no longer to be found in Hertfordshire. One species, *P. megaera*, has disappeared in late years in certain districts, while in others it still maintains itself and in places is fairly abundant. The other four are common, though it is doubtful if they are any of them as plentiful, at any rate in the southern parts of the county bordering on the metropolitan area, as they were a few years ago. With regard to *P. megaera*, of which Mr. Burrows speaks in his closing sentence, I drew attention to the fact that while it was not a rare species at St. Albans when I was a boy, it has now quite disappeared from the district so far as my observation goes. My last record is in June, 1902. But it still occurs in the northern parts of the county, in such localities as Royston and Hitchin. May I point out with regard to Mr. Burrows' quotation from the late Professor Meldola's article in the *Entomologist*, 1911, p. 147, that the remarks there made apply to *megaera* and not to *aegeria* as stated. A correction was inserted on p. 187 of the same volume.

So far as *aegeria* is concerned I cannot do better than reproduce what I said to the members of the Hertfordshire Society on the occasion I have referred to:—"I am very much afraid that *Pararge aegeria* can no longer be regarded as occurring in the county. I do not think that in the memory of living entomologists it was ever really abundant anywhere in Hertfordshire, and in recent years it has been gradually dwindling in numbers in those places where it used to occur, until at last, I fear, it has died out altogether, or is quite on the verge of extinction. I have never met with it anywhere in the neighbourhood of St. Albans. Our only county records are Stevenage (Matthews), Haileybury (School List), Watford (Spencer), and Tring. The first and last named of these localities are the only ones in which var. *egerides* appears to have been seen in any abundance, for Mr. H. T. Matthews, of Berkeley House, Stevenage, wrote me in 1901 or 1902 that he found it to be fairly common near woods in his neighbourhood, and it is recorded by several observers from more than one spot in the vicinity

of Tring, on both sides of the border line separating Herts from Bucks. But most of the records are getting ancient, dating back to the 'eighties,' and the last observation of the appearance of the Speckled Wood butterfly in our county I can hear of was of a solitary straggler in 1912 or 1913. Mr. A. T. Goodson writes me under date of February 13th, 1916:—'I netted a single specimen two or three years ago near Dancer's End, but owing to it being a female I liberated it, as it was getting so scarce.' Mr. Goodson has not again met with it at this spot, which is one of the most likely places in which to look for it. He tells me it was not rare on the Bucks border up to the year 1899. He searched vainly for it in the years 1901 and 1902. Another spot where it used to occur in some abundance was the second hollow way near Tring, but it has also disappeared from that locality. I have failed to learn that the insect is still to be found at Stevenage. The large stretches of woodland in that part of the country might still afford it a home, but the naturalists in the district do not appear to have seen it recently; indeed, Mr. H. A. Leeds, of Knebworth, tells me that he has not met with *egerides* in the county. I fear, too, that it has gone from its old haunts at Haileybury. It used to occur on the Roman road, and it is shown in the 1902 edition of the School List as being represented by specimens in the Haileybury Museum. Mr. L. E. B. Wimbush, who until recently did much good entomological work in the neighbourhood of the School, informs me that the species has not been seen for many years. Dr. A. H. Foster, who has collected at Hitchin from boyhood, has never met with *egerides*, but he has seen specimens taken by Messrs. Grellet in Wain Wood, near Preston about twelve years ago. In the neighbouring county of Bucks *egerides* is still to be found, especially in the extreme northern parts, on the Northants border. Mr. Rowland-Brown found the species quite common in 1909 or 1910 in a wood in which *Leptosia sinapis* also occurred, and he says it actually swarmed in May, 1910, and May, 1914, in another wood rather more in Northants. He also informs me that while it is well distributed in Buckinghamshire it is never common in the beech woods of the central region; and in an article in a recent number of the *Entomologist* he expresses the opinion that it is disappearing from this area. It was reported from the Oxhey Woods in the late 'eighties,' but he had not the good fortune to meet with it himself."

I have recently returned from a short holiday in South Devon, where I found the species to be fairly common and widely spread. I took my first walk in that county on Good Friday morning, April 21st, when I saw *egerides* in fine condition. My last country walk was on Monday, May 8th, a windy morning with intermittent periods of sunshine and shadow, and in the hollow lanes where there was shelter from the wind I took several specimens. Dr. R. C. L. Perkins kindly gave me a number of *aegeria* which he had captured, and he tells me that the insect is common both in spring and summer. The first brood, or at any rate a partial brood, appears as early as about the 20th March. These specimens have comparatively brilliant fuscous spots, and are the nearest approach to the true *aegeria* of Linnæus as found in the South of Europe, that I have seen in Britain. Indeed the brood flying in April and May are also strongly marked, and might almost be called ab. *intermedia*. I have a series of both the spring and summer generations before me as I write. It

is possible that the limited brood, which appears in the middle of March, have spent the winter in the pupa state, and those which emerge in April and May have hibernated as larvæ, but this is a matter which needs further investigation. Dr. Perkins informs me that the insect is still common in the Wotton-under-Edge district of Gloucestershire, indeed he thinks it has increased in abundance in that neighbourhood in recent years.

In my address to the Hertfordshire Society I dealt at some length with the history and bibliography of the species, and especially with pre-Linnean references to it. I also endeavoured to work out the rather difficult questions of nomenclature and synonymy, and showed that the name *aegeria* was bestowed upon the species by Linnæus in "Systema Naturæ," ed. x., vol. i., p. 473 (1758). He speaks of it as inhabiting the South of Europe and North Africa, and his description reads as follows:—

"*Alis dentatis fuscis luteo variegatis; primoribus ocello utrinque unico; posticis supra tribus.*"

From the fact that he so definitely gives the locality, and from the use of the words "luteo variegatis," and in his second and rather longer description "maculis luteis," it is now generally held that it was the southern form that he was describing. He uses the same adjective "luteus" for the colour of *Papilio megera* in edition xii., p. 771, where that butterfly is first described, and the yellow of *megera* corresponds with that of the southern and not of the northern form of *aegeria*. Reference to the great naturalist's collection now preserved at Burlington House throws no light on the matter, for it includes no specimens of *aegeria* that could possibly have belonged to Linnæus. It will be recollected that the collections were acquired in 1784 by Sir J. E. Smith, who brought them to England, and while in his possession numerous additions were made. There are now four specimens of this butterfly in the cabinet, three of them English and one Italian. The first specimen, which is much damaged, bears the label in Smith's handwriting "*Aegeria*, Lewin, 771, Angl. Huds." The number 771 refers to the page in "Systema Naturæ" on which *aegeria* is described; "Angl.," of course, means Anglia; and "Huds." is an abbreviation for Hudson, the correspondent from whom Smith received it. The second and third specimens, the latter pinned to show the underside, are labelled "Angl. Jones," and were no doubt sent to Smith by William Jones of Chelsea, with whom he was on friendly terms. Jones was elected a Fellow of the Linnean Society on 15th November, 1791, and died about 1814. The fourth specimen is of the southern form, and bears a label written by Smith "*P. meone*, Rome and Naples, Common, Lady M. A. Gage." By the kindness of Dr. Daydon Jackson, General Secretary of the Linnean Society, I have been allowed to examine these specimens and have also had access to the books from the libraries of Linnæus and Smith, now in the Society's possession. I think, then, it may be accepted that it was the southern form of the insect which Linnæus called *aegeria*, but the name became wrongly applied in quite early days, and until recent years it has been used by naturalists for the form of the species found in Britain and Northern Europe, and, as will presently be shown, Cramer's name *meone* was erroneously adopted for the more fulvous South European insect, the true *aegeria*.

Fabricius in "Systema Entomologiæ," p. 495, sp. 214 (1775), simply copies Linnæus's name and description, which does not help us at all. In 1778, Bergsträsser figures the northern form as *aegeria*, and in the following year there appeared at Ratisbon a work by J. C. Schäffer, called "Icones Insectorum," in which there is another illustration of the same butterfly, with the legend, of course in German, "The third four-footed day-flier with entire wings." Unfortunately Schäffer does not use a scientific name for the insect.

In 1780, Stoll in Cramer describes a butterfly which he calls *meone* (Papillons Exotiques, vol. iv., p. 51, pl. 314, figs. E.F.), and which he says occurs on the Barbary Coast in the neighbourhood of Algiers. We are able with certainty to determine what insect Cramer was referring to, for his original drawings are preserved in the British Museum (Natural History), at South Kensington, and from these it is evident that it was the reddest of the Continental forms, the one which we find in Morocco, Algeria, and Gibraltar, to which alone, therefore, the name *meone* can apply. The types were in the collection of the Baron Rengers. Esper, who is often, but wrongly, said to be the author of the name *meone*, simply quotes from Cramer (Eur. Schmett., 1, Fortsetz, p. 9, tab. 95, cont. 50, fig. 1, 1780), but he creates confusion by making *meone* of Cramer a synonym of *xiphia* of Fabricius, an insular and quite different form of the insect. Eight years later Borkhausen speaks of the northern form as *aegeria*, and in 1793 we find Fabricius in "Entomologia Systematica" doing the same thing. The latter author in repeating his description of *xiphia* does not mention *meone*. In 1799 Hübner makes the confusion worse, first by misapplying the name *meone* to the "ochre-red" form from Portugal—the ordinary southern form—and secondly, by perpetuating Esper's mistake of supposing *xiphia* and *meone* to be the same thing. He evidently mistook Cramer's *meone* for the ordinary South European form with dark fulvous spots, and he describes *aegeria* separately as the German form with "sulphur yellow spots." In 1807, Ochsenheimer in "Die Schmetterlinge von Europa," repeats Hübner's mistake, and says the colour of the spots in *meone* is "ockerroth" (in his Latin description "fulvo maculatis"), and gives the habitat of the insect as Italy, South France, and Portugal, and according to recent information, Karinthia and Tyrol. "*Egeria*," which he says has yellow or whitish spots, and which he spells with a capital *E* instead of *Æ*, as had hitherto been done, he records from Germany, France, and Italy. Hübner, in 1816, published at Augsburg his "Verzeichniss Bekannter Schmetterlinge," in which he followed Ochsenheimer's way of spelling, and speaks of the northern form as *Egeria*. He repeats the error of calling the southern form *xiphia*, with *meone* as a synonym, but this time he spells *xiphia* with a *y* (*wyphia*).

In 1764 Geoffroy, in his "Insects of Paris," introduced yet another name for the species, calling the northern French form *Satyris tircis*, and in this he was followed by other French writers, and "Le Tircis" was adopted as a trivial name for it. I am not quite sure whether the name *tircis* should not stand for our northern insect, and Staudinger's more recent "*egeides*" fall before it. I hate unnecessary changes in the names of familiar insects, but it is a point which I think might be considered by the Committee on Nomenclature.

Herrick-Schäffer, in 1844, described the two chief forms of the

species, speaking of *egeria* as occurring "everywhere in Sweden" and *meone* in south Europe, but wrongly ascribing the authorship of the latter name to Oechsenheimer. Duponchel in his *Catalogue*, also in 1844, follows on the same lines. This nomenclature, *egeria* for the northern form and *meone* for the southern form, was generally adopted until Staudinger discovered that entomologists were altogether wrong in their application of the names, and that it was the southern form that Linnaeus had named *aegeia*. In the second edition of his *Catalog*, issued at the end of January, 1871, Staudinger says of Linnaeus's *aegeia*, "certissime forma australis lutea." That being so the name *meone*, itself wrongly applied, had to fall before *aegeia*, and thus left the northern form without a name. Staudinger therefore proposed the name *egerides* for it, and to prevent any mistake as to what he meant he gave in parentheses the brief but sufficient description, "forma septentrionalis pallidior."

A very distinct form of the insect, so distinct as to be able to lay doubtful claim to specific rank, was early known to fly in Madeira, and Fabricius was aware of this. There were two specimens in the possession of the British entomologist, Banks, which are still preserved in the national collection at South Kensington. Fabricius evidently saw these, and in 1775 gave them the name of *xiphia*, describing them in *Syst. Ent.*, pp. 492-3, sp. 215, as being in "Mus. Banks; Habitat in Madeira." There is also another well known form which inhabits the Canary Islands, and which is a connecting link between *meone* and *xiphia*. Upon this Staudinger has bestowed the name of *xiphoides*.

The species and its main varieties may therefore be tabulated thus:—

- ÆGERIA, L.—Deep brown with fulvous markings. Southern and south-western Europe, and northern Africa.
- Var. EGERIDES, Stgr.—Dark fuscous with pale yellow markings. Northern, central and eastern Europe, including Britain.
- Ab. INTERMEDIA, Tutt.—A name applied to forms connecting *aegeia* with *egerides*.
- Var. MEONE, Cr.—Reddish brown with reddish fulvous markings. Algeria, Morocco, Gibraltar.
- Var. XIPHIA, Fab.—Large dark form shaded with golden red. Madeira.
- Var. XIPHIOIDES, Stgr.—Dark brown, more and smaller red-brown spots, underside with white streak from costa. Canary Islands.

On some Psychides.

By the Rev. C. R. N. BURROWS, F.E.S.

In the years 1886-7-8, as is recorded in Tutt's "British Lepidoptera," vol. ii., pp. 163-170—being resident at Brentwood, my friend, the Rev. G. H. Raynor and I, found *Solenobia inconspicuell* in considerable quantity upon some old oak palings in the neighbourhood. Several times since I left those parts I have visited these palings, generally a little late in the season, but always with a hope that I might find, at least, the old empty cases to assure me of the continued occurrence of this interesting, though small and inconspicuous species. Up to this year I have failed to find even this evidence. Our studies

having drawn us to the *Psychidae*, Mr. Pierce came down, early in May, and we motored together to the old spot. Four and a half to five hours were spent in a very rigid examination of a mile or more of pales, and we captured a small number of "cases." On examination we were disappointed to find that the insect we sought was conspicuous by its absence. We had taken *Taleporia tubulosa* and *Fumea casta*, (?) and a few each of two other cases at present unrecognised.

A few days after Mr. Pierce's return to Liverpool, letters having passed to and fro concerning our insects and their food, I started out to see if I could find *Fumea casta* (?); and once more found that I had been endeavouring to "carry coals to Newcastle." For, on some old posts, upon my glebe, not a quarter of a mile from home, I found plenty of cases of what was undoubtedly *S. inconspicuella*, empty, of course, but many still grasping the deserted pupa case. And more than this, I found over a dozen cases of *Diplodoma herminata*, a species which has very rarely forced itself upon my notice during my many years of collecting. On this I naturally wrote Mr. Pierce telling him what a fool I had been, and sending him some *D. herminata* cases. He replied, asking me what I feed them upon. They neglected lichen, hawthorn, and everything he offered them, while wandering about evidently hungry. Whereupon I gathered some more cases and set me to work to find how to feed them. I tried hawthorn, one actually nibbled a blossom, but seemed to make little progress. He was evidently just "moistening his lips." I then tried insect food. A fine freshly emerged male, *Spilosoma lubricipeda*, proved unacceptable. Again and again the larva moved away uninterested. *Xanthorhœ fluctnata* likewise had no attraction. But when I captured some nice plump, red "daddies," "a change came o'er the scene." At once, like a bull-dog, each larva fastened upon the thorax of its (dead, of course) prey and proceeded to clear it out. This settles for all time, to my mind, the question of the "food plant!" of this obscure species, confirming, of course, the experience of Fologne, Edelston, and others. With respect to the group *Psychina* in general, it is troublesome for our purposes, that so little is done and known about these insects. It appears to be difficult, if not impossible, to secure material for the study of the genitalia. Few collections contain specimens, and of those which have come into the market, the series are short and of uncertain identity. The so-called *Fumea casta* may well contain several species, and *Epichnopteryx pulla* is not above suspicion. I am writing now of my own ideas.

I have noted of late years a growing scarcity of even the commonest species of the *Psychidae*. It may be failing eye-sight on my part, or it may be that for some reason all the species have really become rarer.

Mr. Pierce and I would be deeply obliged to any friends who will attempt to provide us with specimens for preparation and examination. Specimens from different localities and even different settlements would be of the greatest value for the elucidation of the difficult points and questions.

I must add that a later letter from Mr. Pierce tells me that amongst the Brentwood material he has found one case of *S. inconspicuella*, and that his *Diplodoma herminata* eat willow.



The British Races of Butterflies: their relationships and nomenclature.

By ROGER VERITY, M.D.

(Continued from page 102.)

Pyrameis cardui, L.—This species stands alone amongst Diurnal Lepidoptera, and is biologically of quite a particular interest on account of its world-wide distribution; it seems equally at home in the arctic regions and at the equator, on the tops of the highest alpine ranges and on the sea-coast, in the marshes and in the desert, it picks its food out of any sort of vegetation. Like *Nomophila noctuella*, *Plusia gamma*, *Sesia (Macroglossa) stellatarum*, it even reaches the remotest islands of the Pacific, and by continual migrations it travels from one region to the other. In consequence individual adaptability to different surroundings is kept up to the highest degree, even more so than in man, and the species does not vary geographically in the least, *P. caryae*, Hüb., and *P. kershawii*, M'Coy, certainly being distinct species, although they may be close allies of *P. cardui*. Specimens vary to a certain extent, according to the climate in which they have developed, but no character gets fixed by heredity. It has been observed that African, American, and East Asiatic specimens are generally larger and redder than others; nothing else, to my knowledge, can be said of the variability of *P. cardui**.

Melitaea aurinia, Rott.—Both geographical and individual variations are so great in this species as to make it one of the most variable in existence. In Europe, roughly speaking, two forms occur: the northern one tends to have the ground colour of the wings lighter than the red bands, which stand out sharply upon it, and the black markings very conspicuous, the southern, in which the wings are more or less of a uniform fulvous colouring, with a thin black pattern across them. The former culminating in the lovely *hibernica*, Birch, in which the ground colour is pure white and the bands bright red, recalling strongly the look of the alpine *M. cynthia*; this form flies in Ireland and the English specimens constitute a transition to it. It would be very interesting to work out the distribution of the different forms in Britain.

Melitaea cinxia, L.—There exist in Europe two distinct forms: the small, pale, northern one, with all the black markings intensively developed on both surfaces of the wings, to which the type of Linnæus and the British race belong, and the larger southern form, with a much brighter and redder fulvous ground colour, and with the black pattern very much reduced in extent, so much so that part of it is entirely absent in some specimens. These two forms have never been separated to my knowledge, so that I propose distinguishing the second one, just described, by the name of *australis*, taking as the typical race that of the neighbourhood of Florence. The race *heynei*, Rühl, from Asia Minor, is a step further of variation in the same direction, and extreme individuals of this kind are also met with in Sicily and other very warm localities in the south of Europe.

* There appears to be a small race in the S. African area.—H.J.T.

Melitaea athalia race **britannica**, Verity, *Bulletino della Società Entomologica Italiana*, vol. xlv., p. 210 (1914).—The following is the translation of my original description :—"To end up my observations on *athalia*, I wish to lay stress on the fact that the race of this species from the British Islands differs markedly from the continental ones, and especially from the southern races, for, whereas in the latter region it varies in the direction of *magna*, Seitz, and of *dejongiformis*, Verity, in the former one may say that the lighter individual variations are similar to the races of Central Europe" (the nymotypical race is German), "and that all variation takes place in a diametrically opposite direction, tending to produce conspicuous melanitic forms; individual variability is another of its most prominent characters. It is larger in size than the typical race; all the black bands are broad and diffused and of a very deep black; the marginal band, very broad, is separated from the preceding one by fulvous spaces, which are considerably limited in extent, and which tend to lose, or have lost, their characteristic shape of lunules; on the contrary the fulvous spaces which separate the internal premarginal band from the external premarginal one, are very much wider, as the former is situated nearer to the central S-shaped band; this is broader and straighter; the fulvous ground colour is dark and reddish; the whole surface of the wing has a dull look; the underside, on the whole, has a similar appearance; suffice it to notice that the rust-coloured spots are of a dark-red and are surrounded by thick black arches, not sharply defined, but on the contrary very diffused; the ground colour of the females varies from dark fulvous, like the males, to a yellowish tinge, quite similar to that of the high mountain form; lastly, the wings are broader in both sexes; the apical and anal angle are, however, more acute and the external margin straighter. I pick out my typical couple of *britannica* from a series of specimens in my collection, collected in June at Tavistock, in south Devon."

Argynnis (Brenthis) selene, Schiff.—This species varies very little geographically in Europe; specimens from the north of England and others from Piedmont (Turin) are exactly alike; *hela*, Stdgr., from the extreme north, is the most marked variety.

Argynnis (Brenthis) euphrosyne, Z.—Two very distinct races are met with in the north and south of Europe; the type belongs to the first and so does the British one; it is very much smaller, duller and darker than the second, which culminates in *apennina*, Stdgr., from Italy; the underside of this latter is also on the hindwings of a much clearer and brighter orange colour (not rust-coloured, as most individuals of the nymotypical race).

Argynnis adippe, L. (*esperi*, Verity).—I have exhaustively discussed, in the *Linnean Society Journal, Zoology*, vol. xxxii., p. 182 (1913), and in the *Entomologist's Record*, vol. xxvi., p. 175 (1914), this unique case of a common European species, which had remained unnamed to the present day; Linnaeus having described the male and the female of *A. niobe* as distinct species under two different names, Esper took the second of these descriptions to be meant for *niobe*'s nearest European ally, and figured it under Linnaeus's second name;

nobody having, as usual, taken the trouble to read over the latter author's words again, it was not noticed that they did not in the least describe Esper's species correctly; it was only when I examined the original Linnean specimen that the mistake became clear; I furthermore pointed out that, besides this fact, the name *adippe* cannot stand in any case, as it is but a substitute made by Linnaeus himself of the previous Linnean name, *cydippe*, a proceeding to which no author has a right. Those who are interested in this question are referred to my original papers; suffice it here to mention that I have consequently been obliged to create a new name for the species figured by Esper, and that our old friend, the name *adippe*, must be sunk into oblivion.

I am not acquainted with the British race of *esperi*, so that I am compelled to put off any observations which might be made about it to another occasion.

Argynnis aglaja, L.—What has been said of *euphrosyne* can be repeated here, as variation is quite similar in the two species; I am responsible for the name *appenninicola* of the extreme southern race, described and figured in the *Bulletino della Società Entomologica Italiana*.

Argynnis (Issoria) lathonia, L.—This species varies less than most of its congeners, but specimens from the extreme northern limits of its range, such as the type and the British ones, are small and pale. The name **florens**, if found necessary, would be appropriate to designate the commoner, larger and brighter form, such as our Tuscan one, which can be taken as typical of it.

Argynnis (Dryas) paphia, L.—Prominent bands and spots on the underside of the hindwings characterise the northern specimens, such as the Linnean type and most of the British ones; the latter are also sometimes exceedingly small, whereas in the south variation in size is very limited indeed, and, in point of fact, all the other characters are very constant too.

Melanargia galathea, race **serena**, Verity, *Bulletino della Società Entomologica Italiana*, xlv., p. 205 (1912).

Few species are as fascinating as this one to the eye of a student of variation; both its individual and geographical forms are, figuratively speaking, unlimited, the limits between normal variations and aberrative ones being nearly indiscernible and the latter comparatively frequent. I have in my collection series of hundreds of specimens from every sort of locality, illustrating beautifully in a systematic way all the individual forms and all the races known; some day I intend in fact publishing an essay on the methodical analysis of variation, such as will undoubtedly in the course of years be accomplished on every species, so as to make variation in space and time really thoroughly known and accurately registered by statistical data; we shall then be able to follow evolution in its onward course and establish the laws which govern it. But before such works are accomplished a thorough distinction will have occurred between mere collectors and true laborious students of entomology, who will not shrink at the thought of dozens of names where one was enough in

Linnean times, for names alone can fix characters and forms so that they can be recorded and referred to by other observers.

No knowledge of which race was described by Linnæus being available, it had tacitly been implied that the one of northern and central Europe was nymotypical of *M. galathea*, taking it as a whole and only separating from it the darker *procida*, Hbst., from some parts of southern Europe, and the still darker *turcica*, Boisd., from the Balkans. To be more accurate it is necessary to notice first of all that amongst the insects which were called nymotypical at least two large groups of local races are clearly discernible; no author having as yet pointed this out, their respective distribution remains to be established, but they appear certainly very distinct from one another, not only when extensive series are compared, but even by a simple comparison of a few specimens of the average type of each.

One consists in the extreme variation of the species, in which the black pattern is reduced to the greatest extent, the other may be roughly described as intermediate between this and *procida*.

The only specimen left to us by Linnaeus, a female, certainly does not belong to the first race mentioned; a doubt may arise as to whether it belongs to the second or to *procida*. This doubt has arisen in my mind since I found out the existence of the two forms mentioned above. When I considered them as one and *procida* as a second form, I did not hesitate to ascribe the Linnean type to the latter, and I suggested in the *Bulletino* of the Italian Entomological Society to sink this name in synonymy, but I think a new examination of the type is necessary before taking a definite decision on the subject. If it should be left standing, the nymotypical race can only be the one which immediately precedes it in degree of development of the black markings. It must be noticed that Linnaeus in his original description actually states that there are no ocelli on the upperside, which exactly agrees with his specimen, and excludes the whiter form in which the ocelli are not merged in a black band but stand out well; besides this, Linnaeus gives Germany and the most southern portions of Europe as habitat, which also excludes the greater part of the area of distribution of the form just mentioned.

I have races of the nymotypical form in my collection from the whole of Tuscany, from the Sibillini mountains in the Pienno (Southern Italy), from Vitriolo in Tyrol, etc. In Piedmont *procida* seems to substitute it entirely both in the plains (neighbourhood of Turin) and in the higher Alpine localities (Valdieri, 1,400 m.), and, strangely enough, so it does in Sicily (Madonie mountains), where a *procida* is to be met with which, in the male sex, is exactly similar to the Piedmontese one. In the higher ranges of Calabria (Aspromonte, 1,200 m.) the most melanic race of *galathea* may be said to exist, being even more so than the better known *turcica*; I described it a year ago under the name of *calabra*.

Diametrically opposite to this stands the very white race I first mentioned above and which I have named *serena*. Its culminating form is probably the British *galathea*, so that I have chosen a *British couple as types* from a series collected at Abbots Repton (Derby). I have specimens which do not seem to differ much from it, also from several French localities (Pont de l'Arche, Autun, etc.), and from Germany (Cassel), so that I believe it to be the commonest form of

Central Europe, and it also occurs in isolated colonies or as individual variation in the south (for instance, I have it from the Abruzzi in Southern Italy), but not in its most highly characteristic form, such as most English specimens exhibit. It may be described as follows:

About the same size as the nymotypical race, understood as mentioned above, *i.e.*, smaller on an average than *procida*; females especially do not reach the large size which is often observed amongst the *procida*, and sometimes occurs even in the nymotypical race; the whole of the black pattern is greatly reduced in extent and the clearer evidence of it is to be found in the premarginal white spaces, which in all the internervular areas are very extensive and are marked off by sharply defined outlines; in the nymotypical race these spaces are all present on both fore- and hindwings of most female specimens, but they are much smaller and diffused, and in many males they are scarcely discernible; in *procida* they are nearly always all absent in the male, except the last one on the forewing and the last three on the hindwing, and the same character is very often exhibited also by the female. Another distinctive feature is to be found in the premarginal band which surrounds the ocelli on the hindwings; in the nymotypical race, and even more so in *procida*, it is broad and of a deep black colouring on the upper surface, so that the ocelli are completely absorbed by it and are no more visible; in *serena* it tends to obliteration, being reduced in extent medially and entirely suffused with white scaling, which causes a grey colouring to it and upon which the ocelli are sharply defined in deep black; on the underside the grey band, which surrounds the ocelli in the nymotypical race and is still darker in *procida*, is more or less completely obliterated in *serena*.

In *turcica* and *calabra* the pattern of the outer-half of the wings is nearly identical to that of *procida*, but the median disco-cellular band is very much wider, and the blackish basal suffusion extends so far out on the wing as nearly to reach it and blend with it.

I must finally observe the interesting fact that in North Africa *M. lucasi*, Rber., which is so closely allied to *galathea* as to probably be a sub-species, exhibits the very characters of the northern *serena*, differing from it chiefly by its gigantic size; amongst the Sicilian *procida*, specimens of the female sex are to be met with, which tend to vary in the same direction. Thus we find that the darkest forms are produced in the south of Europe, and that both northwardly and southwardly the species acquires a whiter form.

Erebia epiphron, Kn.—The nymotypical form of this species is the one with the brown pattern reduced to the highest degree, so that the rust coloured band-like space is very wide and continuous, and its inner outline is diffused and nearly reaches the end of the cell by a series of sharp points; the ocelli are very large and in the female they exhibit some clearly marked white pupils; on the hindwings the same proportion between the different markings is exhibited. Another form is **cassiope**, F., in which these band-like spaces are narrower and sharply outlined on the inner side and the ocelli have no white centres. A third form is **mnemon**, Hw., in which the rust-coloured spaces are split up in separate spots on the forewings, and are entirely absent on the hindwings. **Nelamus**, B., and **obsoleta**, Tutt, are only aberrations.

tions, in which the rust-colouring is still more reduced or entirely absent.

Perfectly distinct races do not exist, the different forms occurring together in different proportions and with intermediate individuals, which tend to one or the other according to localities. One can consider as nymotypical the races which produce the nymotypical form tolerably frequently; these are decidedly rare; the Vosges in France and the Harz in Germany are about the only localities in which it occurs; in the rest of Continental Europe *cassiope* greatly predominates and, when transitional specimens to true *epiphron* occur, they are scarce and do not attain its complete development.

The chief characteristic of the British race is its individual variability, the three forms mentioned above occurring together, although the nymotypical one is always much smaller in size and does not reach the highest degree of development met with in the nymotypical race.

In the southern limits of its habitat the species tends to produce the *mnemon* form as the predominating one (Hautes-Pyrénées, southern Italy) and, strangely enough, it again is frequent near the northern limits (Scotland), or, at least, it is less rare there than in Central Europe.

Erebia aethiops race **caledonia**, Verity, *Bulletin de la Société Entomologique de France*, 1911, p. 311, pl. i., fig. 1.

The nymotypical race from western Germany is intermediate between the extreme variations of this species; the Alpine races do not differ much from it, but in the north of Italy two very distinct geographical races occur in the hills; the gigantic *taurinorum*, Verity, in the neighbourhood of Turin, and *parvisi*, Verity, in the province of Udine. In the north of Europe, on the contrary, the size of the species gets conspicuously smaller.

I have described the Scotch race as follows:—Easily distinguished from the Alpine race by its size, which is constantly lesser (expanse of wings 35mm.-42mm., whereas that of the type varies from 40mm. to 45mm.), by its narrower and more elongated wings, with more acute angles and with the outer margin straighter; the fulvous (rust-coloured) band-like space is narrower and never contains more than three small ocelli, whereas in the Alpine race it often contains four or five ocelli, especially in the female sex; finally the band-like spaces on the underside of the hindwings are frequently indistinct.

This description applies to the typical series in my collection from Galashiels (Scotland), but in other Scotch localities transitional races occur, in which the characters mentioned above are not so highly developed.

The *leucotaenia*, Stdgr., form, with very conspicuous white band-like spaces on the underside, is commonly produced by southern races, but does not occur, to my knowledge, in the British Islands.

I have described a magnificent albino specimen in my collection, of German origin, under the name of *semialbina*, the costa and the marginal area (outside the fulvous) is of a dirty white colour, the rest of the wing being light chestnut; band-like spaces of underside white.

(To be continued.)

Brenthis pales, its history and its named forms.

By HY. J. TURNER, F.E.S.

(Continued from page 88.)

I have very closely re-examined Hübner's figs. 563, 564, labelled *isis*, and more carefully compared them with his figs. 38, 39, also labelled *isis*, with the result that I have somewhat modified my conclusion stated on page 86, *ante*. It must be noted first that the earlier figures are of a male, while the latter are of a female, and therefore they are not properly comparable as forms, except as sexually dimorphic forms, which taken alone they might well be. The male is lighter in ground of forewing, the female is richer, the male has less extended and coalesced black markings, the female has more, the underside of the male has much more bright yellow, that of the female has more of a pale sulphur colour, the white markings of the male are less in extent than in the female, the red coloration of the underside of the male hindwings is of two shades, one a light yellowish-red distally, and the other a deeper red basally, while in the female all the red coloration is rich and deep. If the coloration of figs. 38, 39 illustrates that of both sexes, and also if the coloration of figs. 563, 564 illustrates that of both sexes, then one can separate them satisfactorily as forms, but if the difference of colour be only sexual the name *isis* must be the form-name of both.

Ochsenheimer's, "Schm. Eur.," vol. i., pt. I, p. 66 (1807), remarks on *isis* are substantially as follows:—

"*Isis* (*dirphya*, Hoffmanssegg), especially some varieties of it from South Switzerland, appear at the first glance to differ so much, that one can easily be induced to consider it a distinct species. This is less so in the male than in the female, which is sometimes greyish on the upperside and on the underside of the hindwings, especially at the base, and along the inner margin is given a greenish appearance by the various brown and yellow atoms. The markings are also weaker, less sharply margined, and the apex of the forewings is covered more widely with pale yellow.

"Among a number of 34 examples of this variety which I have before me, there are the slightest and most unrecognisable steps from one to the other, as much in the size as in the form and colour of the wing; but in the characteristic markings of it I find not a single mark which can be selected with certainty to distinguish it."

"*Pales* is found in a few places in Germany, especially in Austria, the Tyrol, Switzerland, Sweden and Russia."

Ochsenheimer should have shown here that Hübner had two designations for *isis*, figs. 38, 39, and figs. 563 and 564; the latter were named *napaea* by Hoffmanssegg, and subsequently re-named *dirphya* by him, *i.e.*, *isis*, Hb. (*napaea*, Hfsg. = *dirphya*, Hfsg.).

In 1816 Dalman, "Hör. Sys. Up. Sver. Fjär" (Vet. Ak. Hand., vol. 37, p. 72), included *pales* as a species found in Sweden. But I have been unable to see this work.

In "Schm. v. Eur.," vol. iv., p. 110 (1816), Ochsenheimer noted two varieties of *pales*, one is probably the original of Hübner's figs. 617, 618, on pl. 121. Of it he says:

"The silver coloured spots on the underside of the hindwing run into streaks towards the middle, and those at the base are coalesced into

two spots. Nothing of the central band is to be seen except that the ground colour is somewhat darker."

In 1818, Hübner in his "Verz," p. 30, catalogued *napaea* and *pales* as two separate species, and gave *isis* as a synonym of *napaea*. He does not include *arsilache* in his list, which is most curious, as not only had the name been in use for at least 40 years, but he himself had used it on his plate 7 of "Sam. Eur. Schm.," for figs. 36, 37, in 1799. Now he allows it to be inferred that he had wrongly called these two figures *arsilache*, for he expressly adds as a reference to the form *pales* his own figs. 34, 35, 36, and 37, only to two of which, *viz.*, 34, 35, he had originally appended this name.

In 1818, Hübner in the "Sam. eur. Schm.," on plate 151, figs. 757, 758, gave the upper- and undersides of a *pales* form under the name *napaea*. In size it is about that of an average *pales*, and the colour of the ground wherever seen is a similar fulvous to that of the average *pales*, but over the greater portion of all the wings lies a dusky, somewhat violet suffusion or clouding. This suffusion starts from the base, runs narrowly along the costa to the apex, and widely (half the width of the wing), along the inner margin to the outer margin. On the hindwing this suffusion covers the whole of the basal area and extends along the inner margin as in the forewing, leaving the ground colour visible only on the area in and around the apex. The submarginal lunules (?) are conspicuously light on all the wings, which would point to the insect figured being a female. The underside of the forewings are yellowish-green at the apex and along the hind margin, orange fulvous on the disc and at the base, with very few and slight black markings costally. On the underside of the hindwings there is a general smoky or dusky suffusion over the green, red, and yellow markings, giving a smudged or worn appearance.

In 1822 Illiger, "Sys. Verz. Schm. Wien.," vol. ii., p. 234 (practically a new and enlarged edition of Schiff. "Verz."), re-described *pales* as follows:—"Alis subdentatis fulvis basi maculisque nigris, posticis subtus brunneis flavo argentoque variis." He said that it is also found in Lower Saxony and near Giessen. He asked why has Fabricius removed this species so far from *P. selene*, which it so much resembles? And why has he placed it with *dia* and *daphne* of quite another family?

Illiger gave *arsilache* as a synonym.

[Fabricius in 1793, "Ent. Sys. emend. auct.," vol. iii., p. 257, put *pales* between *pandora* and *daphne*, and three species removed from *dia*, all of which are in his *Papilio satyri* group, while *selene* and *euphrosyne* are far removed in the *Papilio nymphalis* group, between which two groups lie the *Heliconii*, *Parnassii*, and *Danai* groups].

In 1822, Godart in vol. ii., "Hist. Nat. Lep. Fr.," p. 68, gave a description of *pales*, including a full and admirable summary of the underside of the hindwing markings. "Ferruginous red, transverse row of four spots, two middle yellowish, outside ones white somewhat shining, not far from this row a solitary white point enveloped by a yellow band, angular and transverse, on the innerside of which two or three spots are silvery-white. Immediately after this band are two other white spots, one placed transversely against the anterior border, the other on the yellow area near the anal angle. Then there is a row of six eye spots, the fourth from above covered by a yellow blotch

which extends up to the hind margin, on which are seven white, almost round blotches, the anal one is the smallest."

"♀ as males, but yellow parts of underwing greenish."

He said of the forms *isis* and *arsilache* that they are so remarkable that he does not know why Hübner did not make species of them.

On plate ix. are figured an upper and underside of *pales*. The markings are correct enough, but the colour of the underside is a bit off; the markings seem a very good representation and not so stiff as so many of the figures in this work are.

Meigen in 1829, in his "Sys. Besch. Eur. Schm.," vol. i., p. 53, treated of *arsilache*, Esp., as synonymous with *pales*, W.V., etc. He did not mention the underside of the forewings being black-spotted.

In 1829 Boisduval, "Ind. Meth.," p. 15, gave *arsilache* of Esp. as synonymous with *pales*, F. (!!!) He included *arsilache*, H., *isis*, H., and *napaea*, H., as varieties. He did not recognise either Esper's *arsilache* or Hoffmannsegg's *napaea* (*dirphyda*).

In 1830 Freyer, vol. iii., "Beit. Gesch. eur. Schm.," p. 69, treated of *pales*, and considers *arsilache* as quite distinct, adducing Ochsenheimer's suggestion of "not proven" to the same effect. He said *pales* is the smaller, has more pointed forewings, and gives every appearance of being distinct. He has a specimen of *pales* quite as big as *arsilache* however. He then emphasised upon the difference in the underside of the forewing as well as the shape. He gave Hubner's description of the caterpillar of *pales*, but says it may possibly have been taken from a larva of *arsilache*. On plate 115, fig. 1, there is a good recognisable figure, underside of very deep red, perhaps too emphasised for average.

On p. 72 Freyer treated of *arsilache*. He said that the black markings on the underside of the forewing are independent markings showing through. The underside of the hindwing is more vivid and more variegated than in *pales*. In criticism of Esper he said, plt. 50, cont. 6, fig. 4 is not good, but that fig. 5 of *arsilache* is distinctly recognisably figured. He considered *isis* as a true species. On plate 115, fig. 2 is an upper- and underside of *arsilache*, a very good figure, but the underside of hindwing is only fair (v. difficult to reproduce).

Freyer gave two other figures to this species.

On page 89 and plate 121, fig. 1, he gave the ♀ of *pales* upper- and underside, and pointed out that the female has much thinner markings than the female of *arsilache*, and that the general shape of the wing is different.

On page 90 and plate 121, fig. 2, he gave the female of *arsilache* upper- and underside. The figures are quite good and cannot be mistaken, and the colour is practically correct. The submarginal eye-spots on the underside of hindwings are somewhat large.

In 1832, Duponchel in his "Sup." to Godart's "Hist. Nat. Lep. Fr.," p. 303, etc., gave descriptions of *napaea* (!) Hb., and *isis*, Hb., and figs. them on plt. 48, figs. 5 and 6, 7 and 8, respectively. These figures are pretty good as to shape, markings, and colour, except that the underside of *isis* is too formal and of doubtful colour and arrangement of markings on the underside (possibly an aberration).

Duponchel says that "*napaea*" always flies in the plains, while typical *pales* is only met with in very elevated places.

Geyer in his continuation of Hübner's "Samm.," plate 195 (1833), figs. 963-965, gave illustrations of two extreme forms of *pales*.

Fig. 963 has a curious ground colour, a very dull shade of the ordinary *pales*, the markings are re-distributed and coalesced more or less. There is a double blotch of black in the middle area towards the base, and a band more or less wide across the disc nearer to the hind-margins, the submarginal spots are well expressed. The hindwings have an imperfect dark suffusion at the base, a narrow transverse line of connected spots, and well emphasised submarginal spots.

Fig. 964 is an extremely dark suffused specimen with much sheen on it, and the veins being all deeply marked in black with deep suffusion around the edges of all markings. A very fine aberration. (cf. Heuthal specimens).

Fig. 965 is an underside, presumably of 964. The colour is much intensified in depth of shade, only a few of the yellow markings being unsuppressed in brightness.

Treitschke in "Schm. v. Eur.," vol. x., pt. 1, p. 11 (1834), said concerning *pales*, "My reason for the separation of this species and its undoubted variety *isis* from *arsilache*, for a long time united to it, is found in what comes below, and they are thus more fully proved to be separated." He then gave a new diagnosis of *pales*. "Arg. alis subdentatis fulvis, basi maculisque nigris, anticis angulo externo aucto; posticis subtus rubenti brunneis, flavi argenteoque variis, macula conica flava in medio."

He then goes on to say that the larva figured by Hübner, "Larv. Lep.," vol. i., pap. I, Nymph. B. 6, fig. c., which he (Hübner) considered to be that of *selene*, but with a query, might belong here (*i.e.*, to *pales*), or to *arsilache* with much probability, since the larvæ of all the more closely allied species were already known.

Freyer had already, "Beitr. Ges. Eur. Schm.," vol. iii., pt. 20, p. 70, expressed his opinion that the description was of a larva of *pales*.

Treitschke further says, "Contrary to the opinion of Ochsenheimer, but in accord with that of most recent entomologists, I have separated the three butterflies united by him, *pales*, *arsilache*, and *isis*, into two species." He then points out how small and unimportant is the difference between *pales* and *isis*, which latter he says differs from *pales* in the paler colour of the females on the upperside, and on both sides of the hindwings in both sexes, the underside being of a yellowish-green tone whereas it is found to be red in the stem form (type), *i.e.*, *pales*. This he considers strong evidence for their union as one species, and he goes on to the statement that *isis* and *arsilache* never fly together, and hence *isis* cannot be a form of *arsilache*. His subsequent remarks (see below) all go to strengthen his opinion.

In "Schm. Eur.," vol. x., pt. 1, p. 12, etc., 1834, he says of *arsilache*, "*Arsilache* is mostly larger than *pales*. The wings are more round and broader, the black marking of the upperside is bolder, and the surface is largely suffused with black powdering. This powdering almost unites the inner margin of the forewings from the base up to the middle into a toothed line, the black itself extending out across beyond the middle. Further, both species have on the underside of the hindwings in the middle of the outer margin, a deep ochre-yellow spot or blotch; this appears in *pales* as in *isis*, from the margin, lying before the silver hemispheres quite through the red-brown transverse band, and covers the discoidal spot which lies here and which only faintly shows through; in *arsilache* this never overpowers the discoidal

spot, the colour and the form remain unchanged, and serve as its margin. On the underside of the forewings in *arsilache* the black lines and points of the upperside are found equally sharp, whereas in *pales* and *isis* they only show faintly through. The three chief points of distinction educed, *viz.*, the more pointed wings, the want of markings on the underside of the forewings, and the yellow, broad streak on the hindwing sufficiently distinguish *pales* from *arsilache*."

"*Arsilache* flies in Austria, France, Lower Saxony, Brandenburg, in wooded areas, as well as in low ground, while *pales* always is found only on high mountains and in a few German localities. Besides with us (*i.e.*, in Vienna), it flies earlier, *viz.*, in June, while we take *pales* on our Schneeberge after the middle of July and in August."

In an early list by Dr. Herrich-Schäffer, "Nomenclator Entom.," p. 1 (1835), *arsilache* and *pales* are placed as two separate species, and *isis* is treated as a variety of the latter.

(To be continued.)

SCIENTIFIC NOTES AND OBSERVATIONS.

PLUSIA MONETA LARVÆ AND A ROBIN.—As a small contribution to the subject of the relations between birds and insects the following may be worth recording.

A pair of very tame robins with a young brood, in an old kettle in my garden here, were busy three weeks ago in foraging for them, in weather none too favourable to insect life, and on one occasion the hen bird made a dash at the top of a large plant of *Delphinium*, close to which I was standing, and, after a little flutter, drew off to a convenient perch with a larva in her beak. Our friendly relations enabled me to see that it was a young *Plusia moneta* about half an inch long, and although still in the black-dotted stage it had doubtless left its tent for some reason, and was moving outside, thus attracting the robin's attention, for the robin, being an insectivorous bird, has a deadly eye for anything moving, but does not easily see still-life. The bird swallowed the larva without hesitation, and I took the hint and found some more, which both she and her mate took from my fingers and posted off with them to their young.

This observation seems to suggest that *P. moneta* larva when young and conspicuous, by reason of their black dots, feed in a tent for protection, being edible to some birds at least; whilst in their last skin, when they are beautifully protected on the *Delphinium* leaves (but not so well on monkshood), as long as they keep still, they feed quite exposed. I will test this latter point later on to see whether the birds will see the full-grown larva quiescent on the leaves.—C. NICHOLSON, Hale End, Chingford. May 1st, 1916.

RESTING ATTITUDE OF THE LYCENIDÆ.—In the March no. of this Journal, p. 67, Mr. Colthrup, while agreeing that the *Lycaenidæ* go to rest with the head downward, criticises the conclusion that this attitude is in any way protective. He suggests, "after careful observation," that the "true solution of the head downward position is that they take up that position when they sun themselves in the late afternoon, and as soon as the sun disappears close their wings and seem to go into a state of torpor. Some go to sleep in that position, others move a little

and turn round. They can be found in various positions long after dark."

"They are equally conspicuous in both positions and no more safe from attacks of birds in one position than the other."

Before considering the interpretation it may be of use to give some further evidence as to the attitude assumed by these butterflies on first going to rest.

How *Polyommatus icarus* acts after dark I am not prepared to say, but of its actions before dark I can speak with confidence. For many years past I have made very careful observations as to the attitude towards dusk of this and many other butterflies.

With *P. icarus* I have found only rare exceptions to the head downward position, and it was only after a long hunt that I was able to photograph an individual at rest with head uppermost. I especially remember observing the species in July, 1911, when it was extraordinarily abundant in Hogley Bog, near Oxford. My son and I used to visit this locality four or five evenings a week during the whole of July and early August. I can assert with the utmost confidence that at least 99 per cent. rested head downward. This was equally true whatever the object the butterfly was resting upon. Individuals of this species are often rather particular in the selection of a site. I have frequently watched one, preparatory to settling down for the night, alight on a flower-head or grass-stem, turn head downwards, and then, after a little while, flutter off to another object, sometimes repeating the process two or three times before making a final choice. Many of them also open and close their wings before turning head downwards. This species is also to some extent gregarious, two or more often resting on a single stem or flower, and a score or more in the space of a few square feet. I experimented with them many times by touching them with my hand or with a grass-stem, and found that, when thus disturbed, they either fluttered off or more frequently dropped among the herbage. In the latter case they would presently crawl slowly up and, after settling down once more, would always turn head downwards again. Whenever I have met with this species in any number I have been careful to observe its resting attitude before dark, and have found remarkably few exceptions to the above stated rule.

Coming now to the interpretation of the head downward position, my experience does not support Mr. Colthrup's conclusion. In the usual attitude the bright orange spots of the hindwing are uppermost, and thus more conspicuous than if the insect adopted the reverse position. Furthermore, a less vulnerable point of attack is certainly presented by the hindwings covering the short body concealed well within them than by the head projecting in front of the insect. It is also important that injuries such as enemies would inflict have been frequently observed near the anal angle of the hindwing in otherwise fresh and undamaged specimens. The behaviour of another British Lycaenid supports the above interpretation. I refer to *Rumicia phlaeas*, which also usually rests head downwards, but is nothing like so consistent as *P. icarus*. I have also experimented with this Lycaenid and find that if alarmed, it does not drop down like *P. icarus*, but often thrusts forward the forewings and shews the black spots near their apex, thus exposing a directive mark to a possible enemy. After a while the forewings are lowered and the marks hidden beneath the hindwings.

Those interested in this and kindred subjects should take the opportunity of studying the numerous examples of fresh specimens with injuries in the neighbourhood of directive marks on both fore- and hindwings in the Hope Department at Oxford, and should also read Professor E. B. Poulton's account in his "Essays on Evolution," and consult the references there given; also the personal observations of the well known traveller and naturalist, Dr. G. B. Longstaff, in his delightful work *Butterfly Hunting in many Lands*.—A. H. HAMM, Oxford. April, 1916.

RESTING ATTITUDE OF THE LYCENIDÆ.—In a footnote to my note on the above on page 68, in the *Entomologist's Record* for March, the Rev. G. Wheeler says that I ignore the word *fatal*.

I certainly did not use the word fatal in my sentence "no more safe from attacks by birds in one position than the other," but as I was dealing with Mr. Frohawk's note, which specially referred to it, I thought that would be inferred.

As a matter of fact I have found from observation that birds generally attack from below, not from above (except in the case of the swallow and house-martin); they alight on the ground and flutter up. I have watched a kestrel and a pair of stonechats do this with *Agriades coridon* with disastrous results to the latter. In any case I cannot imagine any but *fatal* results, whether the insect was seized by the tail or the head. In the case of the Dragonfly seizing the Ringlet Butterfly (*Aphantopus hyperantus*) I see I omitted to mention that the latter was seized while flying.—C. W. COLTHRUP.

NOTES ON COLLECTING, Etc.

AN ENTOMOLOGIST AT SALONIKA.—Philip J. Barraud, F.E.S., is serving as a private in the R.A.M.C. at Salonika, being attached to the 84th Field Ambulance at Lembec Camp. There has been established for the benefit and enlightenment of the British forces a small four-page daily newspaper, printed in English, called *The Balkan News*, and in the issue for April 5th there is an interesting letter from Mr. Barraud dealing with the entomology of the camp, so far as he had been able to study it up to the date of writing. He first of all refers to the influence of insects on the health of the human race, and gives some brief but useful information to his comrades as to the best way of keeping noxious insects in check, and urging that careful attention should be paid to the regulations laid down by the military authorities for dealing with the matter. He also gives a list of butterflies he had observed in the neighbourhood of the camp, enumerating the following species:—*Pieris brassicae*, *P. napi*, *Leptosia sinapis*, *Gonepteryx rhamni*, *Colias edusa*, *Issoria lathonia*, *Pararge megera*, *P. aegeria*, *Coenonympha pamphilus*, *Pyrausta cardui*, *Celastrina argiolus*, and *Rumiccia phlaeas*. Mr. Barraud informs me in a letter that *Papilio podalirius* and *P. machaon* are both flying, and that he is sending any Orthoptera that occur to Dr. Malcolm Burr, who is in a neighbouring camp. It is to be hoped that Mr. Barraud will be able to continue his entomological studies and to give us, later on, a fuller list of the insect fauna of the district.—A. E. GIBBS.

NOTES FROM SALONIKA.—War certainly interferes with entomology. Yet, in a teasing kind of way, it sometimes helps. Now the spring is

well developed in Southern Macedonia, and the would be collector who happens to be in the Salonika force realises that he is in a most interesting district, and one of the least worked in Europe, yet he is lucky if he sometimes gets a chance of capturing something worth having. At the same time the unusual surroundings have provoked a praiseworthy spirit of enquiry in a number both of officers and men. One enthusiastic member of the R.A.M.C. has formed quite a museum; what first attracted him were the antics of a very young *Eupusa* which he chanced to see while picking a wild flower. The adult is one of the oddest of Mantids, but the larva is really the quaintest little creature imaginable; its tiny head, with prominent eyes and a pronged spikelet in front, its very slender, long neck, and its spidery, lobed legs are contrasted by the almost circular, flat abdomen, which is tucked impudently upwards like a wren's tail. This little creature lived in captivity for a week or more, but did not grow, because its master thought one fly a day would be ample diet for such a little fellow; but he could probably have managed several times his own weight of flies in a day; the prisoner died in captivity.

The most general pets, however, are tortoises (*Testudo graeca*), and most camps have a tortoise compound; it is reported that in one air-raid a bomb fell through a bell-tent; luckily the owner was out at the time, but his pet tortoise was killed. But as tortoises are not insects, in spite of the dictum of Frank Buckland's famous ticket collector, we must return to entomology.

Acridium aegyptium is pretty common, as indeed, along all the shores of the Mediterranean. One officer, who had been employed on a locust campaign in Egypt, was quite interested when he saw it, but this species has never been known, I believe, to swarm or do material damage. Few British laymen know really what a locust is, and often apply the term to centipedes, or any unfamiliar creature that crawls, so *A. aegyptium* is a good object lesson to them. But he is not a very exciting pet, and does not show much originality of character.

Two other Acridians are common enough, but do not attract much attention; these are *Epacromia strepens*, Fabr.; I saw the first one on a warm sunny day early in January; now they are numerous; of course these are hibernated specimens, like *Acrotylus satruelis*, Sturm., which is quite common; the flash of his crimson wings being a frequent sight on the hillsides.

The obtrusive *Caloptenus italicus*, L., has not shown up yet, perhaps he does not hibernate in this district.

The mole cricket (*Gryllotalpa gryllotalpa*, L.), is quite common; his peculiar appearance attracts a deal of attention when he is dug out, which, in fact, is usually in a dug-out; his churr-churr is audible on most warm evenings.

There is another cricket on the plains here which I have not succeeded in running down, in spite of great patience and numerous attempts; he has a peculiarly musical flute-like whistle, but is extremely shy; he only strikes up at sundown, and so there is scarcely half an hour in the day when he can be hunted for with any hope of success. From the tone, I think he is a *Gryllodes*, whose acquaintance I have made in Transcaucasia, but it is impossible to say what species. The common field cricket (*Liogryllus campestris*, L.), is often heard when riding round the country, but rarely seen.

One or two Dectidids and Phaneropterids are about on the hillsides, but still very immature, of course; I have seen a nymph already (May 5th), and so hope the adults will appear soon; all these should be interesting, as the Balkans are rich in endemic forms of both these groups. The northern parts of the peninsula are pretty well known, especially Wallachia, Bosnia, Hercegovina, Dalmatia and Montenegro, but little collecting has been done in Macedonia, at least in Orthoptera.

I have often searched under stones on the hilltops in the hope of turning up one of the Balkan earwigs, *Burriola reiseri* and *B. apfelbecki*, but so far only found the Blattids *Loboptera decipiens*, Latr., which is a very common South European species, and immature *Hololaupra*, resembling *H. subaptera*, Ramb., which it may very well be.

Others are attending to the Lepidoptera, and will report in due course; they will probably say that *Papilio machaon* is quite common, *P. podalirius* less so; I saw one of the latter in the streets of Saloniká in January. *Pararge megera* seems to be the common butterfly of the hillsides, but *Pyrameis cardui* runs it close; a blue, the small copper, and *Gonepteryx rhamni* are the only butterflies that I have noticed.—MALCOLM BURR (D.Sc., F.Z.S.), Capt.

NOTE ON PARARGE ÆGERIA.—*Pararge aegeria* was fairly plentiful in August, 1911, at Paignton, Devon, and I find both broods fairly plentiful in the New Forest every year. Those are the only two places where I have met with the species, but I have never specially worked for it. With regard to *P. megera*, I have come across it near Eastbourne the last two or three years, in August, and it is as a rule fairly common. About twenty years ago I took it near Addington, but I do not know whether it occurs there now.—C. W. COLTHRUP.

CURRENT NOTES AND SHORT NOTICES.

A. B. Shelkovnikov, the Russian naturalist, whose name is now familiar to readers of the *Entomologist's Record*, although a retired officer of the Imperial Guard (Artillery), has not been recalled to the army, but has been appointed Chief Commissioner for Refugees for the Government of Elisavetpol and Persia; owing to his knowledge of the countries and their languages, together with his organising capacity, he is well fitted for the work. His duties took him to Tabriz in the winter; in the spring he visited the region round Lake Urmi; this was a regular scientific expedition, as he took with him a geologist, botanist, zoologist, entomologist, and an assistant; the funds were supplied partly by the Caucasus Museum, partly by the Military authorities. And that is the country which Germany, of all people, calls barbarous!—M.B.

Captain Burr, or Dr. Burr as we know him, must have a busy time at his new post at Salonika with 3000 road-makers, speaking no less than 22 languages, under his supervision. Mr. H. W. Nevinson, brother of Mr. E. B. Nevinson, F.E.S., wrote an amusing article in the *Manchester Guardian* some weeks ago on the Balkan roads and "an earwig expert," giving a detailed account of the varied work and experiences of our colleague. We gather from Dr. Burr's letters to us that he is keen upon his natural history, and not only is he working himself but he is getting in touch with others similarly interested. Both he and

Mr. Barraud are using the columns of the now famous little camp paper the *Balkan News*, to find nature students, and to give information. By the bye, Dr. Burr says "there has been a bad outbreak of 'poet's rash' in that worthy journal," and from a specimen which one of my old boys sent me I quite agree with the remark. In the middle of May Dr. Burr reports two species of *Thais* as said to be flying on the hillsides, and the arrival of the Bee-eater (*Merops apiaster*).

For months we have wondered why the final parts of the *Trans. Ent. Soc. of London* for the year 1915 did not appear. This has explained itself by the arrival of parts iii.-v., the first two of which contain nearly two hundred pages and no less than 89 plates, including 15 in colour. In fact, as regards illustration, the issue of the year exceeds that of any previous year there being as many as 117 plates in all. There are twenty-two papers, sixteen of which deal with Lepidoptera, two with Orthoptera, one each to Coleoptera, Diptera, and Neuroptera, and one of general entomological interest. Among the first should be specially noticed the solution of the long-standing riddle of the later life-history of the larva of *Lycaena arion*, for which our science is indebted to the persistent study of Dr. T. A. Chapman with the aid of Mr. H. Donisthorpe and Mr. F. W. Frohawk.

We regret to hear that Mr. W. E. Sharp has recently lost his only son in the great struggle. He came over with the Canadians and was killed in France some weeks ago.

With much regret we have just heard of the death of one who for years has been a familiar face at the meetings of our London Societies, and was well known throughout the country for his splendid and witty lectures on natural history. Frederic Enock passed away on May 26th, at Hastings, where he had been living recently, and was buried at the Friends' Burial Ground, Winchmore Hill, on May 31st. He was 71 years of age.

Our colleague, Mr. Donisthorpe, has received the following very interesting letter from the chaplain of H.M.S. "Benbow":—

"I must indeed thank you without further delay for the colony of *scabrinodis* and the booklets with the little honey feeding-trough. They all arrived in perfect condition and none the worse for their long journey.

"We have been in action, as you know from the papers, after so long a wait. We inflicted very severe loss of ships and men on the enemy, though our own losses were heavy. You know the maximum loss of the British, and so far only a minimum of the German. This ship with the grand fleet was in the fight, and claims one battleship and a destroyer as her share. I was lucky enough to see a portion of the actual fighting. If only the fog had lifted for the space of fifteen minutes we should have accounted for all their ships, for we had them cut off from their base by the magnificent tactics of the C-in-C.

"At present I hear that the main German naval port is absolutely closed to all persons, whereas we, after a few hours, were ready to come out with the entire grand fleet for action.

"During the action some *ruginodis*, which we got ashore and have under glass in my cabin, laid about thirty eggs.

"I will write soon again, when I am not so busy. Again accept my sincere thanks for the colony, which I am studying with the help of your book and a low power microscope." Mr. Donisthorpe informs

us that the ants were said to be in no way perturbed by the violence of the firing of the big guns on board.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

April 5th, 1916.—SPECIAL MEETING.—The Chairman having read the notice summoning the meeting, the proposed alterations in the Bye-laws were submitted to the Fellows present, and adopted with slight verbal emendations.

ORDINARY MEETING.—ELECTION OF FELLOW.—Mr. Charles Hanslope Bocock, The Elms, Ashley, Newmarket, was elected a Fellow of the Society.

NEW MEMBER OF COUNCIL.—The Secretary announced that the Council had, in accordance with the Bye-laws, co-opted Mr. H. Willoughby Ellis as a member of Council, in the place of the late Mr. G. Meade-Waldo.

A NEW OBSERVATION CAGE.—Mr. H. Main exhibited a new observation cage for the study of earth-boring insects, especially *Geotrupes* species.

FURTHER RECORDS OF *HYPOLIMNAS BOLINA*, L., IN MADAGASCAR.—Prof. Poulton exhibited further examples of this species from the same locality as the fifty-one shown by him last year.

OBSERVATIONS ON VARIOUS INSECTS IN N. QUEENSLAND BY MR. F. P. DODD.—Prof. Poulton said that in the spring of last year Mr. Dodd had sent him a number of interesting observations together with examples of the species on which they had been made. He now brought forward some of these observations and showed the insects concerned.

NEST-BUILDING INSTINCTS OF BEES OF THE GENERA *OSMIA* AND *ANTHIDIUM*.—Prof. Poulton read a letter on this subject that he had received from Dr. R. C. L. Perkins, dated Nov. 15th, 1915, together with the specimens referred to, and now exhibited to the meeting.

MIMETIC GROUPING OF INSECTS.—Dr. C. J. Gahan read a letter on this subject which had been addressed to him as Keeper of the Entomological Department of the British Museum, by Mr. F. G. Stokes, and said it was very interesting not only in itself, but as a quite independent account of a phenomenon which had been discussed more than once at meetings of the Society,

TWO SPECIES OF BUTTERFLIES FROM WAZIRISTAN.—Mr. G. Talbot exhibited on behalf of Mr. J. J. Joicey, the butterflies *Synchlōë lucilla*, Butl., and *Yphthima bolavica*, Marshall.

RELATIONSHIPS IN THE GENUS *HELICONIUS*.—Dr. H. Eltringham gave a short abstract of his paper on "Specific and Mimetic Relationships in the Genus *Heliconius*," illustrated by several coloured lantern slides. In connection with this exhibit Mr. W. J. Kaye showed four large cabinet drawers of *Heliconius* species, three of which contained what might ultimately be proved to be forms of the extraordinarily variable species *melpomene*.

SCENT-SCALES AND GENITALIA IN FORMS OF *PIERIS NAPI*.—Dr. F. A. Dixey showed upon the screen outline drawings of scent-scales and genitalia from various forms of *P. napi*, L., and remarked on them.

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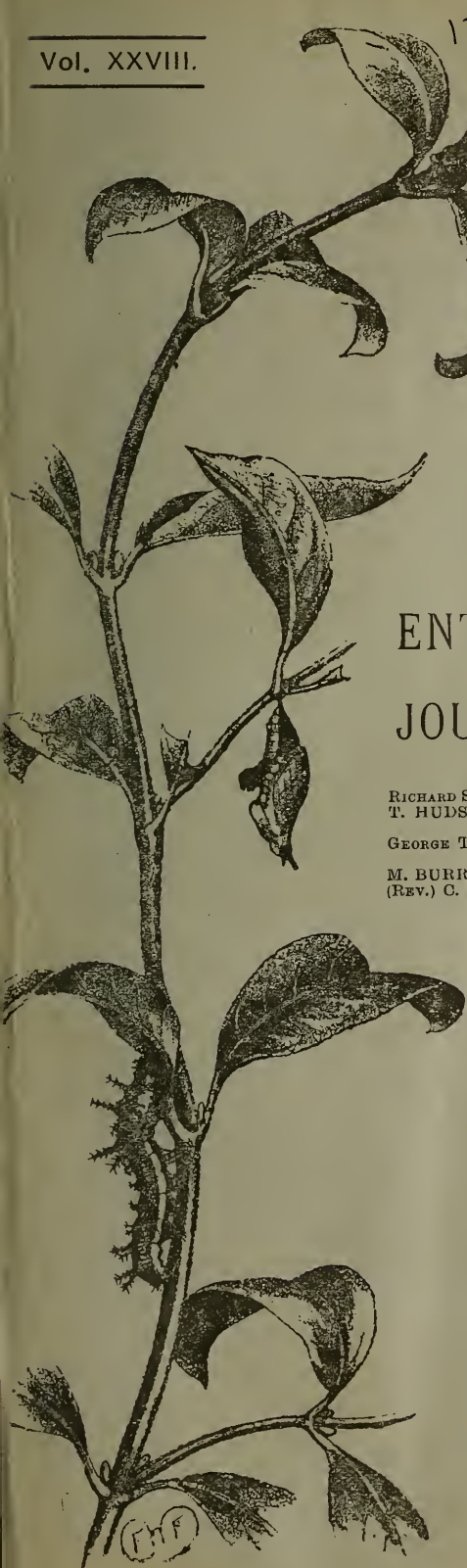
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A Note on *Dinarchus dasypus*, Illiger.

By CAPTAIN M. BURR, D.Sc., F.E.S.

Dinarchus dasypus, and its near relatives of the genus *Callimemus*, are probably familiar to anyone who has ever glanced at a collection of European Orthoptera; their massive and ponderous build and bronze-black colour make them rank among the most striking of palæarctic insects. But as the species are few, and their area of distribution restricted, there are not many entomologists who are familiar with them under natural conditions, or who have, indeed, seen a living specimen.

Among the treeless hills round Salonika there are a number of little nullahs or gorges cut by streamlets through the soft marls and gravels of the slopes; in one of these little nullahs I heard a loud and persistent stridulation among a clump of very tall and extremely fierce thistles; I was rather surprised to hear an obviously Locustine stridulation so early as May 31st, and succeeded in tracing it down to one particular thistle, but was not at the time able to follow the matter up any further. Four days later I revisited the spot in the late afternoon, and heard the same song from the identical thistle. To my delight, I saw a fine male *Dinarchus dasypus* in full song. He was a splendid and uncommonly corpulent fellow; as I held him up by the thorax, he made but little attempt to wriggle free, and none at all to bite, although his jaws are big and powerful, but he protested by uttering a low swearing note and ejecting a shower of a yellow fluid, like the yoke of an egg, all over my hands; this means of defence was rather startling at first, but the fluid appeared to be innocuous, and odourless. At the same time he evacuated bulky dark green faeces, from which I was inclined to think he is entirely herbivorous. A little later I picked up a second male, crawling silently among the low herbage.

I brought them to camp alive, as company for a female which had been brought me by a friend a day or two previously; one "lantern, tent, folding" made an excellent cage, being light, and ventilated, but although I had offered her grass and weeds, she declined to take nourishment, and when I introduced her mates, I was sorry to find that she had pined away and died of starvation. So as fodder for the males, an experiment was made with the thistle on which they had been found, and this was entirely successful; the larger male set to work at once and very quickly chewed right through the thick stalk, making short work of the sharp and hard spines; the smaller male sulked for some days, consequently the former enjoys better health and has a beautiful metallic bronze sheen while the latter is dull and listless.

It was interesting to note the individual difference in character of these two males; unlike most other Locustids, they make no attempt to fight, in fact, they take little notice of each other, except to swear when the one falls down from a bending sprig of thistle on to the other one's back. The corpulent one is of a cheery disposition, keeping up a constant song all day and a great part of the night, when not busy eating, for he is a fine trencherman. He responds to any encouragement by a friendly chirrup, and often joins in the conversation. The note is a sustained and rather high buzz, quite distinct

JULY 15TH, 1916.

from the intermittent buzz of *Decticus* or *Locusta*; a low trill on a deep note is just audible at close quarters; the noise is not loud, but penetrating and can be heard from a considerable distance. When performing, he raises his ample pronotum, the posterior portion of which acts as a sounding-board; the elytra are reduced to mere flaps, and are entirely covered by the pronotum when the animal is not chirping. It is interesting to note that the female has equally well developed stridulating apparatus; I did not hear the female sing, but she uttered a short, deep exclamation of irritation when first handled, as the males do.

The defensive yellow fluid mentioned above is ejected from the longitudinal folds which are situated on the metazona of the pronotum and on the tergites; the fluid is thrown to a distance of four or five inches. Similar glands occur on the tergites of some earwigs and are usually referred to as the "pliciform tubercles"; their true function has not been noted, but they are usually regarded as stink-glands.

Both in habits and general appearance there is a striking resemblance between the *Callimenidae* and the *Ephippigeridae*; in both sub-families the elytra are highly specialised as musical instruments and both are round-headed, corpulent, sluggish creatures; both have a characteristic song, and both swear when irritated; a still more striking analogy is that in both sexes the elytra are modified in the same way, and the female can chirp as well as the male; I know of no other group of Orthoptera in which this is the case. Writing in the field, away from books and libraries, I cannot remember the essential character on which the two sub-families are distinguished, but in Brunner's system, at least, they are widely separated, the *Callimenidae* being placed first, before the *Phaneropteridae*, and the *Ephippigeridae* nearly at the end; probably they are separated by a purely empirical character. The *Callimenidae*, or *Bradyporidae* as they are sometimes called, are a small sub-family with but two genera, the monomorphic *Dinarchus*, and *Callimenis* or *Bradyporus*, with about five species; they occur almost throughout the Balkans, except the Dalmatian Coast, and extend to the north through Wallachia, Bessarabia, to South Russia and the Crimea, and on the south to north-eastern Persia, where Fernando Escalera discovered a very handsome green and cream species. It is interesting to note that along the Dalmatian coast we have two species of *Ephippigeridae*, *Ephippigera limbata*, Kr., and *E. sophacophila*, Kr., the most easterly representatives of this extensive West Mediterranean group; I have taken both species as far south as the Bocche di Cattaro, and probably they extend a little further, they occur in Istria and around Trieste, and so have probably transgressed from Italy; thus, the areas of distribution of the two groups meet but do not overlap; I am inclined to think that the resemblance is due to actual relationship, and not to mere coincidence nor convergence.

Nomenclature.

By HY. J. TURNER, F.E.S.

The Report of the British National Committee on Entomological Nomenclature has just been published (*Trans. Ent. Soc. London*, 1915) and the following is a summary of the decisions arrived at on the 26

points submitted to them for their opinion. It may be stated that in all cases the decisions of the committee were absolutely unanimous.

A. DIPTERA.

1. *Heliodromia*, Haliday, is the genus of which *immaculata*, Haliday, is the type, and *Sciodromia*, Haliday, is a synonym of *Heliodromia*.
Hydrodromia, Macquart, is the generic name of *bipunctata*, Hal., and *stagnalis*, Hal.

B. LEPIDOPTERA.

2. *Cydia*, Hüb., is the genus of which *pomonella*, L., is the type, consequently the generic name *Carpocapsa*, Treit., falls as a synonym.

3. It seems scarcely credible that it could be necessary to submit such an absurd question but there is no doubt that such a case has arisen or so eminent a scientific entomologist as Dr. Karl Jordan would not have formulated the following:—

“X proposed a name for a supposed species closely allied to another species; he does not know which of these species has been already named, and wishes his new name to be applied to the one which has no name. What is to be done with the name proposed by X?”

Of course the committee unanimously deposed such a name. “A valid name can only be applied to a definite conception; . . . X has formed no conception as to the particular species to which the new name is to be applied—there is, therefore, no species nor type to which the new name can be applied.”

4. The name *podalirius*, L., should stand as the species name, and not *sinon*, Poda, as suggested by Verity and others.
5. The form typical of the species *podalirius* was that figured by Rösel, “*Papil. Diurn.*,” Cl. II., pl. 2, fig. 3 and 4, as cited by Linné.
6. 7. 8. These three questions were similar. Are we to consider particular forms of *P. rapae*, *P. napi*, and *P. brassicae* respectively as typical of the species described by Linné?

The general answer to all three questions is that we are not to do so, but that there is every evidence that these names being of generally distributed species were “comprehensive terms,” and hence “the First Reviser was at liberty to restrict the name to which form he preferred.” In the case of *napi* the opinion points out that Esper was the first reviser when he proposed the name for the summer form, *napaeae*.

9. In the genus *Anthocharis* the name *belia*, L., must be substituted for the insect modern usage has called *euphaeno*, L.
10. We must substitute *crameri*, Btlr., for *belia*, Cram., as the older name was mis-applied.
11. Re *rhamni*. See replies to 6. 7. 8.
12. States that *cleopatra*, L., is undoubtedly the name for the North African form which is typical of the species, hence, “if neces-

- sary," one is at liberty to apply the race name *europaeus*, Verity, to the South European form.
13. Similarly in the case of *jasius*, the North African form is clearly designated by Linné as typical of the species, and the "if necessary" remark applies here also.
 14. There is no justification for substituting *iris*, L., for *ilia*, Schiff.
 15. Consequently the name *pseudoiris*, Verity, cannot be accepted.
 16. The substitution of the name *eris*, Meig., for *niobe*, L., as the species name "is not justified."
 17. The name *cydippe*, L., must be substituted for *adippe*, L., and the proposed name *esperi*, Verity, is not valid. This change has seemed inevitable for years. There was no justification for retaining the name *adippe* except long usage. This error of Linné's was pointed out years ago, but common consent seems to have persistently ignored rectification of this application.
 - 18, 19, 20, 21, 22, 23, 24. Refer to *hermione*, L., *alcyone*, Schiff., *jurtina*, L., *maera*, L., *rubi*, L., *virgaureae*, L., and *hippotoë*, L., and are practically answered by the replies to 6, 7, 8, etc. They are comprehensive terms, and the First Reviser was at liberty to restrict the name to which form he preferred.
 25. Refers to *idas*, L., which name definitely applies to an Indian species and cannot affect the name *argyrognomon*, Brgstr.
 26. The opinion states that the name *ramburi*, Verity, must be substituted for *idas*, Ramb., which is a homonym of *idas*, L. (25).

However one may be inclined to cavil at any of these "opinions," we must remember that they have been most carefully arrived at after due consideration by some of our most competent specialists assembled under a machinery which many of us have desired for years past. It only remains for us to accept these results and carry them out, and we have no doubt that ninety-nine out of every hundred will acquiesce in them. We must again urge that in *all* the twenty-six "opinions" referred to above *all* the members concurred, and it should further be borne in mind that individually they hold opinions on nomenclature that are by no means concurrent.

The Time of Emergence of Lepidopterous Imagines.

By the Rev. C. R. N. BURROWS, F.E.S.

I am able to contribute some further information upon the subject to which Mr. P. A. Buxton (*Ent. Record*, vol. xxviii., p. 38) invites attention. I will not claim to have made systematic records in my diary, which may account for the rather curious preference for rare or unusual insects in my list, extending as it does over many years, and for the poverty of the details.

Most of my rearing, especially from the pupa, has been indoors, and therefore scarcely natural. This may make some difference in the times recorded.

Papilio machaon, early morning, 10 a.m.

Aporia crataegi, 8.0 p.m.

Dryas (Argynnis) paphia, 12.0 noon, 1.30 p.m., 3.30 p.m.

Melitaea aurinia, 3.30 p.m.

- Aglais (Vanessa) urticae*, 9.0 a.m.
Apatura iris, 5.30 p.m., 6.15 p.m., 9.0 p.m., 11.30 p.m.
Satyrus semele, 10.0 p.m.
Ruralis (Thecla) betulae, 9.0-10.0 a.m.
Celastrina (Cyaniris) argiolus, 9.0 a.m., 9.50 a.m., 10.0 a.m., 6.30 p.m.
Manduca (Acherontia) atropos, forced, 5.30 p.m. (2), 8.0 p.m., 9.0 p.m., 9.0-10.0 p.m., 9.30 p.m. (2), 10.40 p.m., after midnight (6), 6.0-7.0 a.m.
Amorpha (Smerinthus) populi, morning, 9.0 a.m.
Aegeria (Sesia) andrenaeformis, morning.
Aegeria (Sesia) myopiformis, 10.0 a.m.
Aegeria (Sesia) culiciformis, 7.50 a.m.
Aegeria (Sesia) formicaeformis, noon.
Zygaena filipendulae, morning.
Farias chlorana, 9.30 a.m., 10.30 a.m., midnight, night.
Lithosia lurideola, 12.30 a.m.
Callimorpha dominula, morning, before 10.0 a.m.
Arctia caia, 8.30 a.m., 9.30 a.m., 10.30 a.m. (2), morning, 12.30 p.m., 2.30 p.m., 3.30 p.m., 4.0 p.m., 4.30 p.m., 10 p.m. (2).
Arctia rillica, 5.0 p.m., 12.30 a.m.
Spilosoma mendica, in night.
Spilosoma menthastri, 8.0-9.0 a.m.
Cossus ligniperda, 12.30, noon.
Orgyia gonostigma, 9.0 a.m. (2), 9.11 a.m., 10.0 a.m., 11.0 a.m., noon, 3.30 p.m.
Lachneis (Eriogaster) lanestris, 2.0-3.0 p.m., 9.0-11.0 p.m. (2).
Malacosoma neustria, 4.0 p.m.
Lasiocampa quercus, 9.0 a.m., 11.0 a.m.
Cosmotriche (Odonestis) potatoria, 12.30 p.m., 2.0 p.m., 6.30 p.m., 7.0-8.0 p.m., 9.0 p.m. (2), "evening."
Eutricha quercifolia, 4.30 p.m.
Dimorpha (Endromis) versicolora, 4.0 p.m.
Saturnia pavonia, 9.0-11.0 a.m., evening.
Drepana lacertinaria, 9.0 p.m.
Drepana cultraria, in night.
Dicranura vinula, 4.0 p.m.
Stauropus fagi, in night.
Ptilophora plumigera, 9.0-12.0 p.m.
Pterostoma palpina, in evening.
Lophopteryx camolina, 9.0 p.m., 10.0 p.m., 11.0 p.m., 11.30 p.m.
Lophopteryx cuculla, in night (3).
Pheosia (Notodonta) tremula (dictaea), 6.0 p.m.
Pheosia dictaeoides, 6.0 p.m.
Notodonta ziczac, "evening" (2), 8.0 p.m.
Drymonia trimacula var. dodonaea, 7.0 a.m., 9.0-10.0 p.m.
Phalera bucephala, 12.0 (midnight).
Pygaera curtula, night.
Pygaera pigra, 7.0-9.0 p.m.
Polyplocia (Asphalia) flavicornis, in night.
Bryophila perla, 6.0 p.m.
Demas coryli, 8.0-9.0 a.m., before noon, 12.0-2.0 p.m., 2.0 p.m., in night (2).

- Triana (Acronicta) tridens*, 9.0 a.m. (2), 10.30 a.m. (2), 11.0 a.m., 12.30 p.m., 2.0 p.m., 2.45 p.m., 3.0 p.m., 5.0 p.m.
Acronicta leporina, 9.30 a.m., midday, 4.0 p.m.
Jocheaera alni, 6.0 a.m., 9.0 a.m., 10.0-11.0 p.m., 12.0-1.0 p.m.
Craniophora ligustri, noon, 2.0 p.m., 3.30 p.m., 4.0 p.m. (2), 8.0 p.m.
Meliana flammea, 8.30-9.0 p.m.
Nonagria dissoluta (arundineta), 9.30 p.m., 11.0 p.m.
Leucania (Nonagria) brevilinea, 9.30 p.m., 11.0 p.m.
Calamia lutosa, 8.0-9.0 p.m. (2).
Gortyna ochracea, 9.0 a.m. (3), 10.0 a.m.
Luperina testacea, 7.30 p.m., 9.30 p.m.
Apamea ophiogramma, 8.30 a.m., 9.0 a.m., 11.15 a.m., 9.0 p.m., 10.30 p.m.
Caradrina quadripunctata, 6.0 p.m.
Noctua triangulum, in night.
Triphaena pronuba, before noon, 11.0 p.m.
Taeniocaupa stabilis, 9.0-11.0 a.m.
Taeniocaupa munda, 9.0-10.0 a.m., noon.
Dicycla oo, 10.0 p.m., after midnight.
Dianthoecia capsincola, 9.0 a.m., 9.30 a.m. (2), 2.30 p.m.
Dianthoecia carpophaga, night, 8.0 a.m.
Hecatera serena, 9.30 a.m.
Euplexia lucipara, 2.0-3.0 p.m., 6.0 p.m.
Hadena dissimilis, 4.0 p.m.
Hadena oleracea, 10.0 a.m., 1.0 p.m.
Asteroscopus nubeculosa, 5.0-9.0 p.m.
Cucullia absinthii, morning.
Gonoptera libatrix, 9.0-10.0 a.m., 11.30 a.m.
Plusia moneta, 6.0 p.m.
Anarta myrtilli, in night.
Bankia argentula, 9.0 a.m.
Brephos notha, 11.0 a.m.
Oncrapteryx sambucaria, 5.15 p.m.
Opisthocraptis (Rumia) luteolata, in night.
Hygrochroa (Pericallia) syringaria, morning, 12.30 p.m., 6.0 p.m.
Selenia lunaria, night, 8.0 a.m.
Ennomos (Eugonia) fuscantaria, night, after midnight.
Pachys (Amphidasis) strataria, 2.0-3.0 p.m.
Pachys (Amphidasis) betularia, afternoon, 8.0 p.m.
Hemerophila abruptaria, 9.0-10.0 a.m., evening.
Pseudoterpna pruinata, 6.0 p.m.
Geometra vernaria, midday.
Enchloris (Phorodesma) pustulata, 9.0 p.m.
Enchloris (Phorodesma) smaragdaria, 9.30 a.m. (2), noon, 2.30 p.m., 6.0 p.m., 8.15 p.m., 9.0-11.0 p.m. (2), 9.30 p.m., 10.0 p.m. (2).
Ephyra (Zonosoma) punctaria, 7.0 a.m.
Ptychopoda (Acidalia) aversata, 4.30 p.m.
Cabera pusaria, afternoon.
Cabera exanthemaria, 11.30 a.m.
Lomaspilis marginata, 8.30 a.m., 9.30 a.m.
Oporabia filigrammaria, 2.0 p.m.
Eupithecia linariata, 3.45 p.m.

Eupithecia subfulvata, evening.

Eupithecia absinthiata, midday.

Eupithecia abbreviata, 12.0-1.0 a.m.

Hydriomena (Hypsipetes) ruberata, 7.0 p.m.

Eulype (Melanippe) hastata, in night.

Xanthorhoë (Melanippe) unangulata, 8.0 a.m., 9.0 a.m., 9.30 a.m., 11.30 a.m.

Anticlea cucullata, 8.0 a.m., 8.30 a.m.

Ochyria (Coremia) designata, 9.0 a.m. (3).

Coenocalpe (Phibalapteryx) vitalbata, 5.30 p.m.

Odontia dentalis, 9.35 a.m., 10.0 a.m., noon.

Leioptilus septodactyla (lienigianus), noon.

Porrittia (Aciptilia) galactodactyla, morning, 12.0 noon.

Solenobia inconspicua, noon.

I have evidently at times been interested in this matter, but have been "put off" by some inconsistency in the behaviour of my prisoners.

It should be noted that the number attached to some of the hours are records not specimens. That the conditions, protection, warmth, etc., etc., may influence the time of emergence is very evident. One curious experience has befallen me. On November 10th, 1886, I had a considerable number of pupæ of *Ptilophora plumigera* which I thought were over-due. The evening happened to be rainy and I put them out of doors. I brought in the flower pot containing the pupæ at 7.30 p.m. on the 11th. The whole of the pupæ emerged between 9.0 and midnight, to my utter confusion and despair. A somewhat similar case is quoted by Tutt in *British Lepidoptera*, vol. ii., p. 515, in the note on pupal habits of *Lachneis lanestris*, where the bringing indoors, or taking out, of the pupæ, appears to have determined the time of emergence of the imagines.

The Upper Engadine in 1914.

By Hy. J. TURNER, F.E.S.

(Continued from page 112.)

August 4th was by no means a butterfly day, it was dull and with intermittent rain. My notes say, "a day of rumours of war." After what now became the usual walk round to see the placards, and to get the news and try to exchange some money, a walk was taken to Alp Giop and by the new settlement known as the Chanterelle. In the long grass among the young fir trees were plenty of "blues" and "skippers," and no less than seven species of orchid were noted. The *Hesperidae* seemed extremely fond of resting with closed wings on the large daisy flowers upon which they were quite inconspicuous. There were plenty of *Agriades coridon*, some large *A. thetis*, *Latiorina orbitulus* a few, *Polyommatus eros* in numbers, *Albulina pheretes* a few, a sprinkling of *Polyommatus damon*, with perhaps a preponderance of *Plebius argyro-nomon* var. *aegidion*, and a few *Hesperia comma*, the dark alpine form. On looking at a specimen of *Cupido minimus* taken here, I have been doubtful as to its identity. The row of spots on the underside of the forewings instead of having a double curve is almost straight and would suggest *Cupido sebrus*, but size, shape, colour of upper surface, and particularly locality, all pointed to *C. minimus*. I removed the

label and called Mr. Bethune-Baker's attention to the specimen. He not only said that it was undoubtedly *C. minimus*, but further remarked that he had taken that form at St. Moritz and Pontresina some years before. At the annual presidential address given by Prof. Poulton to the Linnean Society a few weeks ago, the subject dealt with was the "Inheritance of Small Variations," in which numerous species well known for their proneness to the production of local races were mentioned, such as *Pieris napi* for instance. This aberration of *C. minimus* seems to be a good instance of such inheritance, and perhaps it may be possible to get further confirmation if readers will examine their series or captures of this species in the Engadine. A few *Argynnis niobe* and *Colias phicomone* were among the "sitters" on the flowers. The specimens of the former were unusually liberally spotted with silver and not the var. *eris*, which was somewhat remarkable, as elsewhere in the neighbour *eris* predominates almost to the complete exclusion of the type. The latter species, *E. phicomone*, were all females, and very few males were seen after this date. The specimens taken were of an intense yellow on the underside of the lower wings, and the disc of the forewing underside was also yellow instead of the greenish-yellow which usually covers it. A ragged specimen of the very local *Brenthis ino* was noted quite two miles from the extremely restricted area where I had previously taken it. This species was not met with at any other spots. One would have expected to find a number of *Noctuae* with such a wealth of blossom as grew on the beautiful flowery, steep slopes descending towards the old church with its leaning campanile and the Badrutt Park, but the only species seen was an extremely small specimen of *Agrotis ocellina*.

A return to the village brought us back to mundane things. The hotels were mostly either closed or used as barracks for the soldiers, sentries with fixed bayonets were stationed at the banks, post office, and other prominent places, visitors were few and far between, and those wandering about eagerly questioning one another for news. A walk one would possibly have avoided under ordinary circumstances, through the Badrutt Park, showed only a sparse sprinkling of visitors, and not one was passed along the path through the woods, across the mouth of the railway tunnel near Samaden, and back along the fine gorge, the Innschlucht, to the Innfall Bridge. No Lepidoptera were met with beyond a few "blues" on the flowers. Near the north end of the tunnel were masses of a large and conspicuous Composite which I have not identified. The rain now drove us indoors, and "Woulff bureau" news with the non-arrival of expected and delayed communications from home, neither letter nor telegram, made us begin to think how, when the time came, we were to get home, with limited means and tickets not available except by the way of Basle.

August 5th was another very poor day, not at all propitious for entomology; a few odds and ends were picked, among them a very nice form of *Parasemia plantaginis*, in which the ground colour of the hindwings was pure white, and that of the forewings slightly tinged with yellow only; the light and dark areas were of about normal size; the fringes and costa were strongly yellow. *Acidalia flaveolaria* was still in numbers and in good condition among the grass on banks.

The next day was one of those which fortunately have so rarely

fallen to our lot on our continental holidays. In fact memory seems to give us "all sunshine." "Very cold, wet to snow, and thunder in afternoon," is the comment in my notes. To which is added "the whole place full of soldiers." If my memory serves me rightly this was the worst day I have ever experienced in Switzerland when not travelling. There has always been some sunshine, but there was none on August 6th, 1914.

Quick change in Alpine weather is what one expects, and the early morning of August 7th gave signs of a fine day. The Suvretta road was our morning ramble. There was but little fresh to record, insects were abundant and the sun seemed less powerful. Geometers that are readily disturbed by day now seemed more numerous, or was it that butterflies were less obtrusive. *Larentia caesiata* was in numbers, a much paler and larger form than our Scottish insect, and tremendously wary. *Cidaria verberata* was worn, and a specimen of *Thera variata* was taken, large, very pale and considerably worn. A fine example of *Dasydia tenebraria* was disturbed from a rock and captured. The *Argynnis niobe* in this area produced but few silver spotted specimens, most were var. *eris*. On some rocks along a newer road leading to the Alpina a couple of *Erebia goante* were disturbed, the forerunners of a fine series taken here later. There were swarms of *Erebia tyndarus* and *E. melampus*, *Aricia medon*, *Argynnis niobe*, and *A. aglaia* all along the path-side wherever the hay was still standing. In the afternoon it was thought that a walk to Pontresina and back would be a change. In passing the Wald-park, where chamois and other Alpine animals are enclosed in large paddocks, a number of *Parnassius apollo* were seen for the first and only time. The two taken were males. The only other capture was a large example of *Pieris brassicae*, near Pontresina. Just close by the Wald-park cottage a beautiful wasp had a nest on the bank among the grass. The colony was small, numbering seven in all. The species was a bold and handsome one. There was an abundance of Geometers on the trunks of the trees in the woods at the foot of Piz Rosatsch, which flew readily as we passed quickly through in anticipation of more rain.

August 8th is an empty day so far as my notes are concerned, with the exception of the words "letters and telegrams sent." We were evidently attempting to get into touch with our friends at home, thinking that possibly by now the congestion and irregularities of the various mobilisations were abating, and that it would soon be possible for communications to traverse France. In the morning about the lovely Alpina I took a male *Chrysophanus hippothoë* in bred condition and a few Hesperids, and in the afternoon the path on the margin of St. Moritz lake to the Meierei and the Stätzer See, a delightful walk of quiet beauty was taken. This latter had been avoided hitherto as much as a thronged highway would be, but now it could be enjoyed for its almost solitude.

The next day we determined on a whole day in the Suvretta Thal, going as far as we could after the road was left for the path, consonant of course with collecting all the time. I wished to get up to the little lake, which practically marks the watershed where the drainage in the Val goes down to the Val Bevers, near the eastern mouth of the Albula tunnel. Probably had I been alone I should have essayed this long tramp and neglected the insect fauna. But as the day was almost

cloudless, one of the record days for weather and insects, we tarried and tarried, collecting, enjoying the beautiful scenery, trying to push off as long as we could the "coming events" which seemed gradually forcing themselves upon us, and so failed to reach the actual point intended, although we were quite as high, *viz.*, about 8,500ft. up. Past Piz Albana, snow-capped on its northern face, on the winding paths of which one or two soldiers were enjoying a climb, on to the wild and rock-strewn slopes of Piz Nair, opposite to the much more snow-covered slopes of the more lofty Piz Julier, where we took our meal in view of the snowy tops of Piz Suvretta and Piz Bevers. Looking back the way we came gave a grand and extensive view of much of the Bernina range, lying on the borders of Italy, with its complete covering of snow glittering in the sunshine.

It was certainly an entomological day. Insects were in thousands, although many were worn and damaged no doubt from the rains and snows of the past few days. Still changes take place very quickly in the Alps and many useful captures were made. Perhaps the best result was about a score of *Parnassius delius*, which was quite common at the part where there is a solitary cow-hut on the border of the "alp." About an equal number of males and females were secured, all in good condition. There were several of the form recently introduced by Dr. Seitz, *ab. anna*, in which there is a distinct red basal spot on the hindwing and rather strong black powdering on all the wings. The type specimens of Dr. Seitz came from Sulden. This aberration is said to exist in the males rarely, but none of those taken have it. M. Oberthür has named a form in which there is an union of the two large red centred spots on the hindwings by means of a narrow black band, as *ab. cardinalis*; it occurs in examples with very large ocelli. One of my specimens approaches this form in these two characteristics, and has the white eye-centre split into two on the left hindwing. Several of the males taken have the eye-spots quite without trace of a white centre, some have the red stained yellow to terracotta, which may be called *ab. aurantiaca* of Spuler. But there are such numbers of aberrations listed, and the named points in the variation track are so minutely apart that it is scarcely worth the time to work them out when one is not a Parnassiid specialist. There were plenty of *Colias phicomone* and some *C. palaeno*. Of the latter a strongly yellow-green female was captured. *Pieris brassicae* had got somewhat high up and a pair of very large ones were captured. In fact, wherever seen this species seemed of quite unusual size. I had almost forgotten that it was on this day that I met with a pair of *C. phicomone* flying in cop, the male was carrying the female. It will be remembered that I recorded, *Ent. Rec.*, p. 89, ante., a similar circumstance in *C. palaeno*. There was an abundance of the two more widely spread Argynnidæ, *A. niobe* and *A. aglaia*, in both of which species pairs were observed, the females carrying the males. *Brenthis pales* was well in evidence, the females struck one as large in size for the elevation and they were very variable, some almost as light on the upperside as the males, some were *var. isis*, yellow predominating over the red-purple on the underside, and upperside dusted with blackish, some with intense and extended black markings with rich green, yellow and red on the underside, some of the form *napaea*, the upperside shot with dull purple. "Blues" were certainly not in the numbers they were lower down,

nor were the *Erebiae* much in evidence. *Polyommatus evos*, *Plebeius argus* (worn), and *Agriades coridon* are the only species I appear to have taken, the last a small form. While the only *Erebiae* were *E. tyndarus*, which showed much variation in the general coloration of the underside, varying from practically unicolorous silvery-grey to a deep smoky grey with a few darker markings, and *E. melampus*. Strange to say there was no trace of *E. epiphron*, nor did I see another species which I had quite expected to get in quantity, viz., *Zygaena exulans*. In fact, I appear not to have noted any species of the latter genus, probably an oversight. *Parasemia plantaginis* was kicked out at intervals and several nice forms were annexed. The *hospita* form of the male, in which the ground colour of the hindwing is pure white, was present in an intensely black specimen with the white area reduced to the irregular sub-marginal line of marking only. I should have called the form *matronalis* from its area of markings had it not been that the forewings were yellow and not white in ground colour. Another specimen was partly *brunnescens*, in which some of the yellow ground of the hindwings was suffused with brown. From the large masses of detached rock scattered on the slope numerous specimens of the Gnophid, *Dasydia tenebraria*, flew at our near approach. One often wonders by what sense the wary insects know of the presence of an intruder, even at many yards distance. Tree and rock-resting species often start in a small cloud long before one can get at many arm's lengths. A few Pyrales brought home included *Botys rhododendronalis* and *Crambus radiellus*. Here again I came across the curious local *Pygmaena fusca* as I had done the week before at Haanen See.

The 10th of August was another grand day, but unfortunately advantage could not be taken of it as the British Consul, Dr. Holland, had called a meeting of the British visitors to discuss ways and means not only of getting home, but of remaining till opportunities offered. Evidently the British Government had not deserted us, as we heard that arrangement would eventually be made for the British to get back, and money was at the disposal of those who had need to pay their way. When and how the return was to be made was unknown, it was a matter of "wait and see." As to "news of battle" we got nothing authentic except the news (!!) of the now notorious "Woulff bureau," which needless to say no Britisher believed. Perhaps the most reliable news at the time was what one got from the Italian paper, the *Corriere del Serra*. I took the opportunity of the afternoon walk to go across the Alpina woods and then on to the *arsilache* ground. The former produced several more *Colias palaeno*, including the pale dimorphic form of the female among other things already noted, the latter another short series of the Brentid, although only by a waiting search and wet feet.

(To be continued.)

Cis dentatus, Mellie, not a British Insect.

By H. DONISTHORPE, F.Z.S., F.E.S.

In 1907 [*Ent. Rec.*, vol. xix., p. 136 (1907)] I brought forward a beetle, taken by my friend Mr. Mitford, in the Isle of Wight, as new to the British List under the name of *Cis dentatus*, Mell.

Mr. Pool (who has given a considerable amount of study to the

genus *Cis* in Britain) having taken some specimens which he thought might be *C. dentatus*, borrowed the Mitford specimen to compare them with.

He has come to the conclusion that the insect in question is not *C. dentatus*, but a rather striking aberration of *C. alni*. I agree with him in this, having recently examined all the specimens of *Cis* at the British Museum with him. The supposed *Cis dentatus* is pubescent (whereas *C. alni* is shining), the puncturation is very distinct, the larger punctures in the elytra being themselves punctured, and to my mind the anterior angles of the thorax are much sharper than in *C. alni*. Some of our coleopterists would not hesitate to describe this beetle as a new species, but it seems to me to be better to treat it as an aberration of *C. alni*, for which I propose the name of *mitfordi*, n. ab.

Bibliography of *Pieris napi*, its forms and close allies.

By H. J. TURNER, F.E.S.

It has been suggested that a list of all the chief references to *Pieris napi* would be of use to the many entomologists who take an interest in this very common, very variable, and very extended species, and its close allies. The list does not claim to have exhausted the references, which might be increased by further research, but it is hoped that it may contain all the principal items, and form a basis for a more complete study of this important species. [o.d.=original description.]

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 1816. Hübner.—“Verz.,” p. 93.
 1816. Ochsenheimer.—“Schm. Eur.,” vol. iv., p. 31.
 1819. Godart.—“Ency. Meth.,” vol. ix., p. 112, 162.
 1819. Samouelle.—“Ent. use. Comp.,” p. 236.
 1819. Samouelle.—“Nomen. Br. Ent.,” p. 34.
 1821. Godart.—“Hist. nat. Lep. Fr.,” vol. i., p. 55, plt. 2, tert. 2,
 quart.
 1822. Godart.—“Hist. nat. Lep. Fr.,” vol. ii., p. 39, plt. 5.
 1824. Curtis.—“Brit. Ent.,” vol. i., pl. 48.

1824. Dalman.—“Förs. sys. Uppstal. Sver. Fjär.,” p. 84.
 1824. Jermyn.—“Butt. Col. Vad.,” ed. i., p. 24, 44.
 1827. Stephens.—“Ill.,” vol. i., p. 19-20, etc.
 1827. Stephens.—“Ill.,” vol. i., p. 21, pl. 3. o.d. *sabellicae*.
 1827. Jermyn.—“Butt. Col. Vad.,” ed. ii., p. 78, 96, 157.
 1828. “Brit. Butt.” (Birmingham), p. 6, pl. 4.
 1829. Harris.—“New Eng. Farm.,” vol. viii., p. 402. o.d. *oleracea*.
 1829. Stephens.—“Sys. Cat. Br. Ins.,” vol. ii., p. 4.
 1832. Boisduval.—“Coll. Chenilles d’Eur. Pap.,” pl. 5.
 1832. Rennie.—“Conspect.,” p. 3.
 1834. Treitschke.—“Schm. Eur.,” vol. x., pt. 1, p. 88.
 1835. Herrich-Schäffer.—“Nomen. Entom.,” p. 5.
 1836. Boisduval.—“Sp. Gén. Lép.,” vol. i., p. 518.
 1836. Boisduval.—“Sp. Gén. Lép.,” vol. i., p. 518. o.d. *oleracea*.
 1836. Boisduval.—“Sp. Gén. Lép.,” vol. i., p. 519. o.d. *cruciferarum*.
 1837. Dahlbom.—“Skand. Ins. scada och nytta,” p. 158.
 1837. Kirby, W.—“Fn. Bor.-Am.,” vol. iv., p. 288, pl. iii. o.d. *casta*.
 1839 (33). Wood.—“Index,” p. 2, pl. i.
 1840. Boisduval.—“Ind. Method,” p. 4.
 1840. Zetterstedt.—“Ins. Lapp.,” p. 907.
 1842. Rossi.—“Addit. Fn. Aust. Diss., Vindobon,” p. 22.
 1843. Herrich-Schäffer.—“Sys. Bearb. Schm. Eur.,” vol. i., p. 96.
 1844. Selys Longchamps.—“Mem. Soc. Roy. S. Liège,” vol. ii., p. 3. o.d. *nigrovirensa*.
 1850. Agassiz.—“Lake Superior,” p. 386, pl. viii.
 1853. Herklots.—“Bouws. Fn. Ned.,” p. 5.
 1856. Stephens (Stainton).—“List Brit. An., Lep.,” ed. 2, pt. 5, p. 4.
 1857. Stainton.—“Man. Br. Butt. and M.,” vol. i., p. 19.
 1857 (5). Ménétrés.—“Cat. Mus. Petr. Lep.,” vol. ii., p. 113, pl. 10. o.d. *melete*.
 1859. Heinemann.—“Schm. Deutsch. u. Schw.,” vol. i.
 (To be concluded.)

Records of some New British Plant-galls. II. Some more Cecidomyid Galls.

By RICHARD S. BAGNALL, F.L.S., F.E.S.

The following are records of captures made in May and June of this year, but five species, *Rhabdophaga albipennis*, *R. rosariella*, *Perrisia kiefferiana*, *P. hygrophila* and *P. pustulans* were brought forward as British early in 1916 by Mr. H. J. Burkill (*Entomologist*, January, 1916, pp. 4-8).

We have now observed midge-galls caused by just upon a hundred species of *Cecidomyiidae* in the Northumberland and Durham area, and there is no doubt a number yet remain to be discovered.

CECIDOMYIDÆ.

Contarinia viburni, Kieff.

.Guelder-rose, flowers remain closed, swollen; larvæ white.

DURHAM, Gibside, Ravensworth, Lamesley, Cox Green, Fatfield, Lumley. CUMBERLAND, Keswick.

Contarinia lonicerarum, F. Loew.

.Guelder-rose, gall same as in *C. viburni*, but larvæ lemon-yellow.

DURHAM, rare, Fatfield on two bushes, a few: Gibside very scarce.

Contarinia anthobia, F. Loew.

Hawthorn, flower remains closed, slightly swollen, larvæ pale whitish-yellow.

DURHAM, Burnopfield.

Rhabdophaga albipennis, Winn.

Various sallows.

DURHAM, Billingham and Birtley (J. W. H. Harrison), Lamesley, Gibside, Westgate, Penshaw. NORTHUMBERLAND, Ovingham-on-Tyne. CUMBERLAND, Alston. LANCASHIRE, Ainsdale and Freshfield. CHESHIRE, Upton near Birkenhead.

Rhabdophaga rosariella, Kieff.

On *Salix repens*, apparently rare.

LANCASHIRE, Sandhills near Ainsdale.

Rhabdophaga clarifex, Kieff.

On *Salix ? cinerea* or ? *viminalis*.

LANCASHIRE, Ainsdale, two or three of this year's galls; several old, May.

Rhabdophaga giraudiana, Kieff.

Aspen, elongated fusiform swelling of young twig, 15-25mm. long; although aspen is common in neighbourhood I only found two examples of gall.

LANCASHIRE, Ainsdale and Freshfield, late June; the insects had emerged in both cases.

Perisia thomasiana, Kieff.

Lime, young leaves curled, crinkled and crisp, turning brown; larvæ white to reddish, gregarious, June.

DURHAM, Lambton Park and district, scarce but widely distributed; Chester-le-Street and Gibside, rare; Stanhope, in numbers. CUMBERLAND, Keswick, rare.

Perrisia pustulans, Rübs.

Meadow-sweet, June.

DURHAM, Gibside.

Perrisia kiefferiana, Rübs.

Willow Herb (*Epilobium angustifolium*); margins of leaves turned down; larvæ gregarious.

DURHAM, Gibside. Eggs, last week of June. Eggs are found laid singly along bottom of pouch formed by the turned margins, thus showing that the gall (and perhaps other similar galls) is not the result of a special fluid, heat, or other irritant, following on the deposition of the egg in the embryonic tissues of the leaf.

Perrisia hygrophila, Mik.

On *Galium palustre*.

DURHAM, near Gibside.

Brenthis pales, its history and its named forms.

By Hy. J. TURNER, F.E.S.

(Continued from page 138.)

[CORRECTION.—On page 135 an error has crept in, for the correction of which I am indebted to the careful eye of Mr. L. B. Prout. In line 30, the date of Illiger's new edition of Schiff. "W.V." should, of course, be 1801. 1822 is the date of the reprint of Illiger's Magazine, the *Neue Ausgabe*.—H.J.T.]

In 1836 Freyer, in *Neu. Beitr. Schm.*, vol. ii., p. 149, pl. 187, described and figured a melanic aberration of *B. pales*, which much resembles Hübner's figures 617-18, but with more extension and concentration of the intense black over the whole disc, without a trace of the red except a more or less continuous narrow area around costa, inner- and hind margin on hindwings, and costa and inner margin on forewings. There is a regular sub-marginal row of lighter blotches on the hind margin of the forewings. The underside shows no particular divergence in colour markings, and the black markings on the disc of the forewing below are sparse in number and little in emphasis.

On p. 150 and pl. 187, Freyer described and figured a form of *B. pales* which he labelled *isis*. He stated as I have noted above on p. 86, that Hübner's figures 38 and 39, labelled *isis*, are properly *pales*. Freyer's *isis* were obtained in numbers in Switzerland, and he noted them as being quite distinct from both *pales* and *arsilache*. He says that the ground colour of *isis* is very dark and comparable to that of a female *aphirape*. The wing shape is nearest to that of *pales*, but the imago is larger. The underside of the hindwing is very pale and not so variegated in marking as in *pales* and *arsilache*, but well furnished with silvery spots. The antennæ are longer and the club is stouter. It is impossible to criticise Freyer's figure of the underside as the colour has gone in the copy of the Ent. Soc. London library, the upperside is strongly marked and coloured, and the size of the figure is large and strong in appearance. Freyer gives S. Switzerland as the chief range of this butterfly.

In 1836 Herrich-Schäffer, in his *Sys. Bear. Schm. Eur.*, vol. i., p. 35, treated of *pales* and *arsilache* as two separate species.

He criticised Hübner's figures as follows:—"34 and 35 show a typical form of *pales*; these figures in the new edition are brighter coloured. 38 and 39 show a typical duller female, in the new edition the figure is of a fresher insect. 757 and 758 show an example greener on the underside which, like 563 and 564, comes near *arsilache*. 617 and 618 represent an almost markingless variety." 963, 964, and 965 he will not give his opinion on. He said, "36 and 37 are somewhat red *arsilache*, more distinct in the new edition. 563, 564, on account of the scalloped line through the middle of the wing above, and the marking on the forewing below come here, except that the hindwing passes better for *pales*. These figures are very similar to specimens in my collection which I call *pales*."

"*Arsilache* is usually larger, forewing less pointed, its anal angle less obtuse, the hindwings larger; the scalloped line through the middle of the forewing is formed by the coalescence of the strongly curved markings. The underside of the forewings are almost as strongly marked as the upperside. The hindwings are somewhat sharply marked

as in *pales*. Cell 3 with distinct light, curved discoidal spot; immediately behind this the ground becomes yellow.

"Flies in open neighbourhoods and, therefore, earlier than *pales*, in June and July."

Concerning *isis* Herrich-Schäffer, *loc. cit.*, p. 36, is not so clear. "Examples of *pales* that are larger, especially the female, much less red, more yellow, and finally in which yellow-green shows up on the underside of the hindwings, come here. The yellow blotch of the border of cell 3 does not always extend so far towards the base as is usual in *pales*; one often sees the discoidal spot more distinct in it. The underside of the forewing is also black marked, but finer than in *arsilache*, and in cells 1b and 2 never in curved markings. I take all Hübner's figures except 36 and 37 as *pales*."

He said that *pales* flies in the high mountains, at the end of June, in July, and even in August.

On page 27 Herrich-Schäffer, *loc. cit.*, referred to Esper's figure 4, plt. 56, as *pales* (*arsilache*), poor, and fig. 5, plate 56, as *arsilache*, quite distinct; to Freyer's *Beitr.*, vol. iii., figure 1, plate 115, as *pales*, recognisable; fig. 2, plt. 115, *arsilache*, recognisable; fig. 1, plt. 121, as *pales*, ♀ rough; fig. 2, plt. 121, as *arsilache*, ♀ rough; to the *Neu Beitr.*, vol. ii., plt. 187, fig. 1, *pales*, a very fine variety; plt. 187, fig. 2, *isis*, like Hübner's figs. 563, 564; plt. 205,* fig. 2, *pales* var.

Zetterstedt, in *Ins. Lap.* (1840), p. 897, did not differentiate between *pales*, *isis*, and *arsilache* as being found in Lapland. He gave numerous localities for *pales*, only not mentioning the black marking of the under surface of the forewings typical of *arsilache*, hence we may assume that he had not met with this form as occurring in Lapland.

In 1840, Boisduval in his *Gen. Ind. Meth.*, p. 18, held *arsilache* and *pales* as two separate species. He gave the synonymy as follows:—

{ *arsilache*, H., Fr., Tr. (*napaea*, Dup.) Julii.

{ var. *napaea*, H. (*isis*, Dup.).

{ var. *chariclea*, Dup.

{ *pales*, F., O., H., Tr. Junii.

{ var. *isis*, H. (non Dup.).

{ ab. *palemelas*, Bugnon (error for Bugnion?).

Note.—The Vienna Catalogue of Schiffermüller is not recognised. Boisduval ascribed a *napaea* to Duponchel which is *arsilache*, Hb., and an *isis* to Duponchel which is *napaea*, Hb. A re-examination of Duponchel's figures show that it was quite reasonable that Boisduval should re-distribute the legends the former author had attached.

In his synonymic catalogue to vol. i., *Sys. Bearb. Schm. Eur.*," p. 4 (1843), Herrich-Schäffer gave the *arsilache* of Hübner's *Beitr.* as a form of *selene*; on p. 18, i.e., he gave the *pales* of Bergsträsser as a form of *selene*, and the *arsilache* of Esper, plt. 56, fig. 4, as *pales*.

So far, I have been quite unable to trace the ab. *palemelas*, Bugnon. This may have been merely a M.S. name which Boisduval adopted. Hagen, *Bib. Ent.*, gives no help here. He has a name Bugnion, to whom a few short entomological notes are ascribed.

Herrich-Schäffer in 1843, *Sys. Bearb. Schm. Eur.*, on plt. 55, figs. 259-262, gave figures of *arsilache*, upper- and undersides of both sexes, which are quite good except that the undersides are hardly rich enough

* See remarks on p. 134.—H.J.T.

in the red coloration for many specimens, the forewings underside are spotted like the upperside.

Tengström in 1847, *Bid. Tin. Fj.-Fn. (För. Vet. Soc.)*, included *pales*, but I have failed to see a copy of this periodical.

In 1852 Lederer, *Ver. z.-b. Ver. Wien.*, vol. ii., p. 22, in *Versuch. eur. Lep.*, gave *pales*, var. *isis* (H., 38, 39), var. *napaea* (Hb., 563, 564), and *palamelas*, Bugn., as synonyms.

He gave *arsilache* as a species, and put var. *caucasica*, Bisch. (*in lit.*), as synonymous with *arsilache*, H.S., 259-262.

In the notes to this list, on p. 41, he stated as follows :—

“*Isis*, Hb., 563-64, and *napaea*, Hb., 757-58, are varieties, as they occur not uncommonly on the high Alps, and they have also been labelled *palamelas*; Mann also considered *isis*, Hb., 38-39, as a variety, since it differed from the usual form of *pales* only by the greenish-yellow underside.

“H.S. put Hb. 563-64 to *arsilache*; Heydenreich put them to *isis*, and 757-8 quite erroneously to *arsilache*. H.S. later called 563-54 *pales*.”

In 1855, Staudinger in the *Stett. ent. Zeit.*, wrote an article on the Fauna of Upper Carinthia. He said that *pales* was very common, from the darkest green *isis* to the palest yellow, with many aberrations, including one quite black on the upperside. The end of July was the chief time of flight. Larvæ were found on *Arabis* and the brown-yellow pupæ under stones. He said that there is no description or figure of *pales* larva proper, since the description in Treitschke, vol. x., belonged to a species unknown to Hübner. Staudinger then described the larvæ of *pales*, p. 378, and compared it with a painting of *arsilache* larva by Grabow, and said that there was no distinction and that Treitschke's description in vol. x. agreed with both. He then went on to say that *arsilache* is only a lowland local variety of *pales*. The only specific distinction which is given is locality.

In 1856, *Sys. Bearb. Schm. Eur.*, vol. vi., p. 5, Herrich-Schäffer referred to a number of *arsilache* taken in Asia Minor by M. Wagner; like the German specimens they were brown-red above, with finer black markings, the marginal line very fine, and a still finer, obsolescent line parallel with it. The fringes of the males were not lighter than the ground, the spots of the middle row touch on the slightly black veins and were not so developed as usual, and especially as usual in *pales*. Below, the forewings were in all specimens strongly black spotted.

In 1858 Freyer, *Neu. Beitr. Schm.*, vol. vi., p. 115, pl. 666, discussed *B. pales* and figured a male with a larva and pupa on *Soldanella*. He first stated that his previous figure of the larva, *Beitr. Ges. Eur. Schm.*, vol. iii., pl. 121, which he had figured on Hübner's authority, was not that of *B. pales* but of *B. euphrosyne*. Freyer then describes the larvæ of *B. pales*, which he found on the Schlucken Alp feeding on *Viola montana* and *Soldanella*, in July, 1855. Apparently he bred the imagines from these larvæ, as he described the pupa and stated that the butterfly is from 12 to 14 days in the pupal stage. After stating that from his many years experience it only flies at a height of 5,000 to 7,000 feet on the Alps, he insists, contrary to the older writers, that *arsilache* is distinct. “*B. pales* is distinctly smaller, its wings are more pointed, the round black spots are much smaller, and on the upper-wings on the underside not so clearly marked, the black spots have almost vanished which is not the case in *arsilache*.” The figures on the plate are quite good.

Werneburg, *Stett. c. Zeit.*, p. 49 (1859), said of Thunberg's, *Dis. ins. suec.* (see p. 84 ante), "*Pap. pales*, p. 48=*pales*, W.V.

Var. α =*isis*, H., Becklin cites Fab., *Mant.*, ii., p. 63, and says, "dessen Beschreibung sei ganz treffend; dort wird aber die var. *isis* genau beschrieben."

Var. β =*arsilache*, Esp., "Becklin beschreibt sie deutlich und sagt, sie komme an sumpfigen Orten vor."

Var. γ =*pales*, W.V., *Zett.*, p. 897, H.S., vol. i., p. 48, "des Index citirt Thunberg bei *pales*, ohne weitere Erörterung."

In 1859 Heineman, *Schmett. Deutsch.*, vol. i., p. 54, said that *pales* is, as a rule, smaller than *arsilache*, which he treated with reserve as a separate species. *Pales* has more pointed apex to forewings, and at vein 4 is somewhat angulated in the hindwing margin in the male. The ground colour is decidedly paler as also the black markings, which on the underside are obsolescent. He particularly refers to the antennæ of *pales* as being long, reaching almost as far as the black costal spot beyond the cross vein of the cell. He says of var. *isis* that it is larger, with spots reduced to punctures for the most part. It occurs at 7-8,000 feet.

Arsilache he says is larger and brighter than *pales*, its black markings are much stronger and sharply defined on the under surface. The hindwing is uniformly round, with no or hardly any indication of angulation at vein 4. The antennæ, he says, do not reach beyond the cross vein. It occurs at 2,200 to 3,400 feet.

Staudinger in 1861, *Stett. ent. Zeit.*, p. 347, in an article on a journey to Finland, again referred to *arsilache*, and said that it is the form which occurs in marshy areas both on the low land and high land, *pales* occurring only in Alpine meadows. In the north both forms occur at the same level and same locality. *Pales* always on drier grassy places, *arsilache* on swampy areas, both together on intermediate ground, but never on the centre of each other's area. *Arsilache* began flying before *pales* emerged, mid-June and end of June respectively. The northern form is more intensely marked beneath and much darker above, but is very near *arsilache*. He named it *lapponica*.

In his *Sys. Verz.*, of 1861, Herrich-Schäffer still held that *pales* and *arsilache* are two distinct species, but he did not list any varieties.

In 1861 Staudinger, in his *Cat. Lep. Eur.*, ed. i., p. 9, gave one species only, viz., *pales* with *arsilache* (Esp.), as a synonym, and the "abs. (1) *isis*, Hb. and Dup.; (2) *napaea*, ♀, Hb., and vars. (3) ? *arsilache*, Esp., Hb., Tr., Fr. (*napaea*, Dup., proper spec. ?); (4) *caucasica* (*arsilache*, H.S., 259-62); and (5) *lapponica*," to which he gives no reference. He considered Hüb. Gey. *pales*, 964, to be *napaea*.

In 1862 Kirby, in his small *Man. Eur. Butt.*, p. 30, accepted *pales* only as a species, but in the appendix added var. *arsilache* to *pales* on the authority of Herrich-Schäffer. (?)

In 1867 was published Snellen's *Vlinders. Neder.*, where on p. 28 of vol. i., a footnote on *pales* occurs in which the author stated that *arsilache*, a variety of *pales*, has been recorded, but he much doubted the report, considering that it was probably a form of *dia*, a species which had occurred in Holland.

In 1867-8 Baron Nolcken, in *Lep. Fn. Est. Liv. Kur.*, p. 66, stated that *pales* var. *arsilache* occurs in many marshy grounds and peat moors,

and that it appears in mid June, when *euphrosyne* is well out. He said that many intermediates occur in the shape of the wings between typical *pales* and typical *arsilache*, as well as in size. One specimen approached in its paler colour the var. *isis* of the Carinthian Alps.

In 1869 Tengström issued his *Cat. Lep. Fn. Fenn.*, in which, on p. 294, he included both *pales* and its var. *arsilache* as native in several provinces of Finland. In a footnote he said that he had observed both forms flying together very commonly in the marshy meadows of northern Karelia around the flowers of *Comarum palustris*. [It was at the flowers of this plant only that I could take var. *arsilache* near Campfer, in August, 1914.—H.J.T.]

In *Horae Ross.* vol. vii., p. 61 (1870), Staudinger in an account of the Lepidoptera of Greece, said that Caucasian forms of many species occur in that area among which is *pales* var. *caucasica*, which comes near *pales* and *arsilache*. This form is distinct from *caucasica* or either of the other two forms. The black spots on the underside of the forewings are fully developed as in *arsilache*, but the ♂s have as strong a suffusion of greenish on the underside, as is as usual in var. *isis* as in var. *caucasica*, but to a much greater depth of colour and extent in the Grecian specimens. The upperside of the ♂s is yellow-red, that of the ♀s strongly suffused greenish-yellow as in pale *pales* ♀s. The fringes of the Greek specimens are almost always white and black spotted, while in *caucasica* and *pales* they are reddish. He named the Greek form *graeca*.

On plate i., fig. 4, is a good figure. Upperside generally paler than type, a worn paler look, black marking well developed and definite, outer margin slightly yellow, marginal spots of considerable development with small interspaces, basal areas not black but brown-black, tendency to go yellowish in patches on ground colour. Underside of forewing, black markings well emphasised and clearly cut, apical area largely very pale primrose extending one-third along costa, hind margin of a similar colour narrowing to anal angle, only two traces of markings in this area, ground colour of a pink shade rather than orange. Underside of hindwing, most markings indefinite, partially suppressed in number, shape, and size, basal and central areas green of two shades, with silvery white blotches of two shades, three or four indefinite silvery-white markings on the marginal area, the inner rows of spots a series of dull greenish? rings, ground of marginal area pale primrose as in forewings, here and there a mere trace of orange colour,

The insect is of large size, quite as large as any Alpine ones I have seen.

Kirby, in his *Syn. Cat. Diur. Lep.*, 1871, p. 163, evidently found the difficulty of the identification too difficult to solve as his summary is the following:—

A. pales, W.V., p. 177; Hüb., i., fig. 34, 35; fig. 617, 618; fig. 963-965; Godt., ix., p. 275.

arsilache, Esp., *Schmet.*, i., 2, 56, 4.

Var. a. *isis*, Hüb., i., 38, 39; 563, 564.

Var. b. *napaea*, Hüb., i., 757, 758.

pales, Hüb., i., 964.

Var. c. *arsilache*, Esp., i., 2, 56, 5; Hb., i., 36, 37.

napaea, Dup., i., 48, 5 and 6.

Var. d. *pales* v. *caucasica*, Staud., *Cat.*, p. 9.

arsilache, H.-S., i., 259-262.

Sup., var. *bb. pales* v. *lapponica*, Staud., "St. e. Z.," 347 (1861).

In 1871 Staudinger *Cat. Lep. Eur. Fn.*, Ed. ii., p. 20, gave only one species, *pales*, putting *arsilache*, Esp. (56-4), and *isis*, Dup., i., 48, 7 and 8, as synonyms.

He gave the following varieties with a short diagnoses of each:—

1. *isis*, Hb. "major, ♂ subtus sulphur, ♀ sup. obscurior," with the comment "vix nom. conserv."
2. *napaea* ♀, Hb. (*pales*, H.G., 964) ♀ "supra virescens."
3. *lapponica*, Stgr., "transitus ad seq."
4. *arsilache*, Esp. (56, 5), "al. ant. subt. nigro-maculatis," (*napaea*, Dup., i., 48, 5-6), and (*pales*, Och., i., 163 *in parte*).
5. *caucasica*, Stg. (*arsilache*, H.S., vi., 5, 259-62), "♂ satur. fulvus, subt. pallidior."
6. *graeca*, Stg., "subt. pallidior, ciliis albo-nigroque variis."

In the *Pro. Zool. Soc.* (1874), p. 568, Moore described a form allied to *pales* as *sipora*, and figured it on pl. lxvi., fig. 11. It is from the figure evidently a well marked local race of *pales* in shape and markings. The colour of the marginal half-discs on underside of hindwings is clear green, and the wide transverse band across disc is of the same strong colour, and a basal blotch of the same colour. The transverse band is edged with pure white on the inner side. The rest is coloured brown and yellow in varying shades.

Frey *Lep. Schw.*, p. 32 (1880), said *pales* varied quite extraordinarily in size, shape, colour, and black marking, even if one avoided looking at the underside of the hindwing.

"Starting with the high alpine examples (8-9,000 feet), we have a small, acute angled, bright brown (uniform in the two sexes), finely marked butterfly.

"Lower down, at a height of 7,000 feet and less, *pales* becomes larger, usually with more obtusely angled wings. Here the monomorphism stops. Hübner gives the female form the very unsuitable name var. *isis*, a recognition which my view does not endorse. When the female is much darkened it constitutes a dimorphism. This is designated by Hübner *napaea*.

"A quantity of aberrations are now attached to this remarkable species. High sterile places on the Albula Pass afforded me many.

"A further aberration has occurred in wet situations, with not inconsiderable high-up lakes (*e.g.*, Stätzer See, St. Moritz), known as var. *arsilache*. It occurs only very locally in our faunistic area.

"The specimens from the peat-moor at Einsiedeln, where it is common, are small, fairly strongly black marked, coming very near Norwegian specimens in my collection; in size and general appearance those from the upper Harz are very similar."

(To be continued.)

The British Races of Butterflies: their relationships and nomenclature.

By ROGER VERITY, M.D.

(Continued from p. 133.)

Satyrus semele, L., and **semele** race **scota**, Verity, *Bulletin de la Société Entomologique de France*, 1911, p. 313, pl. i., fig. 10 (forma **bipicta**, mibi).

The Linnean race is a small one, with the fulvous scaling very pale, so that, in a general way, the British insect can be referred to it. The band-like fulvous spaces are inconspicuous, so much so that in the male they are often entirely obliterated on the forewings and limited on the hind ones to their outer half, consisting in a series of wedge-shaped spots. On the underside of the latter the white band-like space is also very limited in space.

A very pretty form, which is more frequent in England than in other regions and also more conspicuous, has the band-like space of the upperside of the hindwings divided longitudinally in two distinct parts by a narrow diffused brown stripe; the inner part is of the same colour as the band-like space of the forewing, but paler, being in fact often nearly white, the outer part is of a bright reddish fulvous, and is often subdivided transversely into a series of wedge-shaped spots; in some specimens the two colours blend into each other gradually; I propose the name **bipicta**.

Another fine form, which, as far as I know, is confined to the British Islands, and constitutes a distinct race in the northern parts of Scotland, has been named *scota* by me. I originally described it as much lesser in size than a true *semele*, because I then considered the larger Central European race as nymotypical, but now this must be rectified, the following being quite sufficient to distinguish it: fulvous band-like spaces enormously wide and continuous on all the wings, occupying a third of the forewings and one half of the hindwings in both series; they are of a uniform pale fulvous colour; underside of hindwings uniformly and thickly marbled with jet black on a pure white ground colour; the white transverse space is scarcely discernible and no darker outline is visible internally as in other races; the wing thus acquires a very uniform look. Some females exhibit a small diffused patch of fulvous scales on the upperside of the forewings, between the cell and the band-like space. This character, the broad spaces of the upperside and the jet-black (not brownish) underside, curiously enough, constitute signs of variation in the same direction as the subspecies *aristaeus*, Bon., from Corsica, Sardinia, and Elba, no other form of *semele* exhibiting such wide continuous band-like spaces on the forewings of the male sex as *aristaeus* and *scota*. My typical series of the latter was collected on the northern coast of Scotland, in August.

On the Continent *semele* acquires greater size and more vivid colouring as it extends southward; *teres*, Frühstorfer, is from the Basses Alpes (Digne); *cadmus*, Frbst., is the race generally distributed in Switzerland; the largest known race flies in Sicily, *blachieri*, Frühstorfer. In Africa it again gets smaller, with fulvous spaces limited in extent and with a very variegated underside.

Pararge aegeria race **egerides**, *Staudinger, Catalog der Lepidopteren des Palaearctischen Faunengebietes*, ii. edit., p. 30 (1871).

Linnaeus described the species as fulvous, and gives the most southern parts of Europe and Mauritania as its haunts. It must thus be understood that the nymotypical race is the one which is met with in Portugal, Spain, Corsica, Sardinia, Sicily, Greece, and North Africa, and probably also in other South-Eastern localities.

The form which is generally distributed in the rest of Europe is so distinct from this as to probably constitute a sub-species; the wings

are less scalloped, the brown pattern is much more developed, so much so as to very often leave uncovered but very small areas of the ground colour, and to entirely cover the area between the ocellus of the forewing and the outer margin, which in the nymotypical form is fulvous, with only a streak just before the margin; the fulvous spaces are of a duller, more yellowish colour; the ocelli are smaller, the underside of the hindwings, too, is much less brightly coloured.

The difference between the two forms is so striking that very soon after Linnaeus's times it had been noticed by Esper. Unfortunately his choice, between the two, of the nymotypical one was not, however, made strictly according to modern rules, and he redescribed the extreme southern form under the name *meone*, figuring it very distinctly (I have named the slightly modified Sardinian race *sardoa*). The name *egerides*, Stdgr., should in consequence be used to designate the group of races which answer to the description given above, and which probably constitute a sub-species, as compared to the nymotypical one. Frühstorfer, in the *Internal. Entom. Zeitschr.*, Guben, 1908, considers the form commonly distributed in Germany and Switzerland as nymotypical of *egerides*, and separates from it the local races *camoena* from southern Tyrol and *egestas* from Dalmatia, in both of which the ground colour is reduced in extent and less bright; in *intermedia*, Weism., the spots are described as being partly whitish-yellow, shaded with fulvous along their outline, the types being from Genoa; I can furthermore add that in Italy a form of *egerides*, considerably different from the form just mentioned, is generally distributed, and may be described as approaching the Linnean sub-species by the bright reddish tone of the ground colour, which also extends more, especially in the female, than in any other *egerides*; the underside, too, is brighter, being more mixed with greenish and purplish. I would name it *italica*, selecting the race of the neighbourhood of Florence as the typical one.

In direct contrast to this stands *egerides* from Britain; the extent of the brown pattern is about the same as in the German *egerides* or, if anything greater, often giving a very dark look to this form; but what is very distinctive and characteristic is the extremely pale yellowish-white ground colour, generally quite green, sometimes slightly mixed with fulvous, but rarely as much as in *intermedia*, Weism. Tutt has named this form *pallida*, and the name may well be extended to the whole British race, the extreme forms occurring chiefly in Ireland, where specimens with a perfectly white ground colour are sometimes met with. I obtained some in Italy from Irish chrysalids sent over alive.

I have endeavoured to describe the *Satyri* and *Erebiae* in the earlier paragraphs in as rational a way as possible, using the term "band-like spaces" instead of the usual term "band," which might seem to imply that the rust-colour, or fulvous, was derived from a pattern and was not simply the remnant of the ground colour, which has invaded nearly the whole wing; a good illustration of the progressive development of the *Erebia*-like type of markings may be found in the variations of *Pararge maera*, L., from the female of its *adrasta* variety, which is very similar to the same sexes of *megaera*, up to the nymotypical form or to the usual male form, in both of which the whole wing has been covered over by brown scaling, except the space about the ocelli, which has remained fulvous.

Pararge megaera race **caledonia**, Verity, *Bulletin de la Société Entomologique de France*, 1911, p. 314, pl. i., fig. 12.

This species varies very little geographically on the Continent. In Corsica and Sardinia a variety entirely replaces it, which is so distinct as probably to have attained the rank of a sub-species, *tigelius*, Bon. The Alpine form or race of *megaera* I have named *alticola*; it is smaller, of a lighter fulvous, with the black pattern reduced in extent and the ocelli smaller. One of the chief individual variations, which occurs with tolerable frequency in the south, is *tigeliiformis*, Verity, in which the black streak, extending across the hindwing between the cell and the ocelli, is entirely obliterated, as it is in *tigelius*.

The only region in which true *megaera* acquires the characteristics of a distinct local variety is probably Britain. Its culminating form is reached in the far north of Scotland, but all through England most specimens are distinctly transitional to it. Its distinctive characters consist in the greater extent and deeper tone of the black pattern on both sides of the wings; the marginal brown band is very broad and so is the androconial one in the male; the streak, which detaches itself from it on the first cubital nervule and extends to the hind-margin, is so thick as to blend on the second cubital with the marginal band mentioned above; the basal half of the hindwings is of a uniform black colour; the median band, which is absent in *tigelius*, is here on the contrary, very prominent; on the underside of the forewings the black streaks are more prominent than in any other race; the streaks of the hindwings are very conspicuous and the ground colour is richly suffused with black scales, especially between the two median streaks. My typical series of specimens is from the north coast of Scotland.

Epinephile jurtina race **janira**, L.

I have shown in my paper on the Linnean collection, already mentioned several times, that the name of the species should be *jurtina*, as pointed out by Staudinger, and that the nymo-typical race is the gigantic and brightly coloured one from North Africa, which used to be known under the name of *fortunata*, Alph., and a female of which is in the Linnean collection.

In the south of Europe, and more especially in its extreme portion, *hispulla*, Hb., is met with, which constitutes a transition to the race of Central and Northern Europe, and the name of which should be *janira*, L., the male specimen left to us by this author under this name belonging to the latter race.

The British race has, to my knowledge, nothing to distinguish it from the *janira* race of the Continent, and even the usual British characteristic of extensive individual variation seems to fall short of this species entirely, if one overlooks certain variations which occur with disconcerting constancy all through the species down to the nymo-typical African giant, and which do not seem to be in the slightest degree influenced by surroundings, actually constituting quite a specific character, for I do not believe any other European butterfly exhibits a similar phenomenon; I mean, for instance, the presence or absence of ocelli on the underside of the hindwings and the greyish-white or yellowish ground colour, etc. The greater or lesser development of the fulvous ring-shaped space round the apical ocellus in the

male, and the presence or absence of a very limited fulvous patch on the forewing, distantly pointing to *hispulla*, are about the only characters met with in the British Islands which are connected with racial variation. Another curious character of this species, which no other species exhibits to such a degree, is the frequency of ill-developed individuals with irregular white patches on the wings, or with areas upon which the scales are atrophied.

I do not know whether the following forms have been met with in the British Islands.

♂ ab. *anommata*, Verity: A male with no trace of apical ocellus on either the upper- or the underside.

♀ ab. **pauper**, nom. nov.: A very distinct female form, which occurs occasionally in the *janira* and the *hispulla* race, but which I find a difficulty in describing by words. All the angles of the wings are more acuminate, the outer margin is straighter in the forewings and more deeply scalloped in the hind ones; the apical ocellus is excessively small and there remains no trace of the little black spot which is just under it, below the second medial nervule, in normal specimens; the fulvous patch is very much reduced in extent (the marginal brown band being very broad), and, in extreme examples, broken up into separate inter-nervular patches; the hindwings exhibit no trace of fulvous. This form is all the more striking that it occurs singly amongst the usual forms; intermediate specimens are very scarce, so that it seems to be due to a sudden break of balance in the usual regulating power, in short, a true aberration, not an extreme varietal form. I possess a specimen of it from the Valais (probably Martigny), which is, moreover, excessively small; the others, collected near Florence amongst *hispulla*, are but slightly lesser in size than the latter.

♀ forms **nuragiformis**, nom. nov., and **tithoniformis**, nom. nov.: These constitute the lowest degree of development of the brown pattern and may be considered as the extreme forms of the usual individual variation. In the first, the diffused area of fulvous scales, which exists in most specimens on the forewing between the band-like space and the cell, extends over the greater part of the wing, the brown colouring being restricted to the costa and the hind margin; the hindwings exhibit a fulvous space similar to that of *hispulla*, but usually absent in the *janira* race. These individuals, in consequence, acquire the appearance of the more usual *nurag*, Ghil., female. They occur in the *janira* race, and I choose an example from Intra on the Lago Maggiore (N. Italy), as my type. The second is the corresponding form in *hispulla*, and probably also in the nymo-typical African *jurtina*, which, in consequence of the much greater average development of the fulvous areas in these regions, reaches a still higher degree, both on the fore- and hindwings. This, together with the large size of the apical ocellus, confers on this form on the upperside the look of a *tithonus*, L. specimen, much more than of a *jurtina*. My type was collected at Ogliaastro in Sardinia on the 20th of July, 1904; other specimens from Corsica and Africa come very near it.

Pyronia tithonus race *britanniae*, Verity, *Bulletino della Società Entomologica Italiana*, xlv., p. 220, pl. i., figs. 21, 22, 23 (1914).

We are indebted to Muschamp for the satisfactory scientific description of the generic characters of the species which had to the present

day remained lumped together under the name of *Epinephile*. He thus made out the existence of several genera, two of which are represented in Britain; one of these he has named *Epinephile*, the other *Pyronia*.

The British race of *tithonus*, L., is decidedly different from the usual Continental one, which, however, in the more northern portion of its habitat does vary in the same direction, as compared to the South European races. Linnaeus' type came from some part of Germany. My original description of *britanniae* translates as follows:—"The two sexes are of a deeper fulvous colour; the marginal black bands are broader, and this character is more particularly noticeable on the hindwings, where their internal outline is very diffused and often spreads so far beyond the anal ocellus as nearly to blend with the black basal suffusion; the latter is often so widespread as to completely fill up the internal area of the cell; the androconial band in the male is very much broader, and its forepart extends well around the end of the cell; the number of ocelli tends to increase, and as many as five on the forewing and three on the hindwing may exist. It is interesting to notice that the two latter characters (with reference to the androconial band and to the ocelli) seem due to insular surroundings, for they are to be found both in the British and in the Sardinian races (*fulgens*, Turati), although these two races stand diametrically opposite to each other in the variation of the species, judging by the appearance of the underside. The underside of *britanniae* is characterised by the very bright chestnut colour which covers the basal half of the hindwing, which constitutes a marginal band, and which furthermore exists around the ocelli in the shape of broad rings; these stand out distinctly on an area of a tolerably clear yellow tinge, sharply outlined both on the near and on the far side; on the contrary in Continental specimens the whole of the pattern just described does not stand out clearly, because its outlines are diffused and blended together to a greater or a lesser extent; the yellow scaling, besides, overshades the chestnut colour, which is also less bright and often distinctly greyish, whilst the yellow colouring is always much paler and often of a dirty white colour; it must be added that in *britanniae* the ocelli often exhibit a very large white pupil, which greatly reduces the extent of the black ring, sometimes so much so as to make it nearly imperceptible, especially in the female sex.

My typical series are from Bude (North Cornwall), collected towards the middle of July, and from Benfleet (South Essex), collected at about the same time of year.

Aphantopus hyperantus, L.

This species only varies geographically in size and depth of colour. In the arctic region flies the extremely small and jet black *arctica*, Seitz, with no ocelli on upperside; in the rest of Northern Europe and in Central Europe, including Britain, the nymo-typical form is to be found, as shown by the male and female types in the Linnean collection; a special local race has been described as *minor*, Fuchs, from Oberstdorf (Bavaria, 872 m.), which is small, of a dull brown, with an olive-grey underside in the male and an olive-yellowish one in the female; finally, in the southern portion of its area of distribution, *hyperantus* reaches a much larger size, especially in the females, just as large in fact as *ocellatus*, Butler, from Eastern Asia, but with

smaller ocelli: it also is lighter coloured and more brownish than further north. This race, considering how little the species varies, seems worth naming: **maxima**, nom. nov.; Types, from Turin, in my collection.

Coenonympha tiphon, Rott.

This species has been highly favoured by British entomologists, and the exhaustive work which has been done in reference to it is exactly a fine example of what should be done in reference to the variation and distribution of all the others. I would deem it very pretentious on my part to think of being able to add anything to Dr. F. J. Buckall's excellent paper, read before the City of London Entomological Society, October 15th, 1895, and published in the *Entomologist's Record*, vol. vii., pp. 100-107, or to Mr. H. Rowland-Brown's magnificent work, published by Charles Oberthür in his *Études de Lépidoptérologie Comparée*, vol. vii., pp. 85-193 (1913), and beautifully illustrated by Culot's exquisite plates, one of which is wholly dedicated to each of the three British races (true **tiphon**, Rott., **laidion**, Borkh., and **philoxenus**, Esp.), figuring individual variation just as one would wish it to be done for every species. Consequently I can do nothing better than refer those who are not already acquainted with them to these works on the subject.

It is worth noticing that the extreme northern (*laidion*, Borkh.), and the extreme southern race of the species, the latter of which has only been discovered last year and described by me under the name of *italica*, are, in several respects, rather similar to each other, and also offer a certain resemblance to *C. iphis*, W. V., and to *C. pamphilus*, L.; *italica* flies in the high mountains of the Piceno in the Marche (Southern Italy), well over 1,500 m.

Coenonympha pamphilus, L. (*scota*, Verity, *Bulletino della Società Entomologica Italiana*, xlii., p. 271, pl. i., fig. 10 [1911]).

This little species has been very much neglected by lepidopterists, probably owing to its extreme abundance in pretty nearly every European locality; quite wrongly, however, for like most of the commoner species, it is excessively interesting, and there is more to be got out of one of them in reference to the laws of variation and evolution than out of dozens of scarce localised species. *C. pamphilus* varieties, both individual and geographical, are, so to say, nearly endless, and the work of describing them and classifying them is a most fascinating one. I have begun doing this to a certain extent and the results may be summarised as follows:—

First of all two large comprehensive groups of races are to be made out, as they undoubtedly constitute two sub-species and may be found to be two distinct species. This had not escaped Esper's eye as far back as a century and a half ago, but since then nobody seems to have taken up this observation; as an error was made by his immediate successors in interpreting his good figure and description, which has been carried on by all subsequent entomologists.

The distribution of Esper's sub-species *lyllus* corresponds roughly to that of the nymo-typical *Pararge aegeria*: Portugal, Spain (where in some parts it may meet with the true *pamphilus*), Corsica, Sardinia, Sicily, North Africa, and probably some localities also in the

S.E. of Europe; the distribution of the Linnean one, in the broad sense of the word, corresponds to that of *aegeria* race *egerides*; this parallelism in variation is worth taking note of.

The difference between these two sub-species is so striking, and Esper's figure so demonstrative that no explanation can be given why the name *lyllus* has been used in a wholesale manner for the summer brood from the entire habitat of *pamphilus*.

The chief characters of *lyllus* are the following: On the upperside the black marginal band is sub-divided in a marginal and in a pre-marginal one by spaces of the ground-colour; this never occurs in the spring brood of *pamphilus*, and only occasionally, as an individual variation, in the summer brood of the hottest parts of its habitat, but anyhow, never as prominently as in the summer *lyllus*. The median streak on the underside of the forewing is generally very much developed, as it is represented in Esper's figure. The underside of the hindwings has an entirely different aspect in the summer brood from that of *pamphilus*, it is very light in colour, usually of a pale, more rarely of a reddish, buff, which is quite pure in the female, but mixed with brownish or blackish scaling in the male. The transverse band is very sharply defined in the male and its outline stands out well on a broad whitish diffused area; in the female this pattern may be similar to the male's, but it is often quite inconspicuous, culminating in *torrida*, Verity, in which it is nearly imperceptible, the wing being uniformly of a very pale buff colour. In the spring brood the characters which differentiate *lyllus* from *pamphilus* are much less conspicuous, but a careful observer can detect they are just as constant: besides the double marginal band of the upperside, and the more prominent median streak of the underside of the forewings, it must be noticed that the basal half of the hindwing on this surface is very dark, contrasting with the much lighter outer-half, somewhat as in *scota*, Verity, but with no white band, or with a very inconspicuous one; the ocelli tend to be more developed and more numerous than in *pamphilus*, and in my series from Sardinia most specimens have a supplementary one on the underside of the forewings between the cubital nervules; one can furthermore add that examples very frequently occur with the black marginal pattern of the upperside extremely indistinct, of a very pale grey and sometimes nearly entirely absent (form *detersa*, Verity); this never occurs in the spring brood of *pamphilus* and is not frequent even in the summer one. I must also describe and name another very distinct form, which I have received only from Africa and of the summer brood; the pre-marginal band is so broad as to extend far beyond the row of ocelli, these standing out in the middle of a small circular area of the ground-colour; this broad blackish band is very diffused internally, but sharply outlined externally on the spaces which separate it from the narrow marginal streak (form *latevittata*, nom. nov.). Staudinger's name *thysides* is but a synonym of *lyllus*, Esp., unless it should be found useful to designate the specimens with particularly prominent ocelli, this being the character mentioned by him.

Turning our attention to the Linnean sub-species of *pamphilus*, we find its races can be grouped under two headings, the most highly characterised representatives of which are the extreme northern and the extreme southern races of its area of distribution. One inhabits the

North of Europe and includes the true Linnean *pamphilus* in the strictest sense of the term, the other inhabits the South and most of Central Europe, blending with the former in its northern parts, and producing southwardly specimens which very distinctly remind one of *lyllus* by the direction of their variation, although I have never seen specimens which could actually be referred to it, so that blending of the two sub-species cannot be talked of in this case.

The British *pamphilus*, and more especially the race from the north coast of Scotland, which I have described as *scota*, certainly constitutes a very distinct race as compared with those of Central and Southern Europe. The specimen left to us by Linnaeus, undoubtedly Scandinavian in origin, is a near ally of it, but I have not got it sufficiently clearly in mind to say whether it is identical with the more usual English forms; this point will have to be settled on another occasion: anyhow the extreme British form *scota* is certainly different from it on account of the excessively broad yellowish-white space of the underside, which in its fore part extends, both on the forewings and hindwings, as far as the ocellus or the ocelli. In British specimens from other localities, such as those from Belvedere (Kent) in my collection, this white space is not so broad, but it is preceded by a thick black streak on the forewing, reaching as far back as the second cubital nervule, and by the very dark basal half of the hindwing, which contrasts sharply with the light grey colouring of the outer half, somewhat as in *lyllides*: the outline of the basal dark portion very often exhibits a decidedly chestnut tinge, and so do the rings round the ocelli; all these characters contribute to confer a very variegated appearance to the wing; the fringes are very long and of a dirty white colour, so that they are very conspicuous; finally, the difference between the first brood and the following ones, when more than one occur, is trifling as compared to that of the next group of races I am about to describe.

I have suggested using the name *australis* [*Bulletin of the Italian Entom. Soc.*, xlv., p. 227, pl. i., figs. 38 and 39 (1914)] to designate the group of *pamphilus* races which are widely distributed over the whole of Europe, excepting the regions inhabited by the true northern ones or by *lyllus* as already stated. The spring brood of this group, for which my name is meant in its strictest meaning, can be described as follows:—The fulvous colouring of the upperside, and especially of the underside of the forewings, is deeper and brighter than in the Linnean race; the black marginal band is narrow and sharply outlined; the fringes shorter and darker; on the underside the white band-like space is absent on the anterior wings or is represented only by a vestige near the costa; the hindwings are entirely of a uniform colour from the base to the outer margin of the wing and have a velvety appearance; they are light grey in colour with a slight greenish tinge, sometimes approaching blue, sometimes yellow; the ocelli, when they exist, and the light rings which surround them, are indistinct and so is the undulated premarginal streak; the white space is very limited in extent and only its costal forepart exists; it is diffused and of a dirty white or yellowish colour. In the early spring and in late autumn specimens are met with in which the underside is very dark, decidedly blackish, with a conspicuous blue tinge towards the base and the hind margins, and with no trace of the white median space in extreme examples; I have called this form *murina*.

The summer brood, or broods, of *australis* differ more or less markedly from the nymotypical spring form, according to localities: it varies in two directions, which stand nearly opposite to each other; one culminates in *marginata*, Stdgr., with broad black marginal bands on the upperside and a blackish pattern contrasting sharply with very white spaces on the underside, the other varies in the direction of the *lyllus* typical summer form, being lightly coloured on both upper- and underside, and tending to a fulvous colouring on the latter; in both forms the ocelli are more conspicuous than in the spring brood and tend to appear on the upperside. The second form is the one which used to be called *lyllus*, and should be called *aestivalis*, Rocci.

SCIENTIFIC NOTES AND OBSERVATIONS.

BIRDS AND BUTTERFLIES.—Two wagtails have recently been disporting themselves on the green in front of my window and their sudden rushes after some items are very amusing. A larger prey than usual sometimes attracts a sparrow, and the wagtail generally flies off, leaving the game behind for his enemy. To-day I turned out some *Aglais urticae*; looking out some little time after I saw a wagtail had caught one, and some six or eight yards from the window was worrying it much as a thrush does a large worm, quite at variance with the usual wagtail procedure of a quick snap and away at once to the next capture, a procedure suitable to very small fry. Down came a sparrow, but the wagtail carried off the *urticae*; the sparrow did not follow, but a little way off the wagtail continued for some minutes the worrying process, obviously to produce disintegration, getting rid of the wings being perhaps an important detail. The *A. urticae* turned out were fairly strong on the wing, but one may have been less so, and there were occasional clouds, so the capture by the bird was probably of one resting on the ground and not in flight.—T. A. CHAPMAN, Betula, Reigate. July 4th, 1916.

FOOD OF THE LARVA OF *DIPLODOMA HERMINIATA*, TUTT.—In July, 1913, Dr. Chapman kindly gave me a larva of this species. The following day it eat out the body of a newly killed house-fly. During the following four weeks it demolished two more house flies and one *Scoparia frequentella*.—ALFRED SICH.

NOTES ON COLLECTING, Etc.

SALE OF THE COLLECTIONS OF THE LATE COLONEL NEVILLE MANDERS, F.E.S.—Less than a year ago we received a letter from the late Col. Neville Manders, and yet, on June 20th, his specimens (together with others) were displayed in the auction rooms. It was quite evident from the excellent condition and setting of the specimens—that the late owner took a delight in his favourite study, and the fact that these beautiful insects were about to be scattered before the war is over, struck one as very pathetic. There was a good attendance of purchasers actual and potential, but it was noticeable that the so-called “amateurs,” collectors or students, were in the minority. The “dealers” were to the fore. During the last decade sales of insects have demonstrated the fact that the monetary value assigned to the average British and European species is not equal to the cost of the pins and the time

taken in setting, as witness lot 72, comprising *Gonepteryx cleopatra* 9, *Charaxes jasius* 2, *Eranessa antiopa* 4, *Polygonia c-album* 7, *P. eyea* 7, *Melitaea aurinia* var. *provincialis* 34, *M. cinxia* 18, etc. 93 specimens in all for 6s. Again, lot 70 of 132 specimens, including *Coenonympha dorus*, *Adopaea lineola*, *Thymelicus actaeon*, *Cyclopides palaemon*, *Papilio alexanor*, *P. hospiton* and others sold for the ghastly sum of 3s. Lot 78 of 112 specimens, including wet and dry season forms of *Terias*, together with 15 specimens of *Colias erate*, sold for the same sum, viz., 3s. And what shall we say about lot 135, comprising 390 insect specimens collected in Switzerland in 1914 valued at 4s.? Yet we hear that on the same day, a very few doors from where these beautiful insects were being given away, a necklace of pearls sold in less than five minutes for £24,000. Truly it can be literally said of these beautiful insects that they are "pearls without price."

Whilst many "lots" were sold far below their value, there were a few that changed hands at prices almost meriting the adjective fabulous, as when £20 was given for four specimens of *Antanartia mauritiana* (Joicey), although the next "lot" of four similar specimens went for 7 guineas (Rothschild). Then 30 specimens of *Papilio*, including *Papilio manlius*, 5 ♂ s 1 ♀, *P. phorbanta*, 1 ♂ 2 ♀ s, also produced £20 (Joicey). Good specimens of *Chrysophanus dispar* still maintain their value, as lot 144 reads "1 *dispar* male," £3 15s Od. (Joicey), and lot 145, "ditto female, very perfect," £5 (Joicey). Then it was interesting to note that lot 71 of 135 specimens, but containing one *Thais rumina* ab. *honoratii*, realised £1 6s. Od. (Rothschild), as the writer remembers that when at Digne in 1910 he was asked 20 francs for a specimen of this aberration, which request gave rise to a sardonic smile.

Generalising on one's experiences of the sale-room it is pretty safe to assert that good prices can only now be obtained for (a) types, (b) extraordinary aberrations, (c), extinct species, or (d) rarities. These latter are rapidly dwindling in number and will become fewer as the facilities for travel increase.—H.E.P.

CURRENT NOTES AND SHORT NOTICES.

No. 6 (March) of the *Bull. Soc. ent. Fr.*, illustrates a teratological example of the Coleopteron *Carabus dufourei* from Bobadilla, Andalusia, in which the femur of the right median leg is much enlarged, and bears at its extremity three perfect tibiae, each of which bears equally well developed tarsal joints. Unfortunately the specimen was mutilated, so that only one tibia had the full complement of five tarsi and two claws. The writer, Mr. Ch. Alluaud, suggests that, since the tarsal joints on the two incomplete legs had apparently been originally perfect, the probability was that it was a case of self-mutilation.

In the same number Mr. A.-L. Clément describes, figures, and names a striking aberration of *Erebia aethiops* as ab. *royi*. The band of the forewing is large and without ocellated spots, the band of the hindwing is deeper in colour, interrupted and contains three small ocellated spots. On the underside there is no trace of eyespots on the forewings, and on the hindwings the band contains only one extremely small ocellated spot on the external border of the light band between veins two and three.

Most of our entomological and natural history magazines seem keeping up their constant stream of matter connected with experience, observation, and experiment, and but little influenced so far by the mighty world events which are passing and the gradual absorption of all the younger generation into the vortex of the war. Let us hope that it is not a sign of dwindling interest in our science and that there were but few of the latter who were "coming along" to fill the place of us older naturalists who have "kept going."

In the art section tent at the Royal Horticultural Society's Spring Show at Chelsea in May, some of Mr. Montagu Summer's butterfly pictures were exhibited. These were set up in air-tight frames, and consisted of a painted floral design as a background and real butterflies placed in the attitude of flight or rest. The flowers, which usually came in from one corner of the picture, were beautifully painted and showed much atmosphere, so that at a short distance away, the picture as a whole, looked very pleasing. In one very harmonious picture were some flowering spikes of the common furze and some specimens of *Colias edusa*. In another was a group of sweet-williams with *Issoria lathonia*, but the gem of the collection was the picture with a group of garden nasturtium and *Pyrameis atalanta*. This had a richness of colour which some of the other pictures lacked. There was, of course, some inconsistency between the floral designs and the lifeless butterflies, but from the appreciative remarks I heard from the onlookers, the lay mind did not apparently grasp this point. The pictures would be infinitely superior if the artist had painted in the butterflies in the same graceful and airy manner that he has portrayed the flowers. Butterflies from their delicacies and liveliness are very difficult to represent naturally on canvas or paper, but if these lovers of sunlight had been drawn somewhat in the style of Giacomelli, as shown in his illustrations of Jules Michelet's *L' Insecte*, the pictures would have been charming indeed. There were 36 cases in all, and many of them had already found purchasers. Prices ranged from a guinea upwards.—A.S.

In spite of the war, considerable activity is manifest in scientific circles in Russia. A new review, the Russian Zoological Journal, has appeared in Moscow, and a new zoological and an anatomical publication is expected to come out shortly in Petrograd. In the latter city steps are being taken to form a Russian Zoological Society. If this is as successful as the Imperial Russian Geographical Society, and the Russian Entomological Society, it will be a worthy addition to the learned societies of the world. Like the British, the Russians are keen sportsmen and lovers of nature, and the vast resources of the great empire give ample scope for an active zoological society.—M.B.

A. V. Martynov, the trichopterist, is still at the front, where he has been serving since the beginning of the war.—M.B.

Colonel A. N. Kaznakov, the distinguished Director of the Caucasus Museum at Tiflis, has been definitely invalided and excused further military service, after being wounded four times; he has resumed his scientific duties at Tiflis.—M.B.

A most interesting piece of reasoning (*sic*) occurs in a pamphlet sent to us. It is quoted without further comment. "Among the mass of evidence which tends to establish the falsity of the Darwinian theory, that evolution is the result of the survival of the fittest in the struggle

for existence, the appearance of new varieties of domesticated animals and plants may be selected as a single fact which by itself constitutes proof. Domesticated species are to a great extent removed from the struggle for existence when they are taken under human care, and should, therefore, cease to make new developments to the same extent as in a wild state, if progress is the result of the struggle. On the contrary, however, their power of making new developments is suddenly and enormously increased, thus showing that the previous effect of the struggle has been not to cause progress, but to repress it, compelling the force of life, as it were, to keep within old and narrow limits. This, I think, proves that Darwin was wrong."

The *Can. Ent.* for March contains some interesting items. (1) The monthly Popular and Practical Entomology article is devoted to an account of the "Eradication of the bedbug (*Cimex*), by Superheating." (2) Mr. T. D. A. Cockerell gives a comparison of the numbers and species of "Insects which are attracted by sunflowers in California and in South Africa"; it is noteworthy that Plusiines are attracted in the latter country quite as strongly as they are said to be in many parts of the United States. (3) "The stoneflies (*Perlidae*) of the genus *Peltoperla*." (4) A most interesting record of "Two generations of a parasite reared from the same individual host." (5) "A new genus and species of *Nitidulini*, with descriptions of other new species of Coleoptera," by an old correspondent of the *Ent. Record*, W. L. Blatchley, of Indianapolis, Indiana; etc.

More than ten pages of the *Scottish Naturalist* for April deal with matters entomological. Mr. J. H. Ashworth contributed a note on the "Hibernation of Flies," Mr. T. L. Mackeith gives interesting facts under the heading, "A plague of Flies in a Renfrewshire house," Mr. P. H. Grimshaw has an article on "The Study of Diptera," and there are shorter notes and records by several correspondents in other groups of insects. In addition there is an article "Hydracarina from Strathearn," by Mr. W. Williamson. At the present time considerable attention is being called to an investigation of the economy of the "house-fly," and Dr. Gahan, Keeper of the British Museum, Insects, S. Kensington, has accumulated a large number of facts and material from many sources all over the kingdom, of which we hope he will give us a resumé one evening at the Entomological Society of London. The material he has, some of which we have seen, is most interesting and suggestive.

Dr. Burr, in spite of his various duties military and otherwise, has found time during the past year to see through the press a number of important contributions to Dermapterology. In the first place we have two papers read at the Entomological Society of London, "The Opisthomeres and the Gonophyses in the Dermaptera," illustrated by a score of text figures, and "Notes on the Manubrium of the Ninth Sternite in the Male Earwig," illustrated by four plates of numerous figures. In addition there are three contributions to the *Journal of the Microscopical Society*, which probably contain some of the best scientific work which has hitherto been done on this subject.

Messrs. A. Sigh, F.E.S., and Hy. J. Turner have again been asked to allow their names to be published as referees to name specimens of Lepidoptera which may be sent to them by members or associates of the South-Eastern Union of Scientific Societies.

The *Entomological News* for April contains some apt remarks on "How many Languages must an Entomologist know?" suggested by the receipt of several recent and important contributions to entomological science in the little-known and difficult-to-acquire languages, of which Russian and Japanese may be instanced. H. B. Weiss has a faunistic paper, "Additions to the Insects of New Jersey." Two capital plates illustrate a new species of Odonata from Rio Janeiro, described by E. B. Williamson. Also an article with a plate describing a recently patented net of complicated structure calculated to minimise the chance of mutilation and damage, by H. B. Weiss.

We understand that Mr. Cyril Page, the son of our colleague Mr. Herbert Page, who was gazetted as 2nd Lieutenant in the 154th Battery of the Royal Garrison Artillery (Hants) in October last has just been transferred to the 180th Heavy Battery at Woolwich and is now "somewhere" in France.

The *Canadian Entomologist* for April contains, (1) under the title "The Five Thousand Dollar Butterfly," an amusing summary of the myths of value which have been popularly attached to some of what Scudder has poetically called "Frail Children of the Air," by R. P. Dow; (2) Annette F. Brawn continues to describe new species of Micro-lepidoptera, giving rather more details of relationship than is usual in many descriptions from the trans-Atlantic area; (3) Articles on various groups of Diptera, Homoptera, *Chalcididae*, Caddis-flies, etc., complete the number.

Our colleague Mr. Tomlin has sent us a local trade advertisement, which has come to him, entitled "Moths," in which admirable coloured representations of *Arctia caja*, *Abraeus sylvata*, *Miltochrista miniata*, and *Selenia bilunaria* are given. Needless to say, they are not "moths," the domestic bane, suggested by the letterpress so laudatory of the trader's emporium and methods.

To the *Ent. Mo. Mag.* for April and May Mr. W. E. Sharp contributes a series of "Notes on the Coleoptera of Crowthorne, Berks."

Recently the *Irish Naturalist* has had much more space than usual devoted to Entomology. In the April number Mr. T. Greer gives an account of the "Lepidoptera from County Tyrone," an annotated list which will no doubt be of much use to visitors and students of the Macro-lepidoptera; the Rev. W. F. Johnson publishes Notes on the "Hymenoptera-aculeata in the Counties of Armagh and Donegal"; and Mr. H. Bonaparte-Wyse, "New Beetle Records for County Waterford."

The *Naturalist* (Yorkshire) is publishing some most valuable contributions to the knowledge of "other orders." The April number contains "The Terrestrial Isopoda (Woodlice) of Yorkshire," by Mr. F. Rhodes, and "The Harvestmen and Pseudoscorpions of Yorkshire," by Mr. Wm. Falconer.

In the *Entomologist* for April Mr. H. Rowland-Brown commences a paper on the "Spring and Autumn Butterflies of Cannes and the Neighbourhood"; Mr. J. W. H. Harrison lists a long series of primary and secondary hybrids, etc., in the *Bistoninae*, supplementary to those which he has previously announced. A further series of new Lepidopterous species are described from Formosa by Mr. A. C. Wileman; and Mr. Claud Morley continues his comprehensive notes on the *Braconidae*.

Two new aberrations of British Lepidoptera are described and

named by Mr. F. Worsley Wood in the April number of the *Entomologist*. *Brephos parthenias* ab. *flava* is described from a specimen captured at Wimbledon in 1912. There have been subsequent captures. *Ephyra pendularia* ab. *nigro-roseata* is a melanic form described from a specimen bred from Haslemere in 1911. Others have been obtained from Oxshott.

With accustomed fullness of detail and illustration an economic report on "Scale Insects" has come to hand, published by the Cornell University under the name of Professor H. Comstock. There are 180 pages with 26 plates, and numerous text figures. This economic business has to be taken in hand seriously and thoroughly in the United States. We note that the Agricultural Experimental Staff of the University consists of no less than 56 members exclusive of Professor Comstock. The Report contains an "Introduction," pointing out the importance of the work dealt with, an account of the "Characters of the *Coccidae*," details of the "Division of the *Coccidae* into Sub-families," an illustration of the remarkable development and "Metamorphoses of the *Coccidae*" by a minute study of the sub-family *Diaspinae*, an "Explanation of Characters used in the Classification of the *Coccidae*," a note on "Terms used," a summary of the various "Methods of Preventing the Spread of Scale Insects," particulars of the different "Methods of Destroying Scale Insects," with special reference to remedies which have been proved practicable by the experience of the staff. There then follows the scientific "Descriptions of Species" in their genera and sub-families, with all the necessary references and details, with times and natural history as far as is known. Added to this report are two others which were the first to record the work of Prof. Comstock on this line of investigation, and which have been out of print for many years. As much of the matter was of great importance, and the included plates and text-figures were very valuable for present use, it was thought desirable to take the opportunity of the issue of this report to include reprints of these original publications of 1882 and 3.

In the *Bull. Soc. ent. France* for April (7), a melanic aberration of *Hibernia marginaria* is described and named by M. Mabille as ab. *lesauveri*. It is uniformly black with some scales of intense black. It was bred from a larva taken in October last.

In the *Bull. Soc. ent. France* for April (8), M. J. Pantel writes a long "Biological Note on *Rhacodineura antiqua* (non *Ceromastix rufipes*), a Tachinid parasitic on the Forficulidæ." M. Charles Oberthür corrects the name *royi* which was recently given to an aberration of *Erebria aethiops*, and points out that in *Études de Lépidoptéologie comparée*, v. (1911), p. 328, was an identical aberration which was introduced under the name *fritschii*, which thus has priority. M. Chopard gives a table for the determination of the species in the genera *Diestrammena* and *Tachycines* of the Orthoptera.

Species of Coleoptera new to Britain are still being announced. In the *Ent. Mo. Mag.* for May, Mr. D. Sharp describes and names a new species of *Helophorini*, *Helophorus walkeri*, from specimens sent to him by Commander Walker from the Isle of Sheppey. It seems to be generally distributed, and possibly will be found in many collections mixed with *H. aeneipennis*. Mr. J. H. Keys announces another new species and new genus to Britain in *Anchonidium unguiculare*, taken in

1893 near Plymouth. There is a handsome coloured plate which illustrates this species and also the wonderful protective resemblance of the Coleopteron, *Dorytomus tortrix*, to the husks of the leaf buds persistent on the stalks of its food plant *Populus tremula*. Mr. K. J. Morton gives an account of the "Neuroptera (Linneus), from Invernessshire." A teratological specimen of *Anomala aenea*, in which the external claw on the intermediate and posterior legs of the left side was bifid for a third of its length, was announced by Mr. G. B. Walsh.

The May number of the *Entomological News* contains a short article on the completion of the great work on the Natural History of Central America, the *Biologia Centrali-Americana*, and gives fine portraits of its Founders and Editors, Dr. S. Ducane Godman, and the late Mr. Osbert Salvin. There is an interesting note by Prof. H. Skinner on "The Genus *Parnassius* in America," with a plate of some of the named forms of the four species indigenous to N. America, *P. clodius*, *P. smintheus*, *P. nonion*, and *P. eversmanni*. In discussing the variation of these "very plastic" species, the writer asks for much more information with exact data, and he adds a list of the references to these species since the publication of his *Syn. Cat. of N. Am. Rhop.*, in 1904. An article by M. Hebard would probably be of much interest to Dr. Burr as it deals with "Certain Features found in the Genus *Panchlora* (*Blattidae*)." A. Kurat gives notes on about 40 species of the Noctuid genus *Papaipema* allied to our *Gortyna*. At the time of issue of Dyar's *List N. A. Lep.* (1902), only some 24 species were recognised.

In the *Canadian Entomologist* for May, Mr. F. H. Wolley Dod dealing with the Heath Collection which has been acquired by the Manitoba Government, very strongly criticized not only its condition, but remarks on the "culpably careless" way in which the identification of species was made. It appears that for these determinations Heath relied almost exclusively upon the identification of the late J. B. Smith, concerning whose judgment Mr. Wolley Dod speaks very strongly. "In my own experience in my earlier collecting days in the West, I not infrequently found that if I sent Smith specimens of a species—it might be of a well-known and not very variable species either—twice or three times he would apply a different and very distinct name to it each time." This opinion is supported by detailed references to the collection in question.

We learn from the *Berkshire Chronicle* that our colleague, Mr. J. R. le B. Tomlin has been daily giving of his spare time to the work of registration from October last. Even up to the present time he has to keep in touch with the matters concerning it. We understand that this year he is the President of the London Malacological Society.

Mr. R. S. Bagnall has been engaged in munition work for many months now. He writes us that his brother, Capt. C. L. Bagnall, has been awarded the Military Cross after a varied experience of fifteen months at the front.

Three works issued by the Smithsonian Institute, Washington, U.S.A., have recently reached us. The "Revision of the Parasitic Hymenopterous Insects of the Genus *Aphycus*, Mayr., with notice of some related genera," by P. H. Timberlake, consisting of 80 pages and 6 plates, contains re-descriptions of many species with the re-arrangement. The "North American Collembolous Insects of the subfamilies *Achorutinae*, *Neaururinae*, and *Podurinae*," by J. W. Folsom, consisting

of 50 pages and 19 plates, treats of all the known species of North American *Poduridae*, except the sub-family *Onychiurinae*. A "Generic Revision of the American Moths of the Sub-family *Hypeninae*, with descriptions of New Genera and Species," by Wm. Schaus, consisting of 144 pages, considers mainly the species and genera of tropical America. The North American species having been worked out by the late Prof. T. B. Smith are not included in this revision except where necessary for reference. About 776 species and 164 new genera of the *Hypeninae* are referred to, and a key to the genera is given. Of new species there are 150, and descriptions are given of them, with diagnoses of no less than 41 new genera. Of many of the species described there is either no, or only the most meagre, indication whatever of characters distinguishing them from allied species. In our opinion all descriptions of new species should be largely relative to what has gone before, and not diagnoses isolated from every other. For example, there are ten new species described in the genus *Bleptina*, of these only three have the note as being near another previously described species, and only one has a differential note as to characters (fringe and intensity of colour). This is most inadequate in a genus where many species are listed. No type is given to some of the genera, e.g., *Hypena*, *Salia*. There is one great omission to all these extended papers, and that is an index to the specific and generic names used in any way. It is a simple matter, and saves no end of time and trouble to all future workers, who otherwise have literally to "dig out" their references with much quite avoidable trouble.

Prof. T. Hudson Beare has recently given us an account of the multitudinous duties that he has had since his belated return from the British Association Meeting in Australia in 1914, with a longing to again find time to pursue his entomological studies. In addition to his duties in the University as lecturer, Dean of the Faculty of Science and member of the University Court, he has been for many months Chairman of the Military Education Committee, which deals with the training of the four branches of the Edinburgh O.T.C., investigates all applications for commissions, runs a school of instruction for young officers, and reports on each in detail after a few weeks attendance, he has been more or less responsible for raising and grouping thousands of volunteers as a regular speaker in the street and elsewhere during the whole of the recruiting period. When the Derby scheme was begun Prof. Beare became Chairman of the Committee for Eastern Edinburgh and the supervision of all the subsidiary work fell upon him. When work is to be done, 'tis the busy man on whom it falls to do it.

Our colleague, Mr. R. S. Bagnall, is continuing his studies of the long neglected but economically important order Thysanoptera. We have just received three separata from him of papers published in the *Annals and Mag. of Nat. Hist.*, "Brief Descriptions of new Thysanoptera," containing an account of new species mainly from the Australian region obtained through the untiring energies of the workers of the Hope Museum, Oxford, at the instance of Prof. Poulton. Critical points are illustrated by diagrams.

In a contribution to the *Jr. of Econ. Biology* for December last Mr. R. S. Bagnall introduces and describes two new species of *Machilidae* (*Thysanura*). *Petrobius carpenteri* was obtained in large numbers near

Hartlepool, and is near *P. maritimus* and close to the Dutch species *P. oudemansi*. *Petrobius modestus*, the second new species, was found among dead leaves near the shore at Grange-over-Sands, Lancashire, and is also near *P. maritimus*.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

May 3rd.—ELECTION OF FELLOWS.—Messrs. Leonard Charles Box, F.R.H.S., Dominion Experimental Station, Fredericton, New Brunswick, and Leonard Spencer Tatchell, Heathwood Road, Bournemouth, were elected Fellows of the Society.

EXHIBITIONS.—A QUESTION CONCERNING THE HATCHING OF EGGS OF *STEGOMYIA FASCIATA*.—Mr. Bacot gave in brief outline an account of some experimental work carried out in Freetown, West Africa, dealing with the hatching of eggs of this mosquito.

EGGLAYING OF *TRICHIOSOMA TIBIALIS*.—Dr. T. A. Chapman exhibited living specimens of the Sawfly, *T. tibialis*, Steph., and eight eggs laid in the cuticle of hawthorn leaves, and read notes.

TERATOLOGICAL SPECIMEN. ADDITIONAL TARSAL JOINTS IN A BEETLE.—Dr. Chapman also exhibited a teratological specimen of a beetle labelled "*Odontopus cupreus?*" with additional tarsal joints, and read notes.

CASSIDIDÆ PRESERVING THEIR BRILLIANCY.—Mr. E. E. Green exhibited various species of *Cassididae*, preserved in 2 per cent. formalin, displaying their natural metallic colours which are lost on desiccation.

RECOVERY OF A BUTTERFLY THAT HAD BEEN STUNNED FOR NEARLY THREE DAYS BY A FALL.—Prof. Poulton exhibited a living male *Celastrina argiolus*, L., which he had found, on April 27th, lying with outspread wings on a cement path at St. Helens, Isle of Wight. The insect, placed under a tumbler on the study table, remained motionless on April 27th, 28th, and 29th, but on the morning of April 30th was seen to have entirely recovered.

A SCARCE BRITISH BEETLE.—Mr. H. Willoughby Ellis exhibited a rare British beetle, *Amara nitida*, Stm., taken at Knowle, Warwickshire.

FRENCH SPECIMENS OF AN AMERICAN WEEVIL.—Mr. Champion exhibited specimens of *Mascatraucia cyrtica*, Desbr., from the Landes and Monte Video, an American weevil related to *Dorytomus*, apparently recently introduced in some way into France, where it has been found in numbers under the loose bark of plane trees.

PAPERS.—The following papers were read:—"Butterflies from Southern Kordofan, collected by Capt. R. S. Wilson, Lancashire Regt.," by G. B. Longstaff, M.A., M.D., F.E.S., etc.

"New Chrysidids from Egypt and Algeria," by the Rev. F. D. Morice, M.A., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

April 13th, 1916.—LECTURE.—Mr. F. W. Frohawk gave a lecture on "The Flight of Birds," and showed a number of preserved skins and diagrams in illustration of his remarks.

A UNIQUE ABERRATION.—Mr. Sperring exhibited an interesting and unique aberration of *Spilosoma mendica*, a male of the dark colour with

the central area of the forewings of a lighter shade, with scattered and definite spotting on it as in the female.

EXHIBIT OF PAPILIOS.—Mr. Edwards, *Papilio telearchus* with its mimic *Euploea midamus*, *P. rhetenor* with its mimic the moth *Epicopeia polydora*, and other Papilios.

HIBERNATION OF PYRAMEIS ATALANTA.—Mr. Newman, a living *Pyrameis atalanta* bred in September, 1915, and kept in a warm room through the winter. It had been fed at intervals and seemed none the worse for hibernation.

TRACE OF *C. EDUSA* PUPATING IN ENGLAND.—Mr. Frohawk, a twig gathered at Addington upon which were the remaining portions of a chrysalis of *Colias edusa*.

THE SEASON.—A discussion took place as to the present season. The following species had been seen recently *Sesia stellatarum*, *Aglais urticae*, *Celastrina argiolus*, *Pieris brassicae* and *Gonepteryx rhamni*.

April 27th, 1916.—MICROSCOPICAL EVENING.—Slides were shown by Messrs. West (Ashtead), Dods, Edwards, Dennis, Woods, Dunster, Ashby, Ashdown, Moore, Adkin, and Turner.

May 11th.—THE ANNUAL EXHIBITION OF "OTHER" ORDERS.—ABERRATIONS OF COCCINELLIDÆ.—Mr. Ashdown exhibited long series of aberrations and variations of three species of *Coccinellidae*, *Adalia bipunctata*, *Coccinella 10-punctata*, and *C. hieroglyphica*.

COLEOPTEROUS LARVA.—Mr. West (Ashtead), a living larva of the stag-beetle, *Lucanus cervus*.

PARASITES.—Mr. Pierson, a cocoon of *Samia cecropia* from Brooklyn, N.Y., cut open to show the mass of pupæ of a hymenopterous parasite.

COLEOPTERA, ETC., EXHIBITED.—Mr. West (Greenwich), five drawers containing his fine collection of *Coccinella*, *Chrysomelidae*, etc.

The Society, by Mr. West, drawers showing collections of Diptera, Odonata, and some of their Coleoptera.

EXHIBIT OF HEMIPTERA.—Mr. H. J. Turner, specimens of several groups of Rhynchota, including *Scutellaridae*, *Pentatomidae*, and the *Flatinae* section of the *Fulgoridae*.

HYMENOPTERA AND DIPTERA EXHIBITED.—Dr. Chapman, specimens of the sawfly, *Trichiosoma tibialis*, with their ova *in situ* in hawthorn twigs, examples of the carrot fly, *Psila rosae*, and the rare fly *Pegomyia hyoseyami*, with its parasite and puparia bred from *Datura stramonium*.

BRITISH COLEOPTERA.—Mr. Ashby, several drawers of his finely mounted British Coleoptera, including the *Scarabidae*, *Buprestidae* and *Flateridae*, and the genera *Agabus*, *Pterostichus*, *Polydrusus*, *Phyllobius*, etc.

VARIOUS EXHIBITS.—Mr. H. Moore, cockroaches and earwigs, species taken in a city warehouse with Japanese goods, nest of the weaver-bird, and the eggs of the tropic-bird.

EXOTIC INSECTS.—Mr. Edwards, several boxes of exotic Coleoptera, *Mantidae*, *Phasmidae*, etc.

May 25th.—EXHIBITION OF CATOCALINÆ.—Mr. H. Moore exhibited specimens of *Catocala palaeogama* from the United States of America, and *C. nupta* from France.

Mr. A. E. Gibbs, species of New World and Old World *Catocalinae*,

including *E. nubilis* and *E. desdemona* from the former area, and *M. dilecta*, *C. elocata*, *C. promissa*, and a British bred *C. fraxini* from the latter, and gave notes on the species.

Mr. Hy. J. Turner, numerous species of Palearctic and Nearctic *Catocalinae*, and read a short paper on the exhibit. An aberration of *C. promissa* was exhibited in which the crimson of the hindwings was replaced by a beautiful cream colour.

A discussion followed, Messrs. Frohawk, Gibbs, Wolley-Dod, Dr. Chapman, etc., took part.

ABERRATION OF PARARGE MEGAERA.—Mr. Gibbs, an aberration of *Pararge megaera* taken in Devon by Dr. Perkins, in which the two central transverse lines were united by a dark patch. It was taken in September and was possibly of a third brood.

ABERRATIONS OF COCCINELLIDÆ.—Mr. Ashdown, a further series of aberrations of *Coccinellidae*, including black forms of *Adalia bipunctata* and *A. obliterated*.

ABERRATIONS OF *C. ARGIOLUS* AND *A. CYDIPPE* (ADIPPE).—Mr. Frohawk, a female form of *Celastrina argiolus*, in which several small streaks of male colour ran through the marginal dark area, and an underside of the same species in which there was a dark streak from base to hind margin. He also showed an aberration of *Argynnis cydippe* (*adippe*) in which some of the black markings were coalesced to form a narrow transverse band across the disc.

SERIES OF SOUTHERN FORMS OF *C. PAMPHILUS*.—Mr. Curwen, a series of forms of *Coenonympha pamphilus* from the Mediterranean area, including var. *lyllus*, ab. *marginata* and var. *thyrsideis*.

OVIPOSITION OF SAWFLIES.—Dr. Chapman, leaves of hawthorn and birch to show the method of oviposition of the sawflies *Trichiosoma tibiale* and *Cimbex sylvarum*.

June 8th.—SEXUAL DIMORPHISM IN *C. CORYLI*.—Mr. W. J. Ashdown exhibited male and female specimens of *Cryptocephalus coryli* to show the sexual dimorphism, and also a male example of the Tipulid *Otenophora faveolata* (?) from Surrey.

EXHIBITS OF ACARI AND HOST, AND LARVÆ OF A "FIREFLY."—Mr. H. Main, (1) A small cockroach from among bananas, the colour of which it closely resembled. (2) Male and female of the burying beetle *Necrophorus rufator* covered with Acari. A discussion took place as to the relations between the host and the Acari. (3) Nearly full fed larvæ of the firefly *Luciola italica* from ova laid in 1914.

PLUSIA MONETA AT SOUTHGATE.—Mr. Dunster, cocoons of *Plusia moneta* on *Delphinium* at Southgate.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

March 20th, 1916.—PAPER.—Mr. Henry T. Carter, of the Liverpool University, gave a lecture entitled "Mosquitos." Mr. Carter being a specialist on this group of the Diptera was able to hold the close attention of the meeting while he described the peculiarities of these interesting little creatures. Taking the term mosquito in a broad sense to include the blood-sucking gnats, of which we have several species in England, the lecturer traced the life-history and development of the insect from the ovum to the imago; he showed how particular species had adapted themselves to climates varying from the Equator to the

Arctic Circle and from torrid to frozen conditions, when in the one case the moisture supply necessary for the larval life was fugitive and uncertain, to the other extreme where the water, although plentiful, was almost continually frozen. Lantern slides, in many cases from Mr. Carter's own drawings, admirably done, were freely used to illustrate the chief points of the lecture. An exhibit comprising all the known species of mosquito was much admired and discussed.

April 17th.—PAPER.—Mr. Wm. Mansbridge read a short paper entitled "Suburban Collecting." Principally with the object of showing how much useful work can be done in the immediate neighbourhood of one's own home, the author instanced many local insects which can still be found in the suburbs of our large towns, in the old gardens and parks, on railway banks, and in the old lanes which in many places still exist as vestiges of a vanished countryside. The melanic variations of *Odontopera bidentata*, *Polia chi*, and *Hemerophila abruptaria*, being good examples of this phase of variation and practically confined to suburban localities; while any one with access to an old garden can obtain many prizes in the scarce forms of *Abraxas grossulariata*, as well as from a scientific point of view contribute to our knowledge if he cares to breed from selected parents. In lanes bordered with old hawthorn hedges the common but variable Tortrices, *Peronea variegana*, *Tortrix ribeana*, and *Teras contaminana*, often absolutely swarm, and furnish many beautiful examples for the cabinet. Among the warehouses of our manufacturing towns many species are to be obtained in profusion and scarcely in any other way. Many of the species of the genera *Ephestia*, *Blabophanes* and *Tinea* are thus to be found; and where electric lamps can be worked, such are a veritable mine of insect wealth, as at Chester, where some time ago a species new to science, *Scoparia vafra*, Mey., was so captured. At the present time, however, such a method as collecting at light is practically out of the question, yet it is surprising to what a small light moths will sometimes be attracted. The paper was followed by an animated discussion, and it was resolved to make suburban insects a feature of the exhibitional meeting at the opening of the next session in October.

REVIEWS AND NOTICES OF BOOKS.

FAUNE DE LA RUSSIE ET DU PAYS LIMITOPHES, FONDÉE PRINCIPALEMENT SUR LES COLLECTIONS DE L'ACADÉMIE IMPÉRIALE DES SCIENCES DE PETROGRAD. Insectes Lépidoptères, vol. I., N. S. KUSNZOV. Introduction, DANAÏDÆ (PIERIDÆ, LEPTALIDÆ, auct.). Livr. I., 336 pp., 204 text figures. Petrograd, 1915.—This volume is in Russian, and not therefore, until our Russian alliance has more detailed effects, likely to attract many English entomologists. It is, nevertheless, noteworthy, since it contains a good deal of original matter, and most of the recent literature, bearing on classification and structure, is incorporated in the several sections.

It begins with a classification of the families recognised by the author, followed by a diagram of each. Then follows for 190 pages an account of the structure of the imago, 6 pages on the egg, 50 pages on the larva, and 20 on the pupa; there are further 20 pages on the internal anatomy.

The features that are most accessible to us are the excellent text figures, and the fairly inclusive bibliographical lists. There are, also, glossaries, or almost dictionaries, of names of parts, such as that referring to antennæ (p. 50), the thorax (p. 62), legs, wings and their attachments, the genitalia (p. 113) running to 23 pages and involving descriptions of the male and female appendages. The author adopts Peytoureau's view (for the moment still apparently the orthodox one) that the dorsum of the ninth abdominal segment is that of the eighth, and that the terminal segment is the ninth and tenth combined. There follow twenty-five pages of detailed bibliography, showing progress of research on these organs, a dozen on the synonymy of the names of the different structures, followed by a fuller but less detailed bibliography for some 10 pages.

The text figures are excellent, the majority are original, and apparently from the author's own drawings, usually under the microscope; the source of the remainder is in every case acknowledged.

The work reminds us of Packard's *Text Book* or Berlese's *Gli Insetti*, but it refers of course to the Lepidoptera only, and not to the whole class of insects, it is consequently in many directions more detailed.

We have no English work on quite the same lines, and it deserves the attention of English entomologists even though they cannot read it.—T.A.C.

LEPIDOPTEROLOGY.*—Monsieur C. Oberthür brings out the eleventh fasciculus of the *Lépidopterologie* in a volume of text and one of fifty-nine plates. In these plates, M. Oberthür told us that M. Culot surpassed himself. But for a difficulty in accepting the impossible, we should be in hearty agreement on this point. Whilst enjoying these beautifully engraved and coloured plates, we should wish to associate ourselves with M. Oberthür in his expressions of regret at the loss of M. Millo, Monsieur Culot's son-in-law, killed in the Argonne last December, regrets that the genius of the French language, of which he has so accomplished a command, enable M. Oberthür to express with a respect and sympathy that we can equally feel, but cannot so readily put into words.

The eight plates of *Ægeriids* are unfortunately for the present without text, M. Fd. Le Cerf, who had undertaken to present it, having been prevented doing so, as a result of the war, but promises it for a later volume. Two species are figured as new, *Chamaesphecia powelli* and *C. micra*, and a number of others, more or less recently published by M. Le Cerf and by M. Oberthür. The variation of some of the species is greater than is generally realised, of which *Pyropteron doryliformis* is a striking example, five named forms being figured, and of these some present considerable variation.

There are three plates of forms of *Chelonia* from Algeria, two of *Lemonia*, one of *Lasiocampa*, one of *Lymantria*, and others.

In the explanation of plate 323, *Chelonia oberthüri*, and 328, *Lemonia philopalus*, we see that the life-histories of these species are to appear in Fasciculus xiii. We rejoice at this evidence that the depression of health and spirits produced by the war, and finding expression in the preface to the last Fasc. (x.) in a fear that little further

* *Lépidopterologie Comparée*, Fasc. xi., Rennes, April, 1916.

might be possible in publishing the *Études de Lépidoptérologie Comparée*, has been thrown off. Plates 340 to 363 are of *Catagramma* and allied genera, and the remainder, five of *Acraea*, one of Hesperids, five, 364 to 369 of Satyrids, four of Hesperids and Heterocera, are of species from Madagascar.

Of the volume of text something more than the first hundred pages are devoted to a monograph of the *Catagrammides*. There are some references to the effect of the war of 1870 on Guenée's study of the group and of the present war on the monograph before us. These include some details as to Bismarck's falsification of a despatch that caused the war of 1870, and instances of the lies that the Germans constantly manufacture. This is not strictly "Entomologie," but it illustrates how it is impossible in Entomology, or in anything else, to avoid the effects of the war, and to reflect on the indescribably abominable conduct of the Prussians. The monograph contains a number of text plates in black and white to show the character of the three genera of *Catagrammas*, viz., *Catagramma*, *Callicore*, and *Perisama*. It is represented that the differences and relationship to each other of these genera are the result of creative design. M. Oberthür probably felt that the *Catagrammas* illustrated this thesis very satisfactorily, but he would probably not disagree if one said that any other group would lead to similar conclusions. We no doubt all accord here with M. Oberthür, though some of us see these results as the effect of constant creative action, others find them flow from the unity, uniformity and order that have been immanent in things from the beginning.

The next part treats of Madagascar insects, beginning with *Acraeas* and continuing with the *Satyridae*, the *Hesperidae*, *Agaristidae*, *Saturniinae*, *Noctuae*, and *Nyctemeridae*.

The chapters on *Acraea* and *Satyridae* amount to monographs of the forms and certain genera of the latter as represented in Madagascar.

There is a report by M. Gaston Melou on the resistance of African *Acraeas* to the action of cyanide of potassium. He found the ordinary cyanide bottle with 33% cyanide that he used had practically no effect on *Acraeas*, so he tried pure cyanide of 99%, this was more effective, but took half an hour to an hour to kill the *Acraeas*, and so for practical collecting purposes was no better than the weaker. Yet the vapour of benzine, of ether, or of chloroform, kills them in one or two minutes. It is suggested that they may be immune because their food-plant contains hydrocyanic acid, but M. Melou did not test the matter.

There is an account of the early stages of *Lophostethus demolini*, a sphinx widely spread over Africa. It feeds on trees of the mallow tribe. A curious habit is reported as to pupation. "During the pupation the caterpillar does not free itself from its skin; this seems to melt (*se fondre*) like the colours, and remains whole, making an envelope for the pupa."

Twelve portraits of entomologists complete the volume, of these the names best known to English entomologists are perhaps Lacordaire, Bellier de la Chavignerie, Blachier, Querci, and Verity.

Last, but not least, we must not forget the preface, "A mes Amis," at the end of the volume. This explains how the war, in its direct effect on M. Culot and on M. F. Le Cerf, has disarranged the continuity of the work as intended, and postpones to vols. xi. and xii. items properly in order with the present Fasciculus; how the necessity for

all men of military age being called up has disorganised various services involved. "Further, the continual troubles, national and domestic, produced by the war, which also doubtless reaches all human beings in the various nations at war, have not spared me more than any one else. But I must recognise that studies in entomology, when illness allowed me to devote myself to it, has often resulted in patience and even a measure of rest, in the midst of our anxieties, so acutely painful and continuous."

There follows a long quotation from the Presidential address of Guenée to the Entomological Society of France in 1849, in which he eloquently pictures how entomology, like any other science, benefits its votaries in many indirect ways, in affording a consolation for almost all the ills of life. The quotation seems very apt for war times such as we now suffer from, or for those of 1870 in France. M. Obertbir adds that Guenée might have added the enjoyment of friendships it promotes. One would like to reproduce the poetic and practical eloquence of the rest of this preface, but unless quoted in full as written, one would only spoil it. But, alas, after releasing himself for a season in these eloquent sentences from the worries that affect us all, he has to finish in equally noble and poetic words in deploring the savagery of our enemies, and stating some of their titles to eternal infamy.—T.A.C.

THE SECOND ANNUAL REPORT OF THE LANCASHIRE AND CHESHIRE FAUNA COMMITTEE, DARWEN, 1916.—Dr. W. M. Tattersall, the Keeper of the Manchester Museum, the University, Manchester, has forwarded to us a copy of the above report. It consists of the Report read to the annual meeting and the reprints of the various sectional reports which have appeared at the instance of the Committee in the *Lancashire and Cheshire Naturalist*. This committee deals with all orders, and as the various workers send in their contributions they will be considered and published in due course. Among others the following papers have already appeared during the past year:—

- (1) "Hemiptera Homoptera in Lancashire and Cheshire," by Oscar Whittaker, F.E.S.
- (2) "Report on *Aphidae*," by A. W. Rhymer-Roberts, M.A.
- (3) "Gall Midges and Gall Mites at Grange-over-Sands," by R. S. Bagnall, F.L.S.
- (4) "Wood-lice and Myriapods at Grange-over-Sands," by R. S. Bagnall, F.L.S.
- (5) "Acari at Grange-over-Sands," by Rev. J. E. Hull, M.A.
- (6) "Homoptera at Grange-over-Sands," by R. S. Bagnall, F.L.S.
- (7) "On some Arthropods, Arachnida, and Myriapoda observed in 1915," by A. Randall Jackson, M.D., D.Sc.
- (8) "Hymenoptera of a Suburban Garden," by A. Randall Jackson, M.D., D.Sc.

Further reports are to hand and will be published in due course. A scheme for the compilation of a Bibliography relating to the Fauna for the use of workers has been considered, and no doubt an early opportunity will be taken to carry the scheme into effect. Already many new records for the two counties have been made, and in some groups species new to Britain have been announced. With an organisation like this individual work will not be in vain, and whatever is done will be put in its proper place, while the knowledge gained will be readily available as a starting point for subsequent observers. We wish this work a hearty success.—H.J.T.

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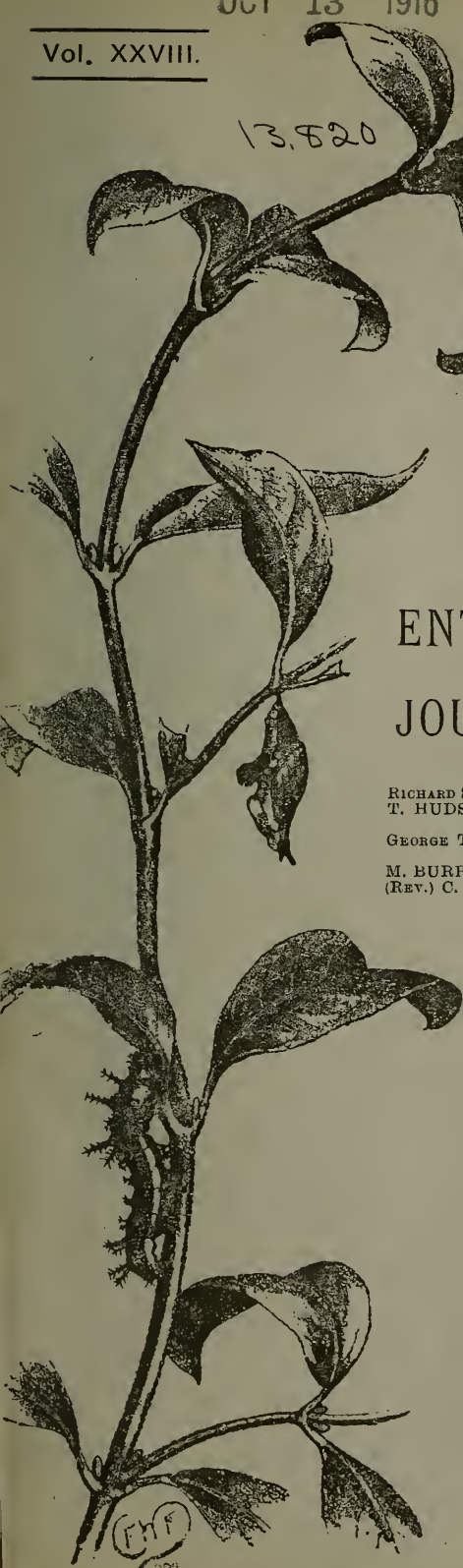
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Field Notes from Salonika. I.

By CAPTAIN M. BURR, D.Sc., F.E.S.

It is extremely tantalising to be surrounded by interesting things without the means of identifying them. The scrubby hills and baking plains of Macedonia are practically virgin soil for entomologists, full of things worth collecting and observing, but both collecting and observing must be done at odd moments, when opportunity arises, not always in selected spots, and with improvised material. Salonika apes the towns of Europe, but, it is hardly necessary to say, there is neither library nor collection for reference, and one is thrown back upon a frail memory to recognise one's captures. Consequently notes from the field are untrustworthy, determinations are likely to err, many nice things cannot be identified at all, and points of interest in distribution and variation may be entirely overlooked. Still, notes direct from the field have the advantage of a freshness and directness that is lacking in the dry accounts written up in the study, often months afterwards, when impressions have faded, for not every observation is noted down, and often enough what passes for a great event to-day is forgotten for ever to-morrow.

So perhaps it is worth while putting on record a few notes on collecting in the neighbourhood of Salonika, with the reservation that all identifications are provisional, and subject to correction at a later date.

The first Orthoptera noted were the few common things that hibernate and appear in the early warm days of spring. As early as January 9th an occasional *Epacromia strepens* was seen taking advantage of those brilliant sunny days with which we were favoured in that month; on January 31st I saw a minute grasshopper, apparently a *Stenobothrus*, evidently just hatched. *Acridium aegyptium*, L., was fairly common in April; the first specimen was brought me on the 4th. About the same date Pte. Barraud sent me *Acrotylus patruelis*, Sturm., *Platyphyma giornae*, several minute Decticids and Phaneropterids just hatched, and a *Grylotalpa grylotalpa*, L. The latter is common enough, and was often found when dug-outs were being made. In April and May, on the Lambet plain and slopes of the adjoining hills, where there was practically no vegetation, a small cricket used to strike up about sunset; time after time I tried to stalk him down, but he was so timid, and the twilight so short, that my patience was never rewarded even by a glimpse of the creature; it was a peculiarly musical chirrup, and on listening attentively and at close quarters, it was just possible to detect the faint sound of a deeper note at the beginning of each song; from the type of stridulation, and the nature of the habitat, I think it must have been a *Gryllodes*. Three day's violent rain at the end of April must have drowned out all these little dwellers in dug-outs, for after that we never heard their cheerful piping again.

The end of March was marked by the arrival of the first swallows (March 31st); storks were reported as early as the 14th of the month; there is a pair nesting in some tall trees at the back of the Turkish cemetery just outside that part of the Egnatian Way, which is known to the lorry-drivers as "Piccadilly Circus," and they are a familiar sight to those who go into town. The Egyptian vulture, *Neophron percnopterus*, which looks very like a stork on the wing, is a spring

SEPTEMBER 15TH, 1916.

visitor here as he is in the Caucasus; I saw the first one on April 8th. A very welcome arrival was the beautiful bee-eater *Merops apiaster*, L., which was seen in numbers on April 19th; this exquisite creature is very tame; he hawks up and down the little gullies and ravines, flashing and disappearing in the brilliant sunlight, uttering a whipling chirrup, and occasionally showing himself off to advantage by sitting on a projecting twig, or on top of a shrub, or telephone pole, surveying the country round, and sometimes diving at a passing dragonfly or other passing insect. The blatant roller, *Coracias garrulus*, turned up about the same time, but frequents the more wooded districts, and is seldom seen on the treeless plain of Lembet. The bee-eater and roller attracted general attention at once by their brilliant coloration; the former is usually called a "kingfisher," and the latter a "jay" or a "parrot."

Towards the end of May, Orthoptera became more noticeable; *Sturoderus bicolor*, Charp., and *Omocestus rufipes*, Zett., are very common, and numerous other species were abundant in the earlier stages; young specimens of *Saga*, various Dectidids are seen, and tantalise. On the tall, terribly spiny, purple-flowered thistles which grow commonly on the plain, a number of beetles and Rhynchota collect; a pretty little *Hololampya* is common on it, a little black fellow, with pronotum and elytra bordered with white; I think it is *H. marginata*, Schreb. The only other Blattid which I have come across is *Loboptera decipiens*, of which I have taken a few immature specimens under stones. While rummaging among some refuse my fingers came into contact with something round and hard; it was a shrapnel bullet, a touch of local colour that added an interest to collecting.

I was camped for several weeks on the top of some gently rising ground, with dry stony soil, and no vegetation but some spare scraggy grass, a few thistles, and some succory. This slope abounded in Orthoptera. On May 27th I took a *Celes variabilis*; as its name implies, this species is of inconstant colouring, and there are races with the wings white, blue-green, and deep red; it is the latter race which occurs here, and a very handsome fellow it is, as the general colour is deep black, that is, in the male; the female is mottled with grey on a dark ground; both are conspicuous, the dark colour showing up distinctly when they are settled on the sparsely covered ground, and the red flash of their wings attracting attention to them directly they make a short flight; I noticed the same thing on the steppes of Boz, in the Transcaucasus, last summer, where the same race occurs. As soon as June was well in *Celes* appeared in numbers, as did *Dociostaurus brevicollis*, Eversm., a common but pretty little grasshopper occurring in numbers on dry waste land practically throughout the Mediterranean province.

But the most persistent and noticeable Orthopteron on this dry ground is a brachypterous Dectid, with decurved ovipositor, referable, I think, to *Gampsocleis*, which I shall call him until I get him identified; the immature specimens were all green, but adults, appearing first early in June, are mottled brown; a good proportion retain a dark green background for a day or two after the final change of skin, and perhaps a few may do so permanently, but in the vast majority of cases the green background turns into a deep brown or rich maroon. They are extremely active and fierce; when captured they bite savagely, but

they are so nimble that it is difficult to catch them without a net; they take two or three long bounds of five or six feet in length, and laugh at attempts to catch them with the fingers; but they are fond of sitting on top of a thistle or bit of succory, chirping with a rather loud and persistent stridulation; if carefully approached it is not very difficult to catch them with a rapid and sweeping stroke. I saw one bounce on to a male *Celes*, roll him over in spite of his vigorous kicking, stand across him, and bury his powerful mandibles in his sternum; *Celes* continued to kick spasmodically till his sternum was nearly eaten away; when disturbed, the *Gampsocleis* made off in two or three bounds, carrying his relatively bulky prey with him; the ruling passion is strong in death; one, on being plunged into a tube of alcohol, seized the nearest object, which was the leg of his predecessor in the tube, and never let go. Another day I placed a tinful of Orthoptera in the sun to dry; almost instantly a *Gampsocleis* strolled round the corner, walked up to the box, and quietly gripped a dead grasshopper in his jaws, and made off with him.

Other Dectioids occurring in the same locality are *Decticus verrucivorus*, L., on the higher ground, and *D. albifrons*, Fabr., on the lower; the latter seems a somewhat smaller race than those which I have taken in other districts in the Mediterranean provinces. One or two species of *Platycoleis*, of the *P. grisea* group, which I cannot name without books, and on the flat, a small, pale, brachypterous species with short curved ovipositor, of the *P. tessellatus* group, are common, but the latter maturing rather late in June. One other Dectioid common enough on the flat, and not mature before the end of June, has a characteristic coloration; it is of a general pale grey, with a very persistent black spot on the upper surface of the posterior femora near the base, bright red-brown jaws, with black frons, and a rather long, straight ovipositor.

On June 29th, in a little gulch near the camp, we found numbers of *Nemoptera coa*. This is an elegant creature, fluttering feebly from plant to plant, his long tail-like hindwings trailing behind like balancers. Ant-lions, too, are weak on the wing; the big black and buff *Palpares libelluloides* flaps about on the plain commonly enough, and a small, plainly coloured species comes to light in the tents every evening, and can be easily picked up in the fingers. *Ascalaphus* is much stronger on the wing; I have taken three species here, two with plain wings, and one handsome black and yellow species, which I think is *A. kolyvanensis*. These hover and fly with a dash, and require some catching, even with a butterfly net. The third species has hyaline wings with one dark spot.

On May 29th, my friend Captain Powell, who constantly helped me in the field, brought me a female *Dinarchus dasypus*, which he had found cowering under some scrub. A little later we took two more, both males, and kept them alive for a long time. They make quite entertaining pets; I have described them in another note; but we did not find any more for a long time, although we kept a sharp ear open for their loud and characteristic song, and it was not until July 3rd that any more were found, when some R.A.M.C. friends came across a colony of them.

Another interesting creature that was about in June was a fat, brachypterous CEdipodid, which I think is *Glyphanus*.

This is a thick-set Edipodid, which seems to resemble *Nocarodes* of the east, and *Ocnerodes* of the west. I first saw young larvæ in a pretty ravine known as the "Happy Valley," as early as May 5th; these were of a light fawn colour, but the neck membrane, between the pronotum and base of the head capsule is a brilliant ultramarine, only visible when the creature stretches its head forward. Three weeks later I took a nymph, and on the 31st of the month Captain Powell found an adult female. For the first three weeks in June the adult insect occurred sparingly on the dry plain, but disappeared before the end of the month. There is considerable variation of colour, from a pale delicate fawn, through deep cream to rich fleshy pink, and grey-brown to deep brown; the males are about half the size of the females, and darker in colour, some running almost to a deep prussian blue; but the pattern is constant, that is to say, the metazona of the pronotum is invariably blackish, with a fine white border; the inner face of the posterior femora has a deep blue big spot, and the rest of the surface is canary yellow, which colour is, as it were, washed on to the contiguous sides of the abdomen; the brilliant blue neck membrane is also constant; the whole of the lower surface of the body in both sexes is dead white. When they jump they turn their belly upwards in the air, so that a white flash is seen, disappearing directly the insect settles, and assimilates with the ground coloration. Thus, although this species is incapable of flight, we get the same effect that is seen in the species with the coloured wings, though by a different process. I noticed that on the sides of the first two abdominal segments in both sexes, there is a roughened patch like emery paper; this suggests that the insect can stridulate, and in both sexes, but I was never able to detect the production of any sound. I kept a number alive for some time; they copulated freely in confinement, the male remaining attached to the female for hours at a stretch; they are sluggish animals, easily caught with the fingers. Unfortunately, they lose their beautiful delicate colouring on dying; the belly turns black, and the upper surface to a dull grey or blackish-brown; only the blue and yellow remain; the lining of the thighs is seldom noticeable, and the brilliant blue of the neck membrane only shows when the creature stretches its head out in walking and eating.

By the first week in June a few adult *Caloptenus italicus*, L., were seen; by the end of the month they were extremely numerous, and larvæ and nymphs occurred in thousands; *Edaleus nigrofasciatus*, the delightful *Edipoda selina*, Pall. (= *gratiosa*, Serv.), and *Aerotylus insubricus*, Scop., are common objects of the plain by the end of June, flashing their pretty wings in the sunlight; the latter flies freely to light, and was a frequent visitor to the mess tent in the evenings. Another frequent visitor is the mole cricket, which comes dashing clumsily in, and scuttles about on the floor looking for cover; another cricket, I think it is *Nemobius heydenii*, flies in on warm still evenings; he has an erratic, dashing flight, and is very nimble when settled, and so takes a lot of catching. The *Gampsocleis* referred to above is also quite domesticated; he commonly comes into the tents in search of flies, and so is a welcome visitor; one, who had lost one hind leg, but seemed none the worse for that, made himself quite at home in the mess for several days, and hopped freely about the table, catching flies, and eating freely from the hand. *Platycleis grisea*, and the rarer brown-

headed *Dectid*, also come in and crawl up the mosquito netting in search of flies.

On June 18th, I took a pair of graceful yellow-winged *Arcyptera*, probably *A. flavicosta*, and found *Chorthippus pulvinatus* in numbers in certain localities on the plain, together with a *Stauroderus* that may be *S. vagans*, Charp. *Xiphidium fuscum*, Fabr., is not very common, but mature at the end of June, and early in July the graceful *Tylopsis liliifolia*, sometimes green, sometimes buff, is adult; I have not yet seen the marked form, *marginiguttata*; nymphs are still numerous. On July 4th, Captain Powell brought in a male *Acrometopa macropoda*, a handsome and delicate Phaneropterid like *Tylopsis*, but two or three times larger; this species occurs only in the extreme south of the eastern Mediterranean coasts.

There is a species of *Saga*, which is far from rare here, but I do not know what species it is, as it is decidedly smaller than the south central European *S. serrata*, and a great deal smaller than the other Levantine species, I am inclined to think it is new; it is of a uniform grass-green as a rule, but one female, rather a big one, after a day in captivity, turned to a greyish-brown, freely mottled with white; the ovipositor in this specimen was deformed; another female was of this marbled pattern when in the nymph stage, as late as July 4th, but all the others were plain green. They are sluggish creatures, walking with a slow, methodical, curious swinging gait, constantly stooping to lick the soles of their dilated tarsi, which have a powerful sucking action, so that these big insects can stand on a pane of glass like a fly. They are quick enough in their movements when they pounce on their prey. I fed them on grasshoppers; a larva of *Acrida* was seized by the frons, and the skin only eaten, the interior of the body being rejected; adult grasshoppers were seized by the head, held by the powerful spiny front legs, and methodically chewed down from head to tail, in spite of its kicks, only the horny parts, the elytra, wings, and legs being rejected. One soft specimen, barely out from the old skin, was evidently a toothsome morsel, for it was chewed right up from end to end; the front legs are used for clasping the prey, as a squirrel holds a nut, and the femora are slightly thickened; they are, indeed, more noticeably thickened than the posterior femora. I kept a pair alive for some time, but in separate cages, for fear they would fight and mutilate each other; one day, a friend of an enquiring turn of mind, put the two together; the male at once approached the female and stood alongside her, "top and tail," gripped her ovipositor firmly in his mandibles, and, curving up the posterior end of the abdomen forwards towards the apex of her abdomen, deposited a pellucid bag containing the spermatophores; after a couple of minutes he let go, and remained quiet.

Early in July, Lieut.-Col. Parsons, R.A.M.C., and Captain Ewens, R.A.M.C., both fired with the fever of collecting, discovered a small colony of *Dinarchus dasypus*, and took me to the spot; I found them sitting high up on thorny shrubs, *Eleagnus* I think, and quite conspicuous. We took four males, and put them in a cage together, but, though apparently vegetarians, they opened their powerful mandibles, and started fighting, so for fear of seeing the specimens spoilt, I very reluctantly killed these portly fellows, who make quite friendly and entertaining pets.

New Forms of *Heliconius*.

By W. J. KAYE, F.E.S.

Heliconius hermogenes ab. *lutescens*, nov.—Forewing black with yellow markings. A divided yellow blotch within the cell; a curved transverse yellow band beyond cell curving from costa to vein three, then recurving to tornus. A series of seven large submarginal yellow spots. Hindwing black with a broad submarginal band of yellow.

This form is apparently scarcer than the type form, which is described as white marked. In Hewitson's figure of the forewing there is some yellow colouring to some of the spots. Doubtless specimens must sometimes occur as in the figure mentioned, but for bibliography we must take the described form *hermogenes* to be wholly white marked.

Habitat.—Colombia, Muzo.

Type in coll. Kaye.

Heliconius hygiana ab. *albescens*, nov.—Forewing dark brown with white markings. A white streak from base along the median vein; a rather narrow white transverse band from costa to tornus, where it is at its narrowest. A rudimentary white band at apex not extending beyond vein six. Hindwing dark brown with a central orange-red band.

This rare form of *hygiana*, like so many other white marked forms of other species, comes from East Ecuador. Although the band of the hindwing is described as orange-red, in fresh specimens it is no doubt like other *Heliconines*, bright crimson-red.

Habitat.—E. Ecuador, Zamora, 3-4,000ft. (O. T. Barron).

Heliconius erato sub-sp. *etylus* ab. *insignis*, nov.—Forewing as in *erato* sub-sp. *etylus*, except that the apical patch is clear white instead of yellow. Hindwing slender-streaked like *etylus*, but even more so.

Habitat.—E. Ecuador, Zamora, 3-4,000ft. (O. T. Barron).

Type in coll. Kaye.

Heliconius quitalinus sub-sp. *nebulosa*, nov.—Forewing with the basal half ochre-brown of the same shade as *Heliconius aristiona*. A broad black sub-inner-marginal streak, which neither reaches to the base nor to the outer margin. Within the discoidal cell is a large black patch joined to a broad streak running to base. Outer half of wing black, the black extending well into the cell, but leaving the lower discocellular ochre-brown as a sharp angle. The black beyond vein 2 extends in two wavy projections, the outer one just touching vein 1. On costa, just outside the cell and above the upper discocellular, is a large oblong yellow spot; extending across the wing is an indication of a macular band, but greatly suffused with black. Just before apex is a straight row of three distinct yellow spots. Below are three pairs of white subapical dots. Hindwing ochre-brown with a central bar of wedge-shaped spots, the wedges longer towards the outer margin. A costal band of black curving round to join the central band between veins 6 and 7. Exp. 78 mm.

Habitat.—S.E. Peru, Yahuar Mayo, 1,200ft., October-November, 1910.

Type in coll. Kaye.

Heliconius telesiphe ab. *nivea*, nov.—Forewing dull black with white markings. A central band (narrower than in *telesiphe*) wholly white and showing no trace of a spot below vein 2. Exteriorly the band is shaded with greyish. A white apical band shaded very slightly exteriorly with reddish colour. Width of apical band as in typical *telesiphe*. Hindwing dull black with white transverse central band as in typical *telesiphe*.

This form is apparently exceedingly rare. Frequently in *telesiphe* there is a small white spot at the commencement of the apical band on the costa, but hitherto transitional forms have not been detected.

Habitat.—Peru.

In the collection of the late Mr. H. J. Adams, which is now with the National collection.

The Insect.

[Probably the following extract from a work by a well known public official, stands unique for its concentrated venom.—H.J.T.]

“And now we come to the consideration of the last class of animated beings of which it is necessary to treat—the insects: that class which seems to have been created for an almost wholly evil purpose.

“If the old idea still prevailed that the evil principle was personified by a fallen deity, one might well imagine that the class of insects was his contribution to the life of this planet.

“This idea certainly prevailed among the Semitic peoples of antiquity, who called Beelzebub ‘the king of the Flies.’

“From the point of view of man and most other mammals, insects are the one class among their fellow creatures which are uniformly hostile and noxious.

“And this feeling that they were to be combated as the enemies of creation seems to have perpetually actuated the development of group after group of new creatures to prey on insects.

“Fish crawled out of the water to pursue primeval insects and became amphibians.

“Amphibians developed into reptiles and into mammals in the same pursuit, reptiles gave birth to pterodactyls and to birds, so that this hated Arthropod might be followed through the air; and mammals for the same end took to flight in the form of bats.

“Birds, almost more than any other class, have nobly devoted themselves to keeping down insects, and for this reason among many others deserve the gratitude and support of humanity, to whom the insect tribe is almost more repellant and more hurtful than it is to less sensitive beings.

“Mr. H. G. Wells, in his interesting book of imaginative foresight, *The Time Machine*, has hinted at the awful development of insects which might ensue when these checks to their expansion were removed.

“When one reads of the many windmills at which philanthropy wastes its time in tilting, one longs for some Peter the Hermit of Science to arise and preach a crusade against insects.

“With the doubtful exception of the bee (and honey now-a-days can be made artificially—is made artificially whether we like it or no)

and the cochineal aphid (now supplanted by aniline dyes), I cannot call to mind one insect that is of any benefit to man.

“Even when the perfect insect exhibits bright colours or pleasing patterns, as in butterflies or beetles, it is on so small a scale that the effect almost requires to be looked at through a magnifying glass, and even then is paltry compared to the effulgence of birds or the beauty of certain mollusca, and at any rate is more than balanced on the debtor side by the mischief wrought in the larval stages; while in the bugs the contemplation of a certain garish brightness of colour or quaintness of pattern is turned into loathing by the foetid smell.

“There are, it is true, traitors in the camp—insects that try to be on our side by devouring other insects, but if with the disappearance of the rest of the class those too became extinct, we could dismiss them with perfunctory thanks, remembering how in the secondary epoch dragonflies from over encouragement grew to the inconvenient length of two feet, and probably presumed on their size and strength to attack the small mammals of the period.

“To those of my readers who are not acquainted with tropical countries and their insect fauna, this declamation may appear strained in its tenor, but a prolonged residence in any part of Africa produces in one's mind a sweeping hatred of the insect race, a hatred not un-mixed with apprehension, a dread lest by some unforeseen turn in the world's affairs, the existing checks might fail to keep these creatures under, and that some awful development of insects might threaten man's very existence by direct or indirect attack—warfare with his body or the attempted destruction of his food supplies.

“Is this hatred ill-founded when we think of the ravages wrought by the Phylloxera on our vines; by the tsetse-fly on the horses and cattle with which we are attempting to open up Africa; by the jigger, or burrowing flea, which may make whole nations lame; by the mosquitoes, which introduce all manner of diseases into the skin and render existence intolerable at all times in the low-lying parts of Africa, and, during the summer, in the northern regions of the globe; by the blue-bottle fly, which spreads blood-poisoning; the ‘fish’ insects, which destroy our books and pictures; the lice; the termites, which mine our houses; the warrior ants, which drive us out of them; the tiny ants, which get into our sugar and jam; the ephemerides that rise from the river at night, extinguish an uncovered lamp, fall into our soup and permeate it with a filthy taste; the kungu fly of Lake Nyassa, which rises in choking clouds and simulates a fog; locusts, that ravage continents and produce wide-spread famine; beetles, that bore into timber, destroy hides, whose grubs eat away the roots of flowers and food plants; innumerable moths and butterflies whose caterpillars rival the locusts in the destruction of crops; bugs, which suck the juices of valuable shrubs; hornets, which inflict an almost deadly sting on no provocation; the thousand unnamed insect pests with which the gardener and agriculturist have to deal under the name of ‘blight’; and last in the innumeration, but not least in its horror, the cockroach, the foulest of all insects, the very sight of which in its mad, malicious, lustful flight, on some hot breathless night in Africa or India, around one's room, fills one with more abject terror and shuddering revulsion than the entry of any wild beast of our own class, or human enemy, or visitor from the other world?

“ Even in well-ordered England what precautions one has to take against the encroachments of insects !

“ But in Africa, beside this conflict, the differences of opinion with slave-traders and cannibals, the contention with lions and leopards as to possession of domestic animals, are incidents of a cheery rivalry with other forms of flesh and blood compared to this nightmare struggle with a class that knows no pity, that shares with us no feelings, and owns with us a community of origin so remote in its independent development that it might be the creation of another planet.

“ It is surprising, to my thinking, that our asylums are not mainly filled with entomologists driven to *dementia* by the study of this horrible class ; on the contrary, however, by some surprising reversal of effect following cause, the study of insects appears to produce mild spectacled men of regular habits, dull sobriety and calm optimism, just as clergymen are usually the authorities on spiders, and men of thin-lipped virtue affect the study of that most disproportionate development of generative energy, the earthworm.”

Records of some New British Plant-galls. III. New Cecidomyiid Galls found during the Summer.

By RICHARD S. BAGNALL, F.L.S., F.E.S., and J. W. H. HARRISON, M.Sc.

The following are records of additions to the British Fauna mostly made during July and August, of which *Rhabdophaga karschi*, *R. nervorum*, and *Perrisia tortrix* were recorded by Mr. Burkill in January of this year (*Entomologist*, 1916, pp. 4-8).

Group LASIOPTERARIÆ.

Trotteria sarothamni, Kieff.

Broom pods, larvæ gregarious.

NORTHUMBERLAND, Wylam-on-Tyne. DURHAM, Gibside, R.S.B.

Clinorrhyncha leucanthemi, Kieff.

In heads of oxeye daisy (*Chrysanthemum leucanthemum*).

DURHAM, Birtley district, J.W.H.H., Fatfield, R.S.B. NORTHUMBERLAND, Whitfield, J.W.H.H.

Clinorrhyncha chrysanthemi, H. Loew.

Heads of chamomile (*Anthemis cotula*) and feverfew (*Matricaria inodora*).

DURHAM, Fatfield, J.W.H.H. and R.S.B., Penshaw, Hylton, Cox-Green. LANCASHIRE, Freshfield, Lathom and Burscough Bridge. CHESHIRE, Bidston Hill, R.S.B. NORTHUMBERLAND, Denton, H. S. Wallace.

Clinorrhyncha millefolii, Wachtl.

NORTHUMBERLAND, Ovingham, R.S.B., Ninebanks, J.W.H.H. DURHAM, Penshaw and Fatfield. CHESHIRE, Bidston Hill, R.S.B.

Group OLIGOTROPHARIÆ.

Rhopalomyia syngenesiæ, H. Loew.

On same plants as *Clinorrhyncha chrysanthemi*.

NORTHUMBERLAND, Ovingham. DURHAM, Hylton, R.S.B., Birtley, J.W.H.H. LANCASHIRE, Freshfield, and CHESHIRE, Bidston Hill, R.S.B.

Oligotrophus fagineus, Kieff.

Beech leaves.

DURHAM, Lambton, a few only on one leaf, J.W.H.H.

Janetiella thymi, Kieff.

Various records from Northumberland, Durham and Lancashire, J.W.H.H. and R.S.B., in 1915.

Janetiella tuberculi, Rübs.

Broom.

NORTHUMBERLAND and DURHAM, a few examples on the Derwent banks (separating the two counties) between Edmondbyers and Esper-shields. DURHAM, in a lane between Newbiggin and Rowley, not un-common, R.S.B.

Mayetiola radicefica, Rübs.

DURHAM, on a meadow-grass (*Poa nemoralis*), in a dene at Ryhope, NORTHUMBERLAND, Ovingham, and CUMBERLAND, Nenthead, H. S. Wallace.

Mayetiola moliniæ, Rübs.

Purple moor grass (*Molinia caerulea*).

CHESHIRE, Bidston Hill, R.S.B. DURHAM, Birtley Fell, Lanchester, J.W.H.H.

Cystiphora hieracii, F. Loew.

LANCASHIRE, on a hawkweed (*Hieracium* sp.), Ainsdale, June, R.S.B.

Rhabdophaga dubia, Kieff.

On *Salix cinerea* and *S. aurita*.

NORTHUMBERLAND, Ninebanks, J.W.H.H. DURHAM, near Chester-le-Street, R.S.B.

Rhabdophaga nervorum, Kieff.

Midrib of leaf, *Salix alba* (young).

LANCASHIRE, Ainsdale and Freshfield, R.S.B.

Rhabdophaga karschi, Kieff.

DURHAM, on *Salix repens*, Birtley, rare, J.W.H.H. LANCASHIRE, on *S. cinerea*, rare, Freshfield, R.S.B. NORTHUMBERLAND, on *S. cinerea*, Ninebanks, J.W.H.H.

Perrisia iteobia, Kieff.

NORTHUMBERLAND, on *Salix cinerea*, Ninebanks, J.W.H.H.

Perrisia pierreana, Kieff. (Houard no. 892 (S. 42)).

Salix cinerea.

DURHAM, undoubted examples from near Chester-le-Street. Also some old specimens which are characterised by a curved channel, most often in the shape of a horse-shoe, on a somewhat flattened surface. LANCASHIRE, near Ainsdale, old specimens as described above, R.S.B.

Perrisia lathyni, Kieff., and *Perrisia lathyricola*, Rübs. (not of Swanton's Cat.).

On meadow vetchling, not uncommon, 1915-16.

Perrisia alni, F. Loew.

Swollen veins, alder leaf.

NORTHUMBERLAND, Ninebanks, one leaf only, J.W.H.H.

Perrisia cirsii, Rübs.

Head of thistle (*Cirsium arvense*), larvæ red.

NORTHUMBERLAND, Ovingham and Blanchland, R.S.B., Ninebanks, Rev. J. E. Hull. DURHAM, Birtley, J.W.H.H., Gibside, Staindrop, Washington, Peshaw, and Cox Green. LANCASHIRE, Ainsdale, Freshfield, and Lathom. CHESHIRE, Bidston, R.S.B.

There is what I believe to be a second species, with yellowish to orange larvæ, though they may be a young form of *cirsii*, R.S.B.

Perrisia sp.

Head of *Cirsium arvense* closed, a few petals to one side only breaking out; larva solitary, deep vermilion to crimson.

DURHAM, Peshaw, Fatfield, Gibside, R.S.B. NORTHUMBERLAND, Ninebanks, J.W.H.H.

Perrisia compositarum, Kieff.

Spear-plumed thistle (*C. lanceolata*), affecting ovary and style; larvæ reddish-orange to red, gregarious.

DURHAM, Gibside. LANCASHIRE, Lathom, R.S.B. NORTHUMBERLAND, Ninebanks, J.W.H.H.

Perrisia sp.

Also on *C. lanceolata*, heads often bent or twisted, remaining closed, or not opening fully; florets apparently normal; larvæ white to yellowish.

Same localities as above; and CUMBERLAND, near Nenthead, R.S.B.

Perrisia floscolorum, Kieff.

Red clover, flower closed, containing rose-coloured larva.

DURHAM, in a field behind my house at Peshaw, R.S.B.

Perrisia sp.

Heads of black knapweed (*Centaurea nigra*), swollen, breaking round edges, larvæ in large numbers, yellowish to pink.

DURHAM, Fatfield, Peshaw, Gibside, and near Staindrop, R.S.B. CHESHIRE, Bidston Hill, R.S.B.

Perrisia mikii, Kieff.

Heads of black knapweed, remaining small.

DURHAM, Fatfield, J.W.H.H., Gibside, R.S.B.

Perrisia engstfeldii, Rübs.

Meadow-sweet, yellowish-green blister on upper surface of leaf turning reddish, the single larva in corresponding concavity below.

DURHAM, Winlaton Mill, Gibside, Fencehouses, near Chester-le-Street, Lamesley, and Lanchester, R.S.B.; fairly widespread but not

abundant, J.W.H.H. NORTHUMBERLAND, Ninebanks, J.W.H.H., Ovingham, R.S.B. LANCASHIRE, Lathom, and CHESHIRE, Bidston, R.S.B.

Perrisia sp.

Like *enystfeldii* but adjacent to midrib or nerve, which is considerably swollen. Very local.

DURHAM, Lamesley and Gibside, rather plentiful, R.S.B.

Perrisia similis, F. Loew.

On *Veronica scutellata* and *V. officinalis*, very local only.

DURHAM, Gibside, and Lanchester, R.S.B.

[*Perrisia kiefferiana*, Rübs.]

My record stands, but the margins of the leaf are *rolled*, and my remarks apply to the gall and eggs of a Psyllid, *Aphalara nebulosa*, R.S.B.

Perrisia genistam-torquens, Kieff.

Genista tinctoria.

DURHAM, Gibside, rare, R.S.B.

Perrisia periclymeni, Rübs.

Honeysuckle—terminal leaves.

DURHAM, Gibside, Barry Stewart, R.S.B. CHESHIRE, Bidston Hill, R.S.B.

Perrisia pteridicola, Kieff.

Bracken.

DURHAM, Fatfield, rare. R.S.B., Birtley, J.W.H.H. NORTHUMBERLAND, Ninebanks, J.W.H.H.

Perrisia lamii, Kieff.

On *Lamium maculatum*.

DURHAM, Birtley, J.W.H.H.

Perrisia vaccinii, Rübs.

On bleaberry (*Vaccinium myrtillus*), terminal leaves.

DURHAM, Birtley, rare, J.W.H.H.

Perrisia sp. Houard, No. 4566, fig. 1111.

On *Vaccinium myrtillus*.

CUMBERLAND, on Skiddaw. DURHAM, Gibside, R.S.B.

Perrisia vitis-idaeae, Kieff.

On Cowberry (*Vaccinium vitis-idaea*).

CUMBERLAND, summit of Skiddaw, probably plentiful, but, unfortunately, a torrential rain-storm prevented me following up the discovery. It is shown in Houard as occurring in the British Isles, R.S.B.

[*Perrisia anylica*, Kieff.]

This is the *Cecidomyia* sp. no. 676, of Swanton's Catalogue and Houard no. 4571.

Perrisia bryoniae, Bouché.

On Bryony (*Bryonia dioica*).

DURHAM, near Lamesley, affecting female flowers only.

Perrisia tortrix, F. Lœw.

On Wild plum.

NORTHUMBERLAND, near Minsteracres, Riding Mill, R.S.B.

Perrisia floriperda, F. Lœw.

Flowers of Bladder Campion (*Silene inflata*).

DURHAM, Fatfield, R.S.B.

Perrisia tetrahit, Kieff. Houard, no. 4831.

Galeopsis tetrahit, flower closed, containing a single white larva.

LANCASHIRE, near Lathom, R.S.B.

Perrisia polygalae, Kieff. (See Houard no. 3855.)

Polygala vulgaris, lemon-yellow larva inside flower.

DURHAM, Birtley, J.W.H.H.

Perrisia nervicola, Kieff.

Hieracium pilosellae, galls like that of *Aulacidea pilosellæ*; larva solitary, orange.

DURHAM, Birtley Fell, J.W.H.H.

Dasyneura geranii, Kieff.

On seeds of *Geranium pratense* and *G. sylvaticum*.

NORTHUMBERLAND, Budle Bay and Ninebanks. DURHAM, Birtley J.W.H.H.

Group ASPHONDYLIARÆ.

Asphondylia melanopus, Kieff.

Seed pods of *Lotus corniculatus*, rare.

DURHAM, Birtley, J.W.H.H., Penshaw Hill, R.S.B. LANCASHIRE, Freshfield, R.S.B.

Group CECIDOMYIARÆ.

Hormomyia cornifer, Kieff.

On *Carex stricta*.

LANCASHIRE, Bidston Hill, R.S.B. DURHAM, nr. Chester le St., J.W.H.H.

Hormomyia tuberifica, Rübs.

Carex stricta, larvæ in leaf sheath, showing as slight swellings at base of leaf.

LANCASHIRE, Bidston Hill, not rare, R.S.B.

Dichroma gallarum, Rübs.

An elongated brown, shining gall, on *Carex stricta*.

LANCASHIRE, Bidston Hill, several, R.S.B.

Zeuzidiplosis giardiana, Kieff.

DURHAM, on *Hypericum perforatum*, Gibside, rare, R.S.B.

Clinodiplosis bellevoji, Kieff.

Lathyrus pratensis, not uncommon; records from Northumberland, Durham, Cumberland, Lancashire, and Cheshire.

Clinodiplosis crassinerva, Kieff.

In flowers of *Stachys sylvatica*, larvæ white.

DURHAM, Birtley, Lamesley, and Lambton, J.W.H.H.

Clinodiplosis longiventris, Kieff.

Flower of *Vicia sepium*, closed, swollen, larvæ brightish red.

DURHAM, field near Fatfield, W. Hall.

Stictodiplosis pilosellae, Kieff.

Head of *Hieracium pilosella*; apparently rare.

DURHAM, wagon-way banks near Fatfield, R.S.B., ? also on *H. boreale*, Birtley Fell, J.W.H.H.

Contarinia rumicis, Kieff.

On *Rumex acetosella* and probably *R. acetosa*, apparently common.

Records from Northumberland, Durham, Lancashire and Cheshire.

Contarinia acetosae, Kieff.

On *Rumex acetosa*.

DURHAM, Greenside, and CHESHIRE, Bidstone, R.S.B., Beamish, J.W.H.H.

Contarinia cucubali, Kieff.

On bladder campion (*Silene inflata*) on leaves and seeds.

DURHAM, Birtley, J.W.H.H., Fatfield and Hylton, R.S.B.; probably common.

Contarinia nicolayi, Rübs.

Hogweed (*Heracleum sphondylium*), floret swollen, with shortened stem.

DURHAM, Penshaw, Gibside and Hart, R.S.B., Lamesley, Wreken-ton, Birtley and Chester-le-Street, J.W.H.H.

Contarinia lathyri, Kieff.

Lathyrus pratensis, flower remains closed.

DURHAM, apparently rare. Penshaw, two or three, R.S.B., and one only near Lamesley, J.W.H.H.

Contarinia barbichei, Kieff.

Not rare on *Lotus corniculatus* and once on *L. major*. Records from Northumberland, Durham, Yorkshire, Cumberland, Lancashire and Cheshire.

Contarinia betulicola, Kieff.

Birch, terminal leaves folded, crisp, thickened, and usually reddish, turning to brownish-black; larva white, apparently solitary. Very local.

NOTHUMBERLAND, Minsteracres, Ovingham and Blanchland. DURHAM, near Swalwell, near Blanchland, and at Gibside, R.S.B., Lancaster, J.W.H.H. LANCASHIRE, Freshfield, CHESHIRE, Bidston Hill, R.S.B.

Contarinia scoparia, Rübs.

On Broom, at extremity of young twig, containing an orange larva. Also on petiole of flower.

DURHAM, in a lane south of Consett between Newbiggin and Rowley, and at Horsleyhope, R.S.B.

Contarinia scabiosae, Kieff.

In flower of sheep's bit scabious ; sparingly.

DURHAM, near Birtley, J.W.H.H., and Penshaw, R.S.B.

Contarinia valerianae, Rübs.

Valerian, flower stalks, shoot, and flowers crowded together, larvæ white.

DURHAM, Gibside, R.S.B.

* * * *

Cecidomyid sp.

In seeds of *Geranium pratense* as in *Dasyneura geranii*, but larvæ yellow instead of bright orange-red.

DURHAM, Birtley, J.W.H.H.

Cecidomyid sp.

Broom, gall as in *Asphond. mayeri* and *Trotteria*, larvæ gregarious, milk white, strongly claviform and very active. NORTHUMBERLAND and DURHAM, R.S.B.

Cecidomyid sp.

DURHAM, in seeds of *Hieraceum boreale*, Birtley Fell, probably a species of *Contarinia*, J.W.H.H.

Cecidomyid sp.

DURHAM, on seeds of *Trollius europæus*, globe flower, larva solitary, J.W.H.H.

Cecidomyia sp. Houard, no. 5290, figs. 1227-28.

LANCASHIRE, several on *Galium verum* in a field near Ainsdale, R.S.B.

Cecidomyid sp.

Geranium pusillum, in flowers and amongst seeds, larvæ, one or more, almost transparent lemon-yellow.

LANCASHIRE, common, Freshfield and Ainsdale, R.S.B.

Cecidomyid sp.

On dandelion (*Taraxacum officinale*), causes leaves to become hoary and hairs to thicken ; larvæ orange-scarlet, gregarious, feeding naked. NORTHUMBERLAND, Ninebanks, J.W.H.H.

Cecidomyid sp.

On hairbell (*Campanula rotundifolia*) ; larvæ gregarious, all stages, living between the dead corolla and seed pod apex. Dead corolla usually remaining fixed, sticking straight out.

DURHAM, Gibside and Birtley, R.S.B.

Cecidomyid sp.

Birch, as in *Contarinia betulicola*, but leaves somewhat pilose, scarcely thickened or coloured, and larvæ yellow to orange-yellow, gregarious.

DURHAM, near Chester-le-street, Gibside. R.S.B.

Cecidomyid sp.

DURHAM, bulrush, larvæ in leaf-sheath, Birtley, J.W.H.H.

SCIENTIFIC NOTES AND OBSERVATIONS.

PERIOD OF INCUBATION OF EGGS OF *ÆGERIA APIFORMIS*.—Mr. Donisthorpe sent me some eggs, just laid, of *Ægeria apiformis*, which I received on July 14th. They hatched out on August 2nd. July 12th to August 2nd will give exactly three weeks as the period of incubation. They were in a temperature rarely below 70°, and probably averaging a little above that.—DR. T. A. CHAPMAN, Betula, Reigate. *August, 1916.*

PYRAMEIS CARDUI: DR. VERITY'S REMARKS p. 128.—I have read with some astonishment Dr. Verity's remarks on this species. I have seen and handled numerous African specimens from Northern Nigeria to the Cape, and so far as my experience goes they are smaller than the type. When Dr. Verity says African are generally larger and redder than others, he must surely be referring to these north of the Sahara,

P. kershawii may be distinct from *P. cardui*, but *cardui* with blue submarginal spots on the hindwings have been taken in the New Forest and Holland, and I can positively state also at Grand Forks, North Dakota, as I have recently set one from there. And per contra *kershawii* without blue spots has been taken at Mount Dandenong, in Victoria, so that whether we are dealing with two species or only one, something more can be said of the variability of *cardui* than Dr. Verity asserts.—HARRY MOORE, 12, Lower Road, S.E.

ATTACKS BY BIRDS ON BUTTERFLIES.—I saw during the last fortnight of July three attacks made by birds on butterflies, in each case unsuccessfully. The first was at Witherslack, and the species attacked was *Pieris rapae*. (For size it might have been *P. napi*, but no specimens of that species were seen at this time, whereas *P. rapae* was just out and very conspicuous.) The aggressor was, I have no doubt, the spotted flycatcher (*Muscicapa grisola*, L.), for the flight was unmistakable; the bird darted out from a bush at the passing butterfly, made two or three snaps at it while hovering (or apparently *sitting*) in the air, and then returned to its perch, the butterfly pursuing the uneven tenor of its way apparently quite unperturbed. The second attack was at Guildford, and the intended victim was again *P. rapae*. In this case the aggressor was a sparrow, which made several determined attacks on the insect, which was flying very low near the lawn. The sparrow's attacks were made alternately from the two sides, but the butterfly made no apparent effort to alter its course, yet always contrived to be either above or below its antagonist when the snap was made. I made rather a study of the flight of *P. rapae* after this, and found that it had exactly the same manner of evading the net without the slightest apparent effort. In the third case, also at Guildford, a swallow made what I thought at the moment a successful swoop at *Aglais urticae*. Apparently, however, it overshot its mark, and the butterfly escaped. Unlike *P. rapae*, it had evidently had a shock to its nerves, for it fled precipitately.—G. WHEELER, 37, Gloucester Place, W.

THE "CARRYING" HABITS OF THE SEXES IN PAIRED BUTTERFLIES.—I had only the opportunity of noting three species this summer, and in every case former experiences were confirmed. Between July 19th and 24th I several times saw *Argynnis aglaia* flying paired at Witherslack, and also *Epinephele jurtina*, in both cases the ♀ carried the ♂. I also saw two cases of *A. adippe* on the 22nd. In the one case the ♀ carried

the ♂; in the other, where the flight was very short, I am inclined to think this was impossible, but the case was altogether exceptional, the ♀ having wings so deformed and weak that I greatly doubt whether she could even have carried her own weight. The extreme shortness of the flight may either have been due to a futile effort on the part of the ♀, or to an unusual attempt on the part of the ♂, but there was no time to come to a definite decision, and one can only judge by "circumstantial evidence."—G. WHEELER.

PARARGE MEGAERA IN SURREY.—In view of the discussion on the disappearance of the Satyrids, it may be interesting to state that I saw three specimens of *Pararge megera* in a garden at Guildford on June 7th, within a few minutes of each other, during a very brief spell of bright sunshine.—G. WHEELER.

NOTES ON COLLECTING, Etc.

OLLA PODRIDA.—I remember well how dear old Tutt was wont to growl each time he rediscovered that taking one or two specimens of a butterfly that interested him did not signify that, with a little patience he would secure a goodly number of them; I never could quite persuade him that one swallow is not necessarily the precursor of many in this country. Of course there are certain butterflies and moths which at a given season abound in a given spot, but this I have always found to be rather the exception than the rule in Switzerland. In spite of many summer holidays spent in this part of Europe, Tutt never got over the feeling that if he only took two or three of a required species, it was because he had not found the spot in which, according to his theory, it certainly abounded. Of course I knew that he was wrong, because in many cases, when we were out together I knew the whole country round. I have never wielded the green bag in England since I was a small boy, but, if I rightly understand what Tutt used to protest, you there generally catch few species and many specimens. A rather obvious explanation of this difference seems to me to be that, as there are in England far fewer species, the struggle for existence is proportionally less marked, or rather, it is confined to a fight between the insect and its natural enemy, whereas in Europe the contest is between many rival species and their natural enemies. The one is a war between Servia and Austria, the other a universal conflagration, and one, too, in which the allied races turn and rend one another after fighting the common foe—like so many Balkan States. The natural result of this contest is that our hill sides and valleys are scattered with a motley host of victors who have won through in the fight to perfect insecthood, and who, having declared a truce, are now dancing over their former battle-fields.

Seventy-two hours of lessons a week means very little time for entomology, especially when one has to turn out a certain number of translations, legal and political, in the hours that are not wanted in sleep and feeding the machine. I have had no opportunity of flourishing the green bag this year, but as I have sat of an evening at my window with a concert of nightingales going on in the lime trees just in front of me, I have often noticed, when I raised my nose from the exercise books I was correcting, or the morrow's dry-as-dust lesson of mathematics I was preparing, that the moths that flew in and out and

around my lamp, were both numerous and varied, so much so that last week, not feeling much inclined to court Morpheus, I spent two nights with a net at my hand, and captured everything that was indiscreet enough to fly in and investigate my electricity, slaying the captives with my fingers or with the nicotine from my most faithful friend, and setting them at once on a few boards that I had put together in about as many minutes—for I brought nothing entomological with me from Stäfa save a net and a few pins. Unfortunately this has necessitated my turning out of the net and the window everything that was too small and delicate for my rough boards and rougher fingers. Still the results of my two "nuits blanches" are, I believe, interesting enough to be put into cold print—cold indeed if it were a question of describing the lazy flight of *Urapteryx sambucaria*, the mad rush of the different *Agrotis* and *Plusia*, the diffident approach of the *Spilosoma*, the blindly adoring worship-of-light of *Thaumatopoea*, the gentle wooing of the lamp by the small Geometrids and Microlepidoptera, and the frightened, bullying bluster of the Sphingids. My two nights' work were separated by four days, in order to enable me to empty the boards and start afresh; the weather was stormy (July 2nd and 7th). I sat, read and set from 9 p.m. till nearly dawn, and there are before me 109 moths as spoils of the chase. On six of these moths I dare not pronounce myself, for I have neither books nor drawers of insects here for reference, but the 103 remaining ones belong to no fewer than forty-one species—and I think that the six others are probably *Agrotis trux*, but then again they may be *A. segetum*, or All are fresh, for I threw the few disreputable specimens out of the window, but these all belonged to species that were already on my boards.

Here is a list of the spoils, the order is not guaranteed as being strictly scientific! *Hyloicus (Sphinx) pinastri* (2), beautiful silver-grey moths), *Sphinx ligustri* (2), *Stauropus fagi* (2), *Pterostoma palpina* (2), *Phalera bucephala* (2), *Euproctis chrysorrhoea* (1), *Porthesia similis* (1), *Malacosoma neustria* (2), *Thaumatopoea pinivora* (1) (there are two of them nestling on my lamp as I write), *Agrotis robusta* (1), *A. pronuba* (1), *A. signum* (2), *A. segetum* (4), *A. triangulum* (3), *A. ocellina* (2), *Mamestra oleracea* (1), *Dianthoecia compta* (1), *Calymnia pyralina* (2), *Plusia chrysitis* (24), *P. pulchrina* (1, a beauty), *P. festucae* (1, chipped wing), *Laspeyria flexula* (1), *Thyatira batis* (1), *Hemithea strigata* (1), *Acidalia nemoraria* (4), *A. aversata* (1), *A. congruata* (1), *Lomaspilis marginata* (4), *Urapteryx sambucaria* (6), *Amphidasis betularia* (2, very white), *Cleora lichenaria* (1), *B. consortaria* (2), *Phasiana clathrata* (2), *Phibalapteryx aquata* (1), *Euchelia jacobaeae* (1), *Spilosoma lubricipeda* (10), *S. menthastri* (2, going over), *Eurrhyncha urticata* (2), *Myelois cribrella* (1), *Hyponomeuta malinellus* (3), etc.—P. A. H. MUSCHAMP, Château de Lancy, Genève. July 9th, 1916.

PSELNOPHORUS BRACHYDACTYLA IN GLOUCESTERSHIRE.—When collecting with Mr. W. B. Davis in a remote valley of the Cotswolds, near Stroud, I was delighted at capturing a specimen of the above rare plume. A subsequent visit produced two more specimens each. We were evidently late (July 15th) for the insect as it was only in fair condition. A good many years ago it was reported to have been taken in a locality not very far from the above by Messrs. Farn and Sidgwick. Our present capture confirms theirs, upon which, for some reason, doubt appears to have been cast. The suggested food plant (*Lactuca*

muralis) was noticed to occur on the spot, but it is by no means certain that this is really its food. I may add that there is no question as to the identity of our captures, as they agree with two types I possess from the collection of the late Dr. Sequira and also with the published descriptions. The absence of the black scale-tooth from the third digit of the hindwing in itself settles the question.—JOHN W. METCALFE, Ottery St. Mary. July 24th, 1916.

THREE WEEKS AT TORQUAY.—The last fortnight of July and the first week of August I spent at Torquay. The weather was hot and sunny almost every day. Lepidoptera were on the whole not very abundant. I did no serious collecting, and the notes below are chiefly based on the insects met with in the course of our delightful walks on the cliff paths and in the deep Devonshire lanes. In the latter *Epinephele jurtina* and *E. tithonus* were common, and there was also a sprinkling of *Aphantopus hyperantus*. Near the sea the beautiful *Satyrus semele* was met with here and there. In a deep valley near Maidencombe *Melanargia galathea* was flying on the steep hill side among *Centaurea scabiosa* and other flowers. In August, between Churston and Stoke Gabriel, a few *Pararge megera* appeared, and *Pieris rapae*, *P. brassicae*, and *P. napi* were seen close together on the same spray of flowers. On the 6th of that month the first specimens of *Vanessa io*, *Aglais urticae*, and *Polyommatus icarus* were noted, and a larva of *Theretra porcellus* was taken. *Geometridae* were numerous in the hedges, two specimens of *Enchloris vernaria* were observed. On July 15th, at Babbacombe, on a grassy bank just above the beach, a large colony of *Apheloseitia (Elachista) argentella* occurred; many pairs were in cop. A small Tineid flying over the grass turned out to be *Glyphipteryx fischeriella*. This was very common on the slopes facing the sea and also in the inland lanes. At Babbacombe I saw also one specimen of *G. equitella*. Here also a fresh specimen of the neat little *Apheloseitia disertella* occurred, and I saw what looked like a very small *A. argentella*, and boxed it for closer examination. Under the lens it proved to be *A. dispunctella*. One cannot be too careful in examining Micro-lepidoptera in the field when they do not appear to be quite typical of the species one supposes them to be. The well known Bishop's Walk runs along the top of the cliffs, and in one place there is plenty of furze. This yielded a large specimen of *Scythris grandipennis*. On July 20th, again at Babbacombe, a clump of *Inula dysenterica*, growing at the foot of a hedge, was noticed. Many of the leaves, especially of the lower ones, were brown, or had brown patches in them. An examination revealed the presence of one or two larvæ and several pupæ of *Acrolepia granitella*. The open net work cocoons were mostly spun on the underside of the mined leaves. A dozen moths were reared in August and it was surprising to find how well their scheme of coloration harmonised with the brown and chequered appearance of the mined *Inula* leaves among which they rested. Near Maidencombe, July 26th, on brambles, three of those strange moths, *Schreckensteinia festaliella*, were seen, showing that it was too late to search for the first brood of the still more curious larva. On some restharrow growing on the cliff at Oddicombe several fresh specimens of *Marasmarcha lunaedactyla* were resting, and a solitary *Bryotropha acuminatella* was boxed with difficulty owing to its dive into the herbage on the steep cliff side. Near the Terrace Gardens, Torquay, there are some bushes of what I believe is *Atriplex halimus*, a south European

plant, mining in the leaves of this were larvæ of *Chrysopora stipella*. I meant to bring some of these larvæ away in the hopes of rearing the more yellow typical form of the imago. However, some years ago I found these larvæ on the same plant at Bournemouth, but reared from them only the var. *naeriferella*. From mines gathered off maple, at Lustleigh, two *Lythocolletis sylvella* were reared. Searching tree trunks proved a failure, but doubtless many species of moths might have been obtained from the hedges with the aid of the net and the beating stick.
—ALFRED SICH. *September 1st, 1916.*

CURRENT NOTES AND SHORT NOTICES.

We regret to announce the death of Roland Trimen, F.R.S., of South African entomological fame, and an ex-president of the Entomological Society of London. Pressure on our space has prevented a full obituary this month, but it will appear in the October number.

Mr. S. G. Whittle has been taking an extended trip to the New World, and in the May *Entomologist* gives a short account and list of his captures in the Argentine and Canada.

Entomology seems to be re-asserting itself in some of the magazines of general natural history. The *Scottish Naturalist* for June contains the following articles: (1) "Lepidoptera and other Insects at Scottish Lighthouses in 1915," by Mr. W. Evans. (2) The conclusion of "Diptera Scotica," by Mr. P. H. Grimshaw. (3) "Hibernation of Flies," by Major S. K. Gaskell. (4) "On the Occurrence of *Stenomalus muscarum* in company with Hibernating Flies," by the Rev. J. Waterston.

In the *Irish Nat.* for May is an article on the Lepidoptera taken at Killarney in 1913 and 1915, by L. H. Bonaparte-Wyse. *Leptosia sinapis*, *Adscita statices*, and *Coenonympha tiphon* were among the captures. S. Greer reports a specimen of *Laphygma exigua* taken in 1904 at ragwort on the shores of Lough Neagh.

In the *Ent. Mo. Mag.* for June, Mr. D. Sharp describes another species of *Helophorini* as new to science in the species *H. phalletevus*, from specimens taken at Brockenhurst in March, 1915. It is very close to *H. aeneipennis*, from which it is clearly distinguishable by the ædeagus. In the same number Mr. J. W. H. Harrison contributes an article, "The Geographical Distribution of *Dimorpha versicolora*, and what it suggests."

In the *Entom. News* for June appears an instalment of a long article, which if well thought out should be a most important contribution to entomological science. "The Lines of Descent of the Lower Pterygotan Insects, with Notes on the Relationships of other Forms," by G. C. Crampton, of the Entomological Laboratory of the Massachusetts Agricultural College. Probably when our colleague, Dr. Burr, is at liberty to deal with this subject and consult his own MS., he will send us his opinion and criticism.

The annual address to the Entomological Society of America, by Dr. C. Gordon Hewitt is an interesting "Review of applied entomology in the British Empire," its object being to show how needful it is to have co-ordination with other countries. Dr. Hewitt refers to the widespread character of the Empire and the diversity of conditions therein, and he thinks that such being the case "international co-

operative effort, particularly to the entomologists of the United States," should have beneficial results of a far reaching character. He reviews the work done country by country, and naturally perhaps Africa occupies the greatest number of pages. We should have liked to have seen some reference to the very valuable work done by Dr. Perkins with the sugar cane plantations of Hawaii, but we suppose that that was rather outside the scope of the review.—G. T. B.-B.

In the same number of the *Annals* wherein the above is published there is a very valuable brochure by Mr. T. F. Martin, of the Massachusetts Agricultural College, on "The Thoracic and Cervical Sclerites of Insects." It contains a historical review of the work done by the earlier entomologists, beginning with Knoch, 1801, and ending with Dr. Prell in 1913. This review very briefly summarises each author's views, and he shows that the investigations of Audouin, in 1824, remain the basis on which our modern research work is built up. We cannot, however, but be surprised that the most able and complete work on the thorax of the *Sphingidae* in Rothschild and Jordan's great monograph is altogether omitted. Though the bulk of the "historical review" section is taken up with work outside the Lepidoptera, yet that order does come in, and as a consequence the omission is serious. The review is followed by a very useful discussion on the different sclerites of the thorax, which will certainly be most useful to other observers. The Bibliographical and Terminological lists will also be very welcome to us in the future. The work is far from a mere compilation, useful as that would have been, but the author has investigated for himself, his special line of research being devoted to the pleuron and sternum, so that the tergum and wings are less fully dealt with. The whole work, however, is a valuable contribution to the morphology of insects.—G.T.B.-B.

We have been informed that the Trimen Collection of South African Butterflies has been acquired by Mr. J. J. Joicey. This historic collection formed the basis of the late Roland Trimen's classical monograph on the S. African Butterflies. It is representative of the whole of the Rhopalocera of South Africa and contains most of the types of the species described by Trimen. Lepidopterists who are desirous of seeing types or other specimens contained in this collection may have access to it upon application to the Curator, the Hill Museum, Witley, Surrey.

The Rev. F. D. Morice, M.A., has volunteered to work on the collections of Hymenoptera in the British Museum, South Kensington, during the absence of members of the staff at the front, and has for the past few months been in constant attendance. Mr. H. St. J. K. Donisthorpe, for some months past, has at his own suggestion similarly taken charge of the large collections of fossil insects in the museum with a view to their more serviceable arrangement and availability for students. For some time his voluntary services have been accepted on the collections of ants and other items. By taking advantage of the generous offers of expert specialists such as these, the trustees of the museum have done their best not only to secure the continuance of the objective of the collections, but even to enhance their usefulness in the future, in spite of the now popular view that "Education is *not* a work of national importance."

We have received several very cheery letters from our colleague Dr. Burr in Salonika, who has met with friends of the net, so that even

there time is found for entomological pursuits that no doubt cheer the waiting hours of our soldiers on that "front." We have also a letter from Colonel Tytler, who has been moved from Mauritius to German East Africa, and is now helping to drive the Huns of Attila out of their last colony. May it soon be done.—G.T.B.-B.

The following extracts are from a letter from a very large and well-known firm (not 100 miles from Oxford Circus) to a customer, who wished to buy ants in observation nests. The prices quoted will come as a surprise to Hymenopterists! The italics are our own:—

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REVIEWS AND NOTICES OF BOOKS.

PROCEEDINGS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, 1915-16, 156 + xvi. pp., 12 plates.—Our first feeling on this volume being handed to us for review was one of literary jealousy—if one may be allowed the use of such a term—knowing full well the difficulty of producing these annual reports. Our second feeling—upon further perusal—was one of despair at being able to do it justice in a brief notice.

The solid volume speaks well for the vitality of the society, and for the "Esprit de corps" of the 172 members, while reading between the lines it is evident that thanks are also due to the individual assistance of determined supporters. The scope of the articles, while with a solitary exception strictly confined to Natural History, is free from any "padding" of extraneous matter. The pages are eminently readable and informative, and are a valuable record, which ought to be treasured by those who were privileged to hear the subjects put before them.

When so much is good it would seem invidious to make selections. Dr. Dixey's paper on "Seasonal Dimorphism" is well designed to clear up some misconceptions upon this subject. His help to the learner centres in his 7th deduction, "Seasonal Dimorphism is not a case of simple alternation of generations, but is determined by the influence of some external condition upon an organism so constituted as to react to that influence in a definite direction." We may perhaps be allowed, in order to bring the matter home to the British collector, to select an item which illustrates the position as we understand it. *Cyaniris argioides*, with us, exhibits generally considerable seasonable

dimorphism in the female sex. Sometimes there is a third brood. Raynor, quoted by Tutt (*British Lepidoptera*, vol. ix., p. 392), states that the females of this third brood are not of the spring form, as might be expected, but of the dark bordered summer form. We ourselves have found the same, and this bears out the deductions quoted above.

Mr. A. Sich contributes another of his most important life histories, this time of *Tortrix viridana*. His detection of the method of oviposition and of the sexual dimorphism of the larva is beyond praise. Patience is not given to every man to work out the life cycles of these small creatures, and we may well hope that Mr. Sich may be long spared to add many more such histories to those which have already proceeded from his pen.

To the same author we owe a paper on "Limacology, or Slug-study." This came upon us as a bit of a shock, for we were unacquainted with this evidence of the extent of Mr. Sich's versatility. What a nerve it must require to study slugs! But here is another of those neglected groups, and we welcome it. Doubtless slugs have charms (indeed we know such), and doubtless the more carefully studied the greater the attractions.

Mr. Bunnett has a most interesting paper on the "Dimorphic larva of the Maple Aphis." We remember, far away in "the sixties," the popularity of these creatures as microscopic objects; but have never before seen an account of their nature. We would like to thank Mr. Bunnett personally for the pleasure and enlightenment which his investigations have shed upon this old, old puzzle.

The appearance of a paper by M. Constant Sano, on the "Metamorphosis of *Geotrupes stercorarius*," fills up a gap in our knowledge of this species, and will as such be welcomed by all Coleopterists, while it reminds all of us of the "Entente," and affords an opportunity of welcoming a distinguished Belgian scientist to our hospitable shores.

The continuation of Mr. W. J. Lucas' paper on the Orthoptera adds the "British Cockroaches" and the "British Crickets" to the subdivisions of which he has treated, and completes the series. It is no small advantage to the members of the "South London" to possess in their Proceedings an account of one whole Order as represented in Britain.

The paper on "The European species of the genus *Melanargia*" is, we sorrowfully confess, beyond our powers. Such are the limitations of those who confine their interests to purely British species. But we may add that we gasp in satisfaction at seeing once more the *galathea* of Stainton and of Newman our youthful pabulum. Why was it ever given up? Even Staudinger in his last edition clings on to it, adding "r(ecte) *galatea*" in brackets.

We notice a similar case on p. 81, where Mr. H. J. Turner complains that he cannot trace the origin of the change from (*Aphantopus*) *hyperantus* of Linneus into *hyperanthes*. Oh! those names! And oh! how one would like to be in Sicily sometimes. And why are some places so much more favoured by butterflies than others? This thought recurs on reading Mr. R. Adkin's notes on "The Autumn Butterflies of Eastbourne." It is most interesting to

read of the capture of *Polygonia c-album* there. These stray specimens do want accounting for. We remember taking a specimen of this species in Epping Forest, near Snarbrook, about 1871, and the late Mr. J. A. Clark took several more specimens a few years later near the same spot. Without presumption, may we interpolate the fact that we have taken solitary specimens of *Lithosia muscerda* in Bentley Wood, near Ipswich, and *Dicycla oo*, with *Orthosia suspecta*, in a reed-bed at Rainham, in Essex. Anyway, the enumeration of Eastbourne butterflies makes one's mouth water after being tied for some 26 years to the Essex marshes, where usually butterflies may be counted on the fingers of one hand. The survival of *Euproctis chrysorrhea* is also a valuable record. Will this species ever re-appear in the numbers which used to make it quite a nuisance in the "sixties"? We also have noticed the falling off of *Cyaniris argiolus*, imagines and larvæ, during the last year or two.

The Abstract of Proceedings introduces, in the form of "Short Papers," a number of interesting facts and investigations. We pause to admire the wisdom of these "Short Papers." How many modest, shy men are scared "off" by an invitation to read "a paper," who yet are able to supply very valuable information in a less formal way.

There are two points worth consideration about Mr. L. W. Newman's contribution. It is to be regretted that his fertile female *Pyrameis atalanta* perished during the winter. We are not certain that the storage system of fertile females has ever been proved. It is more generally held, we believe, that pairing takes place generally (amongst *Lepidoptera*) after hibernation. It is also interesting to learn that this species can pass the winter in the pupal state, even though, as Mr. Newman appears to admit, such hibernation must be very unusual in Britain.

Ornithologists are not neglected here. Mr. Frohawk's adventures amongst the birds on Annet, Scilly, must have been fascinating hearing. We have here but a resumé of his experiences, the full tale must have charmed the hearers. The accompanying plate speaks volumes for the confidence of the "Manx Shearwater" and for the kindness of the author-artist.

Five field meetings—those opportunities for the experienced to teach, and for the inexperienced to learn—are recorded. A note of regret is evident in the report of that held at Oxshott, on March 27th, a rather daringly early date to fix—owing to the bad weather conditions. May we suggest that such a day, uninterrupted by visions of more attractive captures, would probably have been ideal for a search for *Psychid* cases on fences and trees.

Exhibitions of lantern-slides and of varieties take their place in orderly sequence during the year.

It may be well to add that the noise made by *Hylophila prasinana* while flying, mentioned by Mr. B. S. Williams, was recorded in the *Entomologist* for 1900, p. 247, by Mr. R. Freeman.

There are also many valuable notes on particular species, notably upon *Lasiocampa quereus* and var. *callunae*, in which are summarised the differences between the two forms.

The excellent colour plate which forms the frontispiece, the numerous other plates, and the very complete index, must not be passed over unnoticed.—C.R.N.B.

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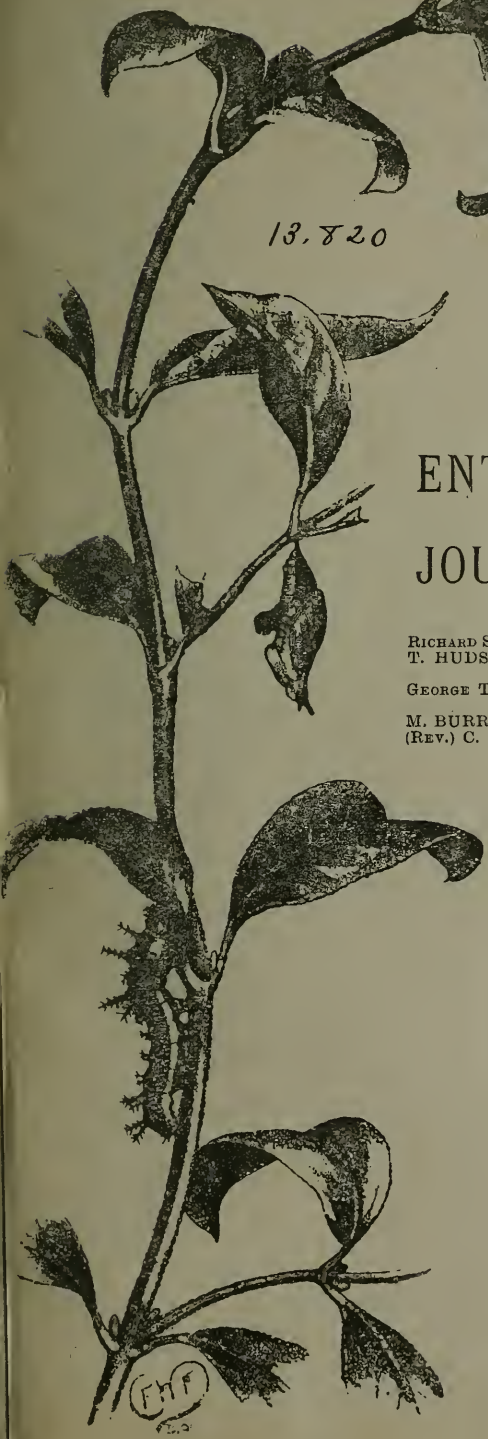
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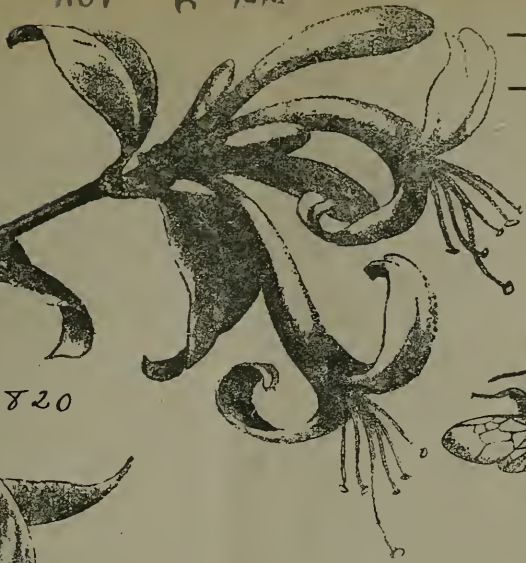
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Lepidoptera at the Dardanelles.

By D. A. J. BUXTON.

I was in Gallipoli last year from April 26th till October 23rd, except for a week on the neighbouring island of Imbros early in September. The material for the following paper is partly notes taken down at the time, partly a few specimens I brought with me through the campaign or have had lent to me by a friend, all obtained in summer or autumn. The notes are, therefore, very incomplete. The areas I was in—Helles, Suvla, and Imbros—were very restricted, and for many reasons not ideal hunting grounds. Much of the land was quite devoid of scrub or any vegetation, which had been worn down by traffic or pulled up for fuel. The least frequented places were of course the best hunting grounds, but they were usually least frequented because they were specially dangerous. My dug-out in the Gully faced a lovely hillside covered with deep scented scrub and small pines, and swarming with warblers, turtle doves, and butterflies of all sorts; but it was also where spent Turkish bullets were continually coming to earth, not to speak of shrapnel occasionally, and I never found it worth while to stay up there long. Also I had no entomological apparatus—except my sun-helmet. Some species could easily be captured in this, but many required to be knocked into the scrub before they were quiet enough to be taken, and this damaged them considerably. Finally, the first consignment I sent home was lost in the post.

The scrub, where most of the lepidoptera occurred, was (especially at Suvla) very largely composed of a small evergreen oak with prickly leaves, much resembling a holly. There was also a good deal of *Erica* and *Cistus*, and in some places *Thymus* and *Arbutus*. At Suvla and Imbros there were quite a lot of blackberry bushes. In my hunting grounds there were no trees except a few stunted pines. The weather was continually sunny, and many butterflies obviously found it too hot and kept in the shade. Till the middle of October I think it only rained three times, in April, May, and September.

I have referred several times below to some notes by Commander J. J. Walker, on the butterflies he found on the neck of the Gallipoli peninsula (Bulair), in 1878, published in vol. xv. (1878-1879), *Ent. Mo. Mag.*

Papilio machaon I only identified once. I caught a specimen in the grass in Suvla plain, where there had been a certain amount of cultivation, early one morning in September. It is very like the British form, even slightly paler in ground colour. Black markings on forewings all rather reduced. The black discal mark on the hindwing is joined at each end to the jagged-edged black band on the outer margin, and the lunar yellow spots in that band are not marked with brick-red anywhere (except of course near the tail).

P. podalirius I saw twice at least (but failed to catch it), July 28th on W. Beach, and August 11th on Gully Beach.

Pieris brassicae was very common in the more open parts of the country. When seen flying across country in the heat of the day it would frequently make for solitary bushes and trees, and remain a few moments in their shade (*e.g.*, July 25th). First brood going over April 26th-27th, second brood, May 23rd. May 31st (common), June 7th, etc.

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Pieris rapae I have no doubt was about all the summer, but I only caught it on Imbros in September and at Suvla in October, when it was becoming uncommon. Both were males, one very distinctly marked with black, the other rather obscurely so.

Pontia (Leucochloë) daplidice. One specimen. The dark marks are extensive, but not very distinct, being dusted with white. The costa dark-marked up to discal spot, which is white-veined. A small additional (sixth) black spot at the end of a vein on lower part of outer margin of forewing. Underside pale yellowish-green (not so pale as var. *raphani* figured in Seitz). Black dusting, especially on outer margin of hindwing.

Anthocharis (Phyllocharis) crameri (belia) occurred in the summer, but I failed to procure it.

Colias edusa (crocea). A few about when we landed at the end of April, very worn and presumably hibernated. May 31st, a fresh female. June 1st, getting commoner. Common during June. August 1st, not so common. A few on Imbros in September. Occasionally at Suvla in October (e.g., October 4th and 14th), ab. *helice*, June 13th. It was one of the commonest butterflies, being found in the scrub and flying over the cliffs and bare semi-cultivated parts of the peninsula, and appearing to enjoy the heat of the sun. A female has the lemon spots in the dark outer margin of the forewing much enlarged, and the hindwing not so darkly shaded as usual, and with its dark marginal band much reduced.

Leptosia (Leptidia) sinapis. One or two amongst some pines in the Gully, on August 2nd, very sluggish. Apex of forewing entirely devoid of black.

Melanargia larissa generally distributed. A fresh male near Pink Farm, May 23rd, in the Gully (fresh) June 1st. June 21st, at the top of the Gully cliffs. It appeared to be feeling the heat more than most species. On June 12th I found it at the foot of the cliff between C. Tekeh and X. Beach, within a few feet of the sea; several specimens sought refuge from the heat in crannies between the rocks, almost on a level with the water. The specimens I procured are darker than the form ab. *herta*, Hbn., and most nearly resemble *syriaca*, Stgr. (= *taurica*, Rüb.) (Seitz, vol. i., pl. 39), only the base of the forewing is not quite so dark. The ground colour varies between straw-colour and almost white. The markings are in one specimen very well defined and of a deep blackish brown; in the others less well defined, brownish, and inclined to be suffused with the ground colour. Base of fore- and hindwings mainly, but in no case entirely, blackish, its outer edge well defined on the hind-, but never on the forewings. A dark discal mark on forewings joined to a dark band running diagonally from the costa to two-thirds down the outer margin. Outer band either almost entire (except for a spot at the anal angle and three near the apex, apical ocellus almost invisible), or containing a row of large and small marginal spots in addition to three enlarged apical spots, one containing a small dark ocellus. On the hindwings the marginal band is again either very dark, almost obliterating the still darker ocelli, except one with an eye, and reducing the marginal spots; or less well defined, several ocelli being visible, some plain, one eyed, and others eyed and ringed; the marginal spots being large, lunate, and nearly continuous. On the underside the ground colour is similarly various,

being sometimes very deep straw-colour on hindwings; black pencilings clear but varying in density. On the outer margin of the hindwings is a row of large conterminous lunules surrounded by a thin black line; there are five ocelli (one double) mostly eyed, set in the ground colour, but each immediately ringed with dark brown; all of them in an ill-defined discontinuous brown band.

Satyrus briseis. First seen on June 18th, drinking at a puddle near W. Beach; after that common, mainly in the scrub, till August. Going over by August 11th. It was fond of settling on the thyme bushes. Though a strong flier, it was not difficult to catch, seeming sometimes unwilling to leave some particular bank or bush. Of the forms figured in Seitz, my specimens most nearly resemble *ab. magna*, though they are larger, measuring 73mm.-88mm.—as large as *ab. major* and *ab. fergana*, in fact. On the forewings variation is mainly confined to the two ocelli. In the male these are blind and of the same colour as the greater part of the wing and therefore inconspicuous. The second (lower) one is usually entirely absorbed by the outer margin. In the female they are blacker and both usually white centred. In one case there is a third small one between the usual two. The pale straw-coloured band across fore- and hindwings varies little in colour or extent; occasionally on the hindwings it is dark-veined and dusted with brown on their inner margin. The costa of the forewings is more ochreous and freckled with dark brown. The outer indented margin of the hindwing is sometimes very pale. The underside is more variable. There are usually two prominent apical spots on each wing. In the female the white central dot may be absent from the lower one, and in the male nearly always is absent. In one asymmetrical male the apical ocellus is reduced, and the other is absent from one wing and a mere black dot on the other. There is much variation of the amount of rufous on the veins between the ocelli. The hindwing (underside) in the female is far more unicolorous than in the male, though the basal area and outer part of the median band are in some cases edged here and there with black. There is considerable variation in the depth of colour of the freckles all over the hindwings. In the male the basal area is darker than in the female and enclosed by two dark red-brown spots, an ovate one on the upper margin and a triangular one in the middle of the wing. The median band is of the same colour as that on the forewing (upper- and undersides) only freckled with light red, and much darkened on its outer edge, being black in places. The outer margin is dark brown, turning to light grey next the median band.

Satyrus semele, seen once or twice, but not caught, early in June.

• *Pararge roxelana*. One female (exactly similar to that figured in Seitz, vol. i., pl. 45) came into our dressing station in the Gully at dusk, on July 20th, and settled on the sand-bag wall.

Pararge megera. Not very common; single specimens April 26th, June 24th, and on Imbros in September. They closely resemble British specimens, except one large female which has the dark markings on the forewings much reduced, and the hindwings less dark.

Pararge maera seemed also to occur, but I failed to procure any specimens.

Epinephele jurtina was common in the oak scrub, being very difficult to disturb, as it liked lurking in the shade and seemed overcome by the heat. I did not notice it till June. It was going over by August 11th,

though still quite common on Imbros in September. The two females I brought home are large and fairly like British specimens. In one the discal area of the hindwing is reddish-brown.

Epinephela lycaon. I brought home a male and female of this species, though I have no dates for their occurrence. The female is smaller than female *E. jurtina* (no larger than the male) and the ground colour more greenish. There are two distinct black ocelli (not white-dotted), and the pale area in which they lie, as well as the pale discal area, is straw-colour and not rufous as in *E. jurtina*. Hindwings crossed by two darker, inconspicuous, indented lines. On the female underside both ocelli are prominent, the apical ones only being eyed. Centre of wings rufous, crossed by an angular black line near the ocelli. Hindwings grey-brown, reticulated, slightly paler just outside the indented median band. The ground colour of the forewings of the male appears much paler than in the female (except in the prominent scent gland), chiefly perhaps because of a reddish-brown sheen especially visible on forewings. Ocelli inconspicuous and apical only. Edges of wings darker. Hindwings unicolorous. Underside as in female but there is only one ocellus (apical) and no angular line.

Coenonympha pamphilus was not uncommon in the smaller scrub. I only noted it on May 18th and June 26th.

Limenitis rivularis, Scop. (= *camilla* of most authors), was frequently seen in the summer sailing majestically up and down water courses and small gullies in the sun. I noted it on June 1st, 2nd, 7th, and early in August.

Pyrameis (Vanessa) atalanta was never at all common, though I saw single specimens at intervals through summer and autumn. I noted it on May 18th, several on June 17th in the Gully, and occasionally at Suvla in October.

Pyrameis (Vanessa) cardui was exceedingly common everywhere. I noted it frequently in April and May and particularly in June. In August it grew scarcer. In October I still saw it occasionally at Suvla (October 4th). It was very abundant on scabious and on bushes of the local thyme, and also on the top of any knoll or eminence it could find. It also occurred on Imbros.

Polygonia egea and *P. c-album*. I saw one or other of these species in a dry watercourse on Imbros, and at Suvla, in September.

Dryas (Argynnis) paphia? The only Argynnid that I saw at all was one very ragged specimen in Suvla plain, on October 16th. I think it was this species.

Callophrys (Thecla) rubi, one worn specimen in the scrub, on April 27th; another specimen May 18th.

Nordmannia (Thecla) ilicis?. A *Thecla*, of which I failed to bring any specimens home, was exceedingly common in the dwarf oak scrub in the Gully, etc., in May and early June. The food plants of the larvæ of similar species were not present (e.g., there was no *prunus* for *Strymon pruni* or for *Klugia spini*), but perhaps *N. ilicis* may have fed on the abundant evergreen oak.

Rumicia (Chrysophanus) phlaeas. I did not see this species till August (August 1st and 11th). The spots were enlarged and the wings heavily dusted with dark brown. In the Gully.

Lampides boetica. Very common in the cultivated fields on Imbros in September, and occasionally on the low ground at Suvla. Very alert and difficult to catch.

Hirsutina (Lycaena) admetus, Esp. (not *ripartii*, Frr.), not uncommon in the late summer.

Glaucopsyche cyllarus. A couple, May 13th.

Nisoniades tages var. *unicolor*, Frr. Hesperids were common in the blazing sun on bare patches of ground, roads, etc. The only specimen I procured is of this form.

HETEROCERA were on the whole very scarce. *Plusia gamma* I noted on April 27th and June 1st. *Hyles euphorbiae*: a larva in the Gully on June 2nd (pupated June 4th). One evening at Suvla, in September, I saw a young Red-backed Shrike take a hawk-moth (presumably of this species) on the wing and devour it. *Sesia (Macroglossa) stellatarum* was common throughout the summer and autumn, and on Imbros.

MICRO-LEPIDOPTERA were very scarce indeed in the summer, except on May 14th, in the scrub after some showers. They were commoner in the autumn. The only specimen identified was *Endrosis fenestrella*.

I was very much surprised never to find any *Gonepteryx*, though I see that Commander Walker reports *G. rhanni* as "scarce." It is also strange that I saw no *Euchloë* or *Melitaea*. He found *E. cardamines* and many species of *Melitaea* abundantly. The latter may of course be restricted to very small areas, and abundant in them. And my hunting grounds were not extensive.

The Coloration Problems. I.

By W. PARKINSON CURTIS, F.E.S.

I don't quite know what this ought to be called. I think I replied to Mr. Colthrup, and he wrote a rejoinder to my reply; so I believe that I should call this a "rebutter."

It is a very tardy one, I fear, and perhaps some of the readers of the *Ent. Record* may have thought that I had retired from the stricken field. Such, however, was not the case, but fresh ammunition, which takes much patience to acquire, was required, and I have had to be much longer this time than last at the risk of being wearisome and tedious. The arguments pro and contra on the colour problems cannot be demolished by a clever repartee or a smart piece of dialectics. Not that I think I am likely to indulge (or indeed am capable of indulging) in either. I much prefer the slower and heavier bludgeon of fact. Facts take time to accumulate, and several things have militated severely against this. One thing was my own health, which necessitated the attentions of the surgeon, and thereafter a somewhat lengthy convalescence, which not only prevented me from being physically active in almost every way, but the shock of which necessitated a strict obedience to doctor's orders, "not to do any more brain work than absolutely essential" for a time. Another thing was the dislocation of business arising out of the calamitous conflict into which the degenerate mental processes of Germany and her false prophets and soothsayers have plunged a peaceful civilization. This latter cause has also robbed one of that mental condition of philosophic calm and detachment so necessary to work of investigation, and at times one has vaguely wondered almost in despair whether the results of scientific research were not a thing to be abhorred, seeing the base uses to which they have been put by a graceless and unholy alliance of

vicious callousness and brutal rapacity. However, I have at last found time to begin.

I think all people interested in these problems will think it fitting, if I preface my remarks with an expression of a very genuine regret that among those British soldiers who will never more return from the Gallipoli peninsula must be numbered Col. Neville Manders. One of his last acts before his departure for active service was to communicate a very courteous and encouraging paragraph to the *Ent. Record* (vol. xxv., p. 309) to say how interested he had been in my previous paper. When he left we all hoped to be able to welcome his return to the field of controversy. Now, however, we can only regret that a painstaking, careful and original investigator, and a chivalrous disputant has been removed, and will no longer endeavour to unravel the tangled skein of phenomena that complicate this involved subject. Where I have to criticise his conclusions I will endeavour to do so remembering that he is no longer here to defend himself.

I think perhaps the next matter I should touch upon is the unfortunate paragraph that led the Rev. G. Wheeler to censure me so severely. I am glad to say that the personal element of friction has been laid to rest, I hope for ever, by a frank correspondence between us, and Mr. Wheeler very kindly allowed me to see what he proposed to print before it was sent to the press, and in some respects he modified it at my suggestion, but it must not therefore be assumed that I accept all the arguments therein. With regard to the original cause of the difficulty the readers of the *Record* have before them all the facts necessary to enable them to form their own opinion as to the extent of unintentional misrepresentation laid to my charge. So far as it existed it was almost wholly due to an effort to compress and curtail what seemed to me to be getting to be a very lengthy paper, so lengthy indeed that I feared its absolute refusal. At the risk of bringing down the editorial wrath on my head this time, I shall quote in extenso where need or occasion shall be or require, and run no risk from condensation giving rise to controversy. With regard, however, to the substance of the comments inserted by Mr. Wheeler as it bears on the problem, I think it shows that he believes I have stated my beliefs rather higher than I am prepared to put those beliefs myself, and rather higher, too, than I think our present information warrants. Personally I have a way of mentally pigeonholing cases which strike me as bearing out the theories, and many of the cases go in the pigeonhole which might be labelled "presumably protectively coloured; requires investigation in habitat." The value of a resemblance as a means of hiding is sometimes more and sometimes less than one would expect from the specimen in the hand, and sometimes investigation will quite falsify a provisional guess.

I do in reality, as Mr. Wheeler on p. 190 of vol. xxv. puts forward, make "the universality of a theory's applicability the test of its truth." Such experience, as I have acquired of theory in other realms of thought, has convinced me that the surest way of testing a theory is to carry it out to its logical extremity (or absurdity if you will). If the theory will stand that it is pretty certain to be correctly and competently stated. If it will not it is necessary to modify it in some way which will enable it to be used in its entirety without bringing about such a breakdown.

I should, however, take the most particular care to keep questions of fact as opposed to theory abundantly distinct. Hence I should never (as Mr. Wheeler surmises I should not) fall into the trap of considering that the melanic forms of our cities were a "Müllerian" assemblage. A slight investigation of the facts would show that the salient feature of Müllerian mimicry, as I understand it to be, is absent, *viz.*, a proved or reasonably presumed distastefulness common to the assemblage. I do not understand, nor do I mean to claim, by universality of application, that because moths A, B, C, and D are black, and occur in a given locality together, and might if they were moderately distasteful be a Müllerian assemblage, therefore that, without proof of the existence of the peg on which the whole thing hangs, they must be assumed to be a Müllerian group.

Again, with regard to those cases where the dampness of localities have produced melanism, it is a matter for investigation. It seems to me, that if one carelessly abstains from investigation and assumes that the darkness is due of itself to the process of elimination, one is assuming without evidence a whole array of essential facts, which must be shown to exist before the theories can reasonably be expected to operate. Moreover, it is often next to impossible to ascertain to what extent the operation of one natural law is masked, retarded, or accelerated by the operation of another. Correlation of parts, etc., in this respect is one of the greatest pitfalls. One never knows what effect a modification in one respect may produce in another, and a careful perusal of "The Determination of Sex" (Doncaster), will demonstrate to the thoughtful reader how characters are so wedded to one another that the absence of one may necessitate the absence of another.

Another point that has to be borne in mind is this, a variation started under one natural law, may come under the operation of a second, or a third, so what started as a pure sport may become a mimic.

What I meant to express by my claim for universality of application was something a great deal more like this. Where moth A sits upon the trunk of an oak in company with spider B, beetle C, and caterpillar D, and all resemble the bark, whilst another group, moth E, caterpillar F, spider G, and beetle H, live among the leaves of the same tree, which leaves they likewise resemble, then the same law applies to the one group as applies to the other.

Besides that claim I also intended to claim that if the first group occurred in Britain and the second in Timbuctoo, the same law applied to both groups.

Moreover, I intended to claim as well that the theory must cover such a case as that of *Hypolimnas misippus* wherever it occurred, and for that purpose I refer to what I said at vol. xxv., pp. 150 and 153, because the coloration of *H. misippus* at Bipindi, Cameroons (thank goodness we need no longer spell it "Kamerun"!), is explained reasonably by the Coloration theories, and likewise in Ceylon, whilst Col. Mander's atmospheric explanation is out of court in the Cameroons.

No doubt, if I leave *H. misippus* at this point, someone will promptly enquire how do I get over the difficulty of the recent extension of this insect to the Neotropical Zone. In reality this presents no difficulty, the insect had by the time it reached that region an

established facies, in the absence of any force within or without acting upon it, why should it depart from the facies. Its ability to survive will depend on the presence of enemies in its new habitat, which cannot be ascertained now. It will be exceedingly interesting to watch whether in time (it may be centuries) to come, if it does survive in the new habitat, it will be forced into an association with *Anosia gilippus*, or *Anosia berenice*, or one of that group of *Danaidae*, which a very small step on the part of the *diocippus* ♀ would bring about.

Perhaps I may also be permitted to say that I consider I am entitled to hold to my own opinion, "that the theories would lose their value to me if they could not be applied throughout." I will explain why.

I may be peculiarly constituted mentally, other people are better able to express an unprejudiced opinion on that than I am, but I flatly decline to swallow two different laws to explain precisely similar operations in respect to which all obtainable material facts are precisely alike. I should distrust both explanations in the light of the knowledge of the existence of the other.

If the theories under discussion cannot be applied throughout to explain similar facts (I do not claim more than this), they become at once a halting, lame and impotent makeshift, and really hardly worthy to rank as theories of scientific value, poor things of shreds and patches, which as far as I am concerned I should consign to that capacious rag-bag, or scientific scrap heap wherein, or whereon, have been cast so many ancient and flyblown tales. They would keep company with a creation of the world in seven days of 24 hours measured by Greenwich time; with the toads entombed for centuries in a mine, and with the swallows hibernating in the mud of the River Thames, and I for one should never take the muck-rake to fish them out with, there they might repose.

(To be continued.)

SCIENTIFIC NOTES AND OBSERVATIONS.

BOARMIA RHOMBOIDARIA AB. *REBELI* IN FRANCE UNDER AN ALIAS.—In a recent number of the *Bulletin de la Société Entomologique de France* (1916, no. 11, p. 188, tab. 1) M. Moreau describes and figures a supposed new Geometrid aberration as *Boarmia gemmaria* ab. *nigerrima*, Moreau. This is none other than our familiar friend the "black *rhomboidaria*," figured from Norwich by Barrett (*Lep. Brit. Is.*, vii., tab. 315, fig. 1g, 1h) and now well known from North Kent. Moreau wastes some energy in satisfying himself and his readers that his new form cannot be the same as var. *perfumaria*, Newman, and entirely overlooks the fact that it was described and named from Hungary ten years ago, by Aigner-Abafi (*Ent. Zeit. Guben*, xix., p. 209; *Ror. Lap.*, xiii., p. 73) as ab. *rebeli*—"both wings entirely smoky black, only the sharply dentate submarginal line remaining white"; and is duly registered in Rebel's edition of Berge under that name. Minor variations in the distinctness of the three pale lines I do not consider separable, though it is not impossible that future research may reveal some kind of parallelism with the *robsoni-thompsoni* phases of *Aplecta nebulosa*: in any case the aberration is Mendelian.

M. Moreau captured his first example in the neighbourhood of Paris,

on May 20th, 1914, and subsequently found larvæ in the same locality on ivy, breeding five of the ab. and seven typical. This year he bred six ab. and fifteen typical. He promises to breed from the egg and see whether the form occurs also in the second brood; it is to be hoped his researches will take a wider scope and furnish a further contribution to the study of Mendelism.—L. B. PROUT.

NOTES ON COLLECTING, Etc.

HYMENOPTERA (ACULEATA) AT PORTHCAWL.—So little seems to be published from South Wales that it may be as well to draw attention to the district now and again, in the hope that others will come along and help to make its fauna better known.

Between the mouth of the Ogmore River and the town of Porthcawl lies a stretch of sandhills, known as the Newton Burrows, which possesses a very interesting fauna and flora.

I have spent there two periods of a fortnight each, and a few odd days during the last few years collecting Aculeates, and some of the results are perhaps worth recording. In all I have taken some 140 species, of which the following are the more noteworthy.

HETEROGYNA.—*Donisthorpea umbrata* and its variety *mixto-umbrata*, *D. mixta*, and *D. aliena*. *D. nigra* is extraordinarily abundant and makes "grubbing" quite unpleasant.

FOSSORES.—*Methoca ichneumonides* is very abundant, in one restricted locality, about the burrows of the Tiger Beetle (*Cicindela campestris*), quite 50 females being seen in June, 1915. *Tiphia femorata* commonly, *T. minuta*, very rarely. *Pompilus rufipes* and *P. consobrinus* not common; *P. chalybeatus* is apparently the most abundant of the red-bodied species; *P. wesmaeli*, a few males. *Salix affinis*, a few; *Ceropales maculatus*, very abundant, especially at the flowers of the Sea Spurge. *Astutus stigma*, not rare, *Tachysphex unicolor* is abundant, much more so than *T. pectinipes*; *Pemphredon carinatus*, one female on a willow stump, in July, 1916. *Psen bicolor* and *P. unicolor*, both fairly common. *Gorytes tumidus* rare, *Ocybelus mandibularis*, two females in June, 1915; *O. mucronatus* is exceedingly abundant, far more so than *O. uniglumis*; in fact, with the exception of *Pompilus plumbeus* and *Crabro wesmaeli*, it must be by far the commonest fossor on the sandhills; it appears to provision its nest exclusively with the similarly coloured fly, *Thereva annulata*. The males are very partial to the flowers of the sea spurge, and seem to be about on the dullest days. I have taken no rare species of *Crabro*, but Colonel J. W. Yerbury took *C. tibialis* and *C. styrius* here in 1906.

CHRYSIDIDÆ.—These do not seem common beyond *C. ignita*, which is of course abundant. I have also taken *Ellampus auratus*, *Hedychridium integrum*, *H. minutum*, *Chrysis cyanea*, *C. viridula*, and *C. ruddii*.

ANTHOPHILA.—*Colletes fodiens* and *C. marginatus* are both common, *C. picistigma* much less so; *Sphecodes pilifrons* common with its host *Andrena albicans*; *S. affinis*, common. *Andrena nigriceps*, a small colony was found on a bank close to the sea; *A. coitana*, one female. *Dasygaster hirtipes*, one male; *Epeolus productus*, common, *E. rufipes*, scarce, both at flowers of thyme. *Coelioxys mandibularis* is a very abundant sandhill bee, in company with *Megachile maritima*, with which I suspect it is associated, though I have never seen the *Coelioxys*

enter a burrow of any sort. These two are, with the exception of the two species of *Colletes*, the most abundant bees here. *Osmia aurulenta*, not very common; *O. leucomelana*, not rare, and nests in dead stems of the ragwort; *O. spinulosa*, common. *Stelis octomaculata*, five specimens of this rare little bee were taken in July, 1916, the first four flying about and settling on the bare sand (its flight to my mind much resembles that of *Oxybelus mucronatus*), the fifth was taken entering an excavated ragwort stem which was lying on the sand. *Anthidium manicatum* common; last year several were noticed entering burrows in a bank of coarse rubbly sand, in a situation where it was impossible to dig them out. *Anthophora furcata*, fairly common at *Ballota nigra*—this is a common bee in most parts of the county. *Psithyrus* and *Bombus* are well represented, perhaps the most uncommon species being *B. distinguendus*.—H. M. HALLETT (F.E.S.), Penarth. *October 2nd, 1916.*

ACIDALIA CONGRUATA AT GENEVA.—Mr. Muschamp is interesting and amusing as ever in his graphic account, "Olla podrida," of collecting at his electric lamp, and the number and variety of his captures remind me of somewhat similar experiences years ago at Aigle. I know him for a keen and careful observer, and therefore hesitate to suggest a doubt about the identity of any of his "takes." But as he himself hints modestly at the possibility of error, as he had "neither books nor drawers of insects for reference," may I ask whether on further scrutiny he is convinced that *Acidalia congruata* should be rightly included in his list of captures. Both Prout and Staudinger confine this species to Sicily. Of course, as in the case of so many other lepidoptera, it may occur in widely different localities from those originally assigned to it.—(Rev.) FRANK E. LOWE, Guernsey. *October 1st, 1916.*

SMERINTHUS OCELLATUS AND STAUROPUS FAGI NEAR POOLE.—I want to note a second emergence of *Smerinthus ocellatus* bred from ova laid by a female taken at Parkstone this year by Mr. W. E. Gray. The ova were laid the third week in June and hatched early in July, the imago emerging on September 3rd. Also near Poole my brother, Mr. E. Harker Curtis, beat three larvæ of *Stauropus fagi* on September 2nd and 3rd. They were obtained in a small copse, which for other reasons we think is a remnant of an ancient wood (very ancient). This species is known to occur in Dorset, and we have taken the imago at another locality, but as a Pool insect it is quite new to us, although we have collected in the neighbourhood for over twenty-five years.—E. PARKINSON CURTIS (F.E.S.), Aysgarth, Poole.

CURRENT NOTES AND SHORT NOTICES.

In the *Ent. Mo. Mag.* for July, Mr. G. C. Champion concludes his long paper, "Notes on *Melandryidae*," and gives a coloured plate; Mr. J. R. le B. Tomlin announces a Carabid, *Pterostichus angustatus*, from W. Surrey, as new to Britain; and Lord Walsingham announces a Tineid, *Stigmella speciosa*, from Hants, as new to Britain.

In the *Ent. News* for July, Mr. Wm. Moore advocates the use of para-dichlorobenzine as a substitute for potassium cyanide in killing-bottles. He claims that the bottle is easily charged, the benzine does

not absorb water and spoil the bottle, keeps at full strength until all gone, can be easily recharged, and the substance is not very poisonous to higher animals. The only disadvantage is that in hot weather crystals form on the sides at times.

Circumstances prevented our attendance at the Annual Congress of the Union of Scientific Societies in June last, at Tunbridge Wells. The meeting was a momentous one, in that it was commemorative of the coming of age of the Union, which was founded in the same place just 21 years before and under the same President, the Rev. T. R. R. Stebbing, F.R.S. From the admirable account of the gathering given in the pages of the *Naturalist* for July, and from other sources, we hear that the Annual Address was an expression of extremely liberal and broad minded views, while its reception was very mixed, and even was a striking example of the intolerance which is so prevalent at the present time. Eventually it was agreed to print the address in the Annual Report. So far as we understand Entomology was conspicuous by its absence.

In the *Entomologist* for July, Prof. F. O. Theobald announced a species of Aphid, *Macrosiphum hibernaculorum*, as new to Britain, and describes two British species, *M. piceaella* from Woking and *Rhopalosiphum tulipaella* from Kent, as new to Science.

The July number of the *Canadian Entomologist* gives an account of "A Few Days in Newfoundland," by Mr. E. M. Walker; "New N. American Lepidoptera," by Messrs. Barnes and McDunnough; "Some Rocky Mountain Andrenid Bees," by Prof. T. D. A. Cockerell; "Geometrid Notes," by Mr. L. W. Swett; etc.

The *Transactions of the Cardiff Naturalists' Society* for 1915 contains the final section of Mr. Tomlin's "Coleoptera of Glamorgan," in which he deals with the *Heteromera* and *Rhynchophora*. The usual entomological notes are by Mr. H. M. Hallett, who remarks on *Celastrina argiolus* as occurring "in great numbers in early spring," on the larvae of *Pieris brassicae* being "extremely partial to the garden nasturtium," and to the species of *Tipula* appearing "in enormous numbers in the autumn." "Wasps seem very partial to these flies and appeared to do great execution among them." A considerable number of records and additions to the local Hymenoptera-aculeata are made, including the finding of two nests of the very local wasp *Vespa norvegica*.

In the *Ann. Soc. ent. France* appeared an article by Dr. Roger Verity "Sur deux *Lycaena* confondus sous le nom de *L. (Agriades) coridon*, Poda." This has produced an interesting article from Mr. H. Rowland Brown in the August number of the *Entomologist*, adding further facts in evidence of Dr. Verity's views from his own experience and research. Probably more light will be thrown on the question when a detailed examination of the genital characters has been made. We regret to see that the wretched noninformative polynomial nomenclature is used, obscuring the clearness of the argument.

In the *Ent. Mo. Mag.* for August Mr. D. Sharp introduces and describes two species of British Coleoptera as new to science. *Biblopectus margaretae* was taken by Mr. H. Britten at Brockenhurst; it is closely allied to *B. ambiguus*. *Ernobius oblitus* is another Brockenhurst species, and is very like small specimens of *E. consimilis*. Mr. Sharp adds two more species as new to Britain. *Liozoum parvicolle*, taken near Brandon

in June 1899, and *L. consimile*, a species hitherto confounded with *L. mollis*.

Entomology in the *Naturalist* for August consists of a preliminary List of Cumberland Hemiptera-Heteroptera by Mr. F. H. Day, and notes on the Coleoptera observed in Yorkshire during the year 1915.

The *Report of the Lancashire and Cheshire Entomological Society* for the two years 1914 and 1915 has recently been issued. It contains the Reports of the Council, Proceedings at Meetings and a further instalment of the annotated List of Lepidoptera of the District compiled by Mr. W. Mansbridge, F.E.S. This seems a very useful collection of records and it is a pity that the nomenclature is not more up to date. Both Rothschild and Jordan and the late J. W. Tutt have dealt much in detail with these names, and their conclusions have such good bases that one feels it is due to the coming generation of workers to give them a more or less correct start.

The *Bolletino Lab. Zool. Gen. e Agraria*, Portici, Italy, seems to increase in bulk each year, and the matter, usually the account and results of special investigations, is of considerable economic value. Prof. F. Silvestri has contributed articles on the *Zoraptera*, the *Diplopoda*, and the structure of the ovum of a parasitic Hymenopteron. G. Sciarra has some notes on *Carpocapsa pomonella*, or as we should call it *Cydia pomonella* (see Rep. Nomen. Com., 1916). R. Sarra writes Biological Observations on the damage done to the fruit of the almond tree by the larvae of the Lepidopteron *Anarsia lineatella*. G. Martello has an article on the Lepidoptera of the genera *Zelleria* and *Glyphodes*, which attack the olive. While C. Emery, G. Grand, and R. G. Mercet have contributed respectively articles on the ants, the Chalcids, and the Mutillids obtained by Prof. Silvestri during his journey in north-east Africa.

In the *Trans. Ent. Soc. Lon.*, part 1 for 1916, Mr. Champion describes a large number of new or little-known *Xylophilidae* (Coleoptera) with two plates. Messrs. J. J. Joicey and G. Talbot describe and figure a number of New forms of Lepidoptera from Biak and the Shouten Islands, N. of New Guinea. The paper is illustrated by four coloured plates. Mr. Durrant adds the description of a new Tineid sent from Biak with the collection described. Messrs. C. B. Williams and P. A. Buxton give a series of notes on the Biology of the Mantis, *Sphodromantis guttata*, with four plates. Dr. Eltringham publishes his paper "On Specific and Mimetic Relationships in the genus *Heliconius*," with two coloured and five other plates, to which Mr. W. J. Kaye adds a critical reply. The remaining paper is an encyclopædic investigation of the "Pairing of the Plebeid Blue Butterflies" by Dr. T. A. Chapman, with no less than forty-five plates of details. The Report of the Proceedings at the first three meetings of the year are very full and contain many original notes occupying more than forty-eight pages. This makes most interesting reading.

REVIEWS AND NOTICES OF BOOKS.

"GYNANDROMORPHISM AND KINDRED PROBLEMS," by E. A. Cockayne, M.D., M.R.C.P., and F.E.S.,

This, a separatum from the *Journal of Genetics*, has been lying on our table for some time. To do adequate justice to such an important

contribution to biological science is impossible without reproducing the whole paper, and to examine it critically needs much more than a superficial knowledge of the matter. One can only give a sketch of the contents and the manner of the treatment of the subject, with a statement of the conclusions to which the author comes as a result of his intensive study. We might say, in passing, that the assiduous collection of and search for aberrations, even those which appear at first to be trivial, and what is even more important still the recording of such in our current literature, has afforded the great bulk of material upon which this paper has been based. At the same time aberrations obtained by breeding are of as much, if not of more, assistance, since some of the proximal conditions, which may suggest direct or indirect factors in their production, are known.

The author deals with the matter as follows:—

OCCURRENCE OF GYNANDROMORPHISM.

Structure and Classification.

Reference is made to the more or less common occurrence of the phenomenon among insects compared with other animals, and in Lepidoptera it appears to be more common, probably because in all other orders of insects it is much less conspicuous. In the Hymenoptera only some 90 records were collected by Dalle Torre, while in an experiment with bees there were produced some hundreds of gynandromorphs. The various classifications which have been suggested are discussed, with an expression that "the more gynandromorphs one sees the more unsatisfactory does any attempt at classification by external characters appear to be." The most elaborate classification on these characters is that of Dalle Torre and Friese who make four groups with a large number of subdivisions. The groups are.—

- Group I. Lateral Gynandromorphism.
- Group II. Transverse Gynandromorphism.
(Dorso-ventral arrangement.)
- Group III. Frontal Gynandromorphism.
(Antero-posterior arrangement.)
- Group IV. Mixed Gynandromorphism.
(Lateral, transversal and frontal intermixed.)

Nearly all gynandromorphs fall into Group IV.

The writer regrets the small number of dissections which have been carried out, greatly hampering the classification based on internal structure, and puts forward the following

I. GENETIC HERMAPHRODITES.

Primary sex glands of both sexes present.

1. *Lateral.*
 - a. Ovary on one side. Testis on the other.
 - b. Two ovaries on one side. Testis on the other.
 - c. One ovary on one side. Two testes on the other.
 - d. Two ovaries on one side. Two testes on the other.
2. *Unilateral.*
 - Ovary or testis on one side.
 - Ovary and testis on the other.
3. *Bilateral.*
 - Ovary and testis on both sides.

II. PRIMARY SOMATIC HERMAPHRODITES.

Sex gland or glands of one sex only, but parts of the secondary sexual apparatus, internal or external, of both sexes present.

- a. Male type, with one testis or two testes.
- b. Female type, with one ovary or two ovaries.

III. SECONDARY SOMATIC HERMAPHRODITES.

Sex gland or glands of one sex only; secondary sexual apparatus of one sex only, that corresponding to the sex gland, present. Secondary sexual characters of both sexes present in antennæ, wings, or other parts of body.

- a. Male type, with one or two testes.
- b. Female type with one or two ovaries.

Gynandromorphism associated with Heterochroism.

Heterochroism is the term introduced by the author to distinguish insects which, "in addition to being gynandromorphous, exhibit the colour and pattern of the type form in all the parts which are of the one sex, and those of some varietal or aberrational form in all the parts which are of the other sex." . . . "These strange gynandromorphs not only exist in the halved and nearly halved forms, but also in the crossed and coarse mosaic forms." This segregation of colours of patterns is "quite unconnected with sex."

Reference is made to the lists of palaeartic gynandromorphs made by Schultz, and numerous additional instances are described.

Larvæ which showed Heterochroism and produced Gynandromorphous Imagines.

Insects showing segregation of somatic characters (Heterochroism) but no segregation of sexual characters (Gynandromorphism).

Gynandromorphs partly of male type colour, and partly of aberrational colour limited to the female sex.

Under each of these headings a considerable number of examples, many newly described, are given in detail.

HEREDITARY AND FAMILIAL NATURE OF GYNANDROMORPHISM.

Instances are given from the experience of Harrison and Main, C. W. Simmons, E. B. Haynes, H. B. Williams, H. Donisthorpe, etc.

Hereditary Gynandromorphism probably of Indirect descent.

In a series of admirable diagrams the author gives the results of his microscopical examination of eight gynandromorphous *Amorpha populi* bred by L. W. Newman.

Hereditary Gynandromorphism probably of Direct descent.

This section contains details of the examination of a large number of *Agriades coridon* from the now famous Hertfordshire locality, as well as references and criticism regarding many other cases which fall in this class.

HYBRID GYNANDROMORPHS.

Gynandromorphism is far commoner among hybrids than amongst pure races of Lepidoptera.

Here are considered the Gynandromorphs of the hybrids *Amorpha*

(*ocellatus* × *populi*), *Saturnia* (*pavonia* × *pyri*), and *Ithysia* (*zonaria* × *hirtaria*).

GYNANDROMORPHOUS MONGRELS.

Here the case of the gynandromorphs produced by the crossing of *Lymantria dispar* with its var. *japonica* is considered.

THEORETICAL EXPLANATION OF GYNANDROMORPHISM.

All the theories are placed under four heads.

- (1.) Supposes that gynandromorphs are formed from (a) a fusion of two ova, or (b) from a binucleate ovum.
- (2.) That they are formed by an abnormally dividing single ovum.
- (3.) The Mendelian hypothesis based upon supposed differences in the potency of the sex characters in different races and species.
- (4.) That they are due to abnormal conditions occurring during the development of a normally fertilised ovum.

The discussion of these explanations and the consideration of a large number of relative facts take up the remainder of the paper.

CONCLUSIONS.

We have given these verbatim, as to condense them would only lead to misrepresentation.

“(1.) Gynandromorphs probably fall into three groups. The first two groups contain a majority of symmetrical gynandromorphs showing a blending or fine mosaic of male and female characters, and some showing characters predominantly male or female, but having on the wing streaks with the colour or pattern of the opposite sex.

“These are unisexual or have sex glands containing mingled ovarian and testicular tissue.

“The third group contains the completely and almost completely halved gynandromorphs, some with a coarse mosaic arrangement and some with a fine mosaic arrangement of sexual characters.

“(2.) The first group is due to a difference in the potency of the factors for sex, or secondary sex characters, or both, occurring in the two parents. The characters behave as simple Mendelian dominants and recessives, respectively. This difference occurs in *Lymantria dispar* and its var. *japonica*.

“(3.) The second group is probably due to a failure in the normal process of fusion of the sex chromosomes of the spermatozoon and ovum. This is especially liable to occur in the cases where the parents are of different species.

“(4.) In the third group the condition is due to an irregular distribution of the chromatin, which carries the factors for sex and for secondary sexual characters, or for one of these alone, to the first two cleavage cells. Thus it occurs at a late stage in mitosis and not at an early stage as in the first two groups, and the first two cleavage cells are different instead of being alike in their chromatin.

“(5.) A similar, irregular distribution of the chromatin carrying a somatic character may take place, and this leads to heterochroism.

“(6.) An irregular distribution of sex and somatic factors may occur together and this leads to the production of a heterochroic gynandromorph.

“(7.) The existence of these strictly parallel groups of heterochroic insects, simple gynandromorphs, and heterochroic gynandromorphs,

supports the view that sex is a Mendelian unit character comparable in every way to a somatic character.

"(8.) All the genital and somatic peculiarities of the second group of gynandromorphs, are due to a mosaic arrangement of cells with nuclei of different chromosome content. This was due to a similar arrangement of the embryonic cells from which the different parts developed.

"(9.) This arrangement of the embryonic cells is made possible by the syncytial nature of the ovum in its cleavage and preblastodermic stage, which allows nuclear migration to take place to any extent. In most cases little or no migration takes place, in others it is extreme.

"(10.) The fact that nuclear migration is usually slight accounts for the fact that gynandromorphs approaching the halved condition are much commoner than those examples which show a more or less fine mosaic of male and female characters on both sides.

"(11.) In birds four halved gynandromorphs and one almost perfectly halved are known. This is due to the fact that from each cell produced by the first cleavage one lateral half of the individual develops. Nuclear migration is absent or very slight.

"(12.) In insects trophic changes, heat and parasitism for example, may alter chromosome constitution of the cells in a postembryonic stage of development, and lead to the assumption of male secondary sexual characters in a female. This phenomenon is quite different from the kind of gynandromorphism discussed in this paper."

In addition to the numerous text figures there are four black and white plates containing more than two dozen figures of gynandromorphs, all Lepidoptera, most of them hitherto neither described nor figured. There is also a useful Bibliography.—H.J.T.

THE ANTS OF THE NETHERLANDS AND THEIR GUESTS.*—We have recently received this compact and interesting little book, which, though in Dutch, is written in such a manner that, with the help of the text figures, Latin names, etc., it is both easy to follow and to understand.

The author divides the work into eleven chapters, as follows:—

- Chapter i. Is on Observation Nests and how to obtain the ants for them (pp. 7-15).
- Chapter ii. On *Formica fusca*, L., its habits, races, guests, etc. (pp. 15-39).
- Chapter iii. *Lasius flavus*, F., and account of *Claviger testaceus* and the guests of *L. mixtus* and *L. umbratus* (pp. 40-59).
- Chapter iv. All about *Lasius niger*, L. (pp. 60-75).
- Chapter v. *Lasius fuliginosus*, Ltr. (pp. 76-82).
- Chapter vi. *Formica rufa*, L. (pp. 83-99).
- Chapter vii. *Formica sanguinea*, Ltr., and an account of slave raids, *Lomechusa strumosa*, etc. (pp. 99-111).
- Chapter viii. *Polyergus rufescens*, Ltr. The Amazon Ant (pp. 112-116).
- Chapter ix. *Myrmica rubra*, L., dealing with the different races, or species, of *Myrmica*, and the beetles *Atemeles*, etc. (pp. 117-121).

* *De Nederlandsche Mieren en Haar Gasten*, by Father H. Schmitz, S.J. Maastricht, 1916 (pp. 146, text figures 56).

Chapter x. Other species of ants in Holland, *Tetramorium*, *Formicoxenus*, *Anergates*, etc. (pp. 122-132).

Chapter xi. On the distribution of ants, systematics, instinct, etc. (pp. 133-145).

There is very little systematic entomology in this volume, but on the other hand it is full of interesting information on ants and their guests, and good lists of the latter are given after each species. To anyone interested in European ants, and especially the Myrmecophiles, we can heartily recommend this book.—H.D.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

June 22nd.—ABERRANT LARVA.—Dr. Robertson, a larva of *Cleora jubata* (*glabraria*) from the New Forest, which was almost wholly suffused with black coloration.

CAPTURE OF *COPRIS LUNARIS*.—Mr. Priske, a series of the very local beetle, *Copris lunaris*, and pointed out the sexual dimorphism in the development of the frontal horn.

SAWFLY LARVÆ.—Dr. Chapman, the larvæ of the sawfly, *Umbex sylvarum*, a large species on birch, and stated that the ova laid by a virgin female would produce all males.

CAPTURES IN THE WYE VALLEY IN JUNE.—Mr. Carr, a mimetic spider from the Wye Valley, and reported on the species of Lepidoptera he had recently met with there, including *Leptosia sinapis*, *Asthena blomeri*, *Brenthis selene*, *B. euphrosyne*, *Abraxas sylvata*, *Perinephele lancealis*, *Cymatophora fluctuosa*, etc.

ABERRANT FORM OF *A. BROCKEELLA*.—Mr. Sich, specimens of *Argyresthia brockeella* with the aberration *aurivittella* and an intermediate form; and also a cocoon of *Tortrix viridana* spun on a blade of grass, and thus of a long narrow shape.

SIERRA LEONE PYRALES.—Mr. Hy. J. Turner, a number of species of *Pyraustinae* taken by Mr. Bacot in Sierra Leone. They were all species of very extensive distribution and included *Entephria cribrata*, *Zinckenia fascialis*, *Marasmia venilalis*, *Syngamia floralis*, *S. abruptalis*, *Bocchoris inspersalis*, *Nacoleia indicata*, *Sylepta balteata*, *S. derogata*, *Glyphodes indica*, *G. sinuata*, *Sameodes cancellatus*, *Maruca testulalis*, and *Pachyzancla phaeoptivalis*.

XANTHIC ABERRATIONS.—Mr. R. Adkin, xanthic forms of *Aglais urticae*.

July 13th.—ABERRATIONS OF *P. ICARUS*.—Mr. H. Leeds exhibited a large number of aberrations of *Polyommatus icarus* taken in May and June, including obsolete, asymmetrical, gynandromorphous, abnormally spotted, light, dark, and suffused specimens.

DETAILS OF LIFE-HISTORIES.—Mr. H. Main, pupa of *Geotrupes spiniger*, living examples of *Copris lunaris*, larva of *Panorpa germanica* (scorpion fly), an ichneumon of the alder sawfly, *Phyllotoma vagans*, and the larva of the sawfly of the Solomon's seal, *Phymatocera aterrima*.

A BRITISH EXAMPLE OF *POLISTES GALLICA*.—The Rev. F. D. Morice,

a British specimen of *Polistes gallica*, a common continental wasp. It was taken in Durham.

T. VIRETATA LARVÆ AT REIGATE.—Dr. Chapman, a larva of *Triopteryx viretata* on the flowers of *Cornus sanguinea*, from Reigate.

COCOONS OF MICRO-LEPIDOPTERA, ETC.—Mr. Hy. J. Turner, cocoons of *Bucculatrix aurimaculella*, leaves of birch mined by the Coleopteron *Orchestes rusci*, the beautiful open network cocoon of the anomalous Lepidopteron *Chrysocoris festaliella*, and some tubular larval cases of a Tineid formed on dog's excrement at Aden.

Mr. Bunnett, flowers of a species of *Aristolochia*, a spike of the Orchid *Malaxis paludosa*, which had been well preserved in a solution of 2½% of formalin for the past six years, and the imagines and larval cases of the hawthorn Coleophorid *Coleophora nigricella*.

G. RHAMNI PUPA.—Mr. F. B. Carr, a pupa of *Gonepteryx rhamni*.

THE SEASON.—Messrs. R. Adkin and F. M. B. Carr communicated notes on the Lepidoptera of the present season, and interesting remarks were made on the same subject by Messrs. Curwen, Hare, Newman, Rev. F. D. Morice, and others.

July 27th.—**ABERRATIONS OF BRITISH BUTTERFLIES.**—Mr. Frohawk exhibited a figure of the unique absolutely white form of *Melanargia galathea*, taken near Walmer, in 1843, also a specimen of *Euchloë cardamines* in which there was no trace of black scales on either side, and a *Colias hyale* in which the black markings were represented by a faint dusky shade.

RACES OF PARNASSIUS APOLLO.—Mr. Turner, a series of *Parnassius apollo* var. *valaisica*, from Macugnaga, and contrasted its size and brilliancy with the smaller var. *moutana*, from St. Moritz, Engadine.


DETAILS OF LIFE-HISTORIES OF COLEOPHORIDS.—Mr. Turner also showed cases of the following species of the genus *Coleophora* (Microlepidoptera), supposed to have been in the late H. T. Stainton's collection, and referred to by him in his "Tineina of Southern Europe," 1869. *C. calycotomella* on *Calycotome spinosa*, *C. chamaedryella* on *Teucrium chamaedrys*, *C. giraudi*, *C. musculella* on *Dianthus superbus*, *C. cornuta*, *C. polonicella* on *Astragalus arenarius*, and *C. otitæ* on *Silene otites*.

CAPTURE OF LYTTA VESICATORIA.—Mr. Bowman, a specimen of *Lytta (Cantharis) vesicatoria*, a rare British beetle from the I. of Wight.

MELANIC FORMS OF EUPITHECIA SPECIES.—Mr. B. S. Williams, several species of *Eupithecia*, including melanic *E. lariciata* from Leith Hill, a melanic *E. castiyata* from Finchley, and a series bred from larvæ taken at Oxshott last autumn.

DWARF P. ICARUS AND ABERRATIONS OF E. OBLONGATA, P. NAPI, AND E. TITHONUS.—Mr. Sperring, dwarf examples of *Polyommatus icarus*, ♂ 22mm., ♂ 24mm., and ♀ 22mm. respectively, with very light ♂ s and very blue ♀ s from Portsmouth; a barred aberration of *Eupithecia oblongata* (*centanreata*); seven examples of *Epiphyle tithonus* with extra eye-spots, from Sidmouth; and a yellow *Pieris napi* spring brood.

DESTRUCTION BY LARVÆ OF THE STAG BEETLE.—Attention was called to the destruction caused by the larvæ of *Lucanus cervus* in fencing around London.


BITUARY.
Roland Trimen, F.R.S.

Roland Trimen, M.A., F.R.S., the last of that small band of great naturalists headed by Darwin and Wallace, was taken from us on July 25th, and all who knew him cannot but mourn that we shall here meet him no more. The third of a family of four sons (of whom one had similar tastes, Dr. Henry Trimen, F.R.S., for many years director of the celebrated gardens at Peradeniya), he was educated first at a private school and then at King's College School. Delicacy of the throat showed itself at an early age and involved a voyage to the Cape before he was 20 years old. The next year (1860) he entered the Cape Colony Civil Service, and returned there to take up the study of the insect fauna of that region, a study that his early doings at Dorking had already shown he was eminently fitted to undertake. His two greatest works are, without doubt, his famous paper read before the Linnean Society, on March 5th, 1868, but not published till 1869, on the Bionomics of *Papilio merope*, or as he himself called it, "on some remarkable mimetic analogies among African Butterflies." This paper, now a classic, was received with little less than scorn by the then opponents of the Darwinian theory, and certainly with more opposition than were those by Bates and by Wallace, seven and four years previously. We in these days cannot understand the dislike and even bitterness of that controversy, that has ended in the triumph of our great predecessors in entomology. This was followed later on in life by his three volume monograph on "South African Butterflies," in which, however, he was ably lieutenanted by his friend Colonel Bowker. Had he done nothing else, these are two works that are going to last. In addition to these, however, are his first separate work, "*Rhopalocera Africae Australis*," besides many papers in the *Trans. Ent. Soc. Lond.*, and elsewhere.

He was appointed Curator of the South African Museum at Cape Town, in 1873, and retired from that post in 1895. He was delegate to many congresses on the Phylloxera Pest, and in 1889 he was the Cape delegate to the first International Congress of Zoology that met in Paris, and there he met Miss Blanche Bull, who became his wife, and to whom our deepest sympathy and condolence is offered.

He served on the Council of the Entomological Society for several periods, and was President in 1897 and 1898, his addresses on "Mimicry" and "Seasonal Dimorphism" being most valuable contributions on these subjects, and greatly enhanced by his own personal observations during the long period of his residence in South Africa. In 1883 he was elected a Fellow of the Royal Society, and in 1910 he received the Darwin Medal.

Thoroughness was a conspicuous element in his character, and it was this thoroughness that compelled his retirement from his office before the official age limit in 1895, inasmuch as the vineyards of the Cape were suffering most severely from Phylloxera, and his arduous work in examining them day after day and week after week, in the burning February sun, so seriously affected his health, never at any time robust, that it became necessary for him to return to England permanently.

It is not given to many men to have such versatility as he had,

much less to remain the modest unassuming character, as did Roland Trimen up to the end. It is not, I believe, generally known how many were his gifts. As a conversationalist with his friends at home he was always keen and witty, and sometimes quite entrancing. His ready repartee (never cutting) was delightful, and he had a great power of setting men at ease in awkward situations, a single instance of this may well be told. A decidedly reserved Governor of the Cape was being entertained by a provincial magnate, and not only he but the whole party were being made quite uncomfortable by the flattery of their host, who was deprecating the iniquity of the local clergy in omitting at the morning service "the Prayer for his Excellency's health." A very awkward pause—a pause that could be felt—followed. In a moment Roland Trimen grasped the situation, and gaily broke in with, "Oh, Mr. ———, if you knew his Excellency as well as we do you would know he was long past praying for." An almost audible sigh of relief followed immediately, like a rush of pure mountain air on the fervid plain, and conversation flowed again—the situation was saved. His sense of humour was delicious, but it is not generally known that he had an extraordinary aptitude for the stage, and had he given his life to it he would certainly have ranked high amongst comedians. He had a most facile pencil and brush, and was a really capable artist and cartoonist, the latter being aided no doubt by his fine sense of humour. He was also a poet of much ability, sonnets and poems, and humorous verse, the latter especially on local doings were constantly appearing in the Colonial Press from his ever ready brain. He could not restrain his wit in some of these local references, for instance, in a poem about a certain statue of Sir George Grey, the closing line of one of the stanzas was—

"Whose grime belies his Order of the Bath."

His "Song of Longer Billee" (a certain noble Zulu who was deported to Robben Island), is very amusing, not only for itself but also for its side hit at a bishop, who created a sore controversy in those days, on an opinion that to-day would be passed over quite unnoticed. I can only give a portion of the rhyme—

"Give ear, Black and White, while I proudly relate
The events that have made me a prisoner of state;
Oh! little I thought when a starved refugee,
Such distinction awaited poor Longer Billee!

"A decent location I got in Natal,
Sufficient to keep me and many a pal;
From dread of Cetwayo and Panda set free
Set up for a chieftain was Longer Billee.

"I did very well on Her Majesty's land,
Eating up by degrees, the rich men of my band;
With their cattle and wives I then always made free
As the proper belongings of Longer Billee.

"All went well while the Government left me alone,
And we scarce had to pick an occasional bone;
But at length on the gun-tax I didn't agree,
Which put on his dignity Longer Billee.

- “ The facts of the rumpus I will not rehearse,
Or I never should get to the end of my verse ;
Suffice it to say that the Shilliboree
Made flight quite essential for Longer Billee.
- “ I thought that alone with Natal I'd to do
And laughed as the mountains with ease I got through ;
But alas ! the keen Cape-tes came forward with glee
To aid in the capture of Longer Billee.
- “ When in irons they brought us before the Great Chief,
Both I and my son thought we *had* come to grief ;
' Mahlambule,' I said, ' take your last leave of me,—
They'll string you up first, and then Longer Billee.'
- “ What possessed that old muff, Benjy Pine I can't say ;
But he spared both our lives in the stupidest way :
Had a headman of mine rebelled as did *we*,
He'd been scragged precious quickly by Longer Billee.
- “ But before I was shipped to my charming retreat
With a friend unsuspected I gladly did meet ;
It was Dr. Colenso, his card sent to me,
Humbly craving an audience of Longer Billee.
- “ The Doctor palavered most pleasant indeed,
And said that to England he purposed to speed ;
The Queen and her Councillors there would he see
And put everything straight for dear Longer Billee.
- “ As soon as he'd gone—' Mahlambule,' said I,
' *What can make him in us take such interest high ?* '
You remember dear dad, how some books he did write,
About which all his brethren did wrangle and fight.
- “ Now, his maulings of Moses and popguns at Paul
Have ceased to attract any notice at all ;
He has gone in for what they call philanthropie,
And will gain immense *Kudos* by Longer Billee.
- “ The event clearly proved Mahlambule was right,
For as soon as Colenso's ' Blue Book ' saw the light
.
- “ Her Majesty's Councillors thought it was wise
To give in at once to the popular cries,
And the Earl of Carnarvon wrote out spedilie
To release that much injured chief, Longer Billee.
- “ Three cheers for Colenso ! and long may he be
A Bishop *in partibus*—no *ex-parte* ;—
Of his debt to the Zulu he must be held free
Since he bolstered the cause of his Longer Billee.”

He did not hesitate to give the aid of his pen to the fallen and the

unfortunate, and some of his verses for them ring, not only with a deeply religious tone, but with that broad sympathy for the needs of the human race, that was much more rare to find forty or fifty years ago than it is now. His farewell poem to his bosom friend, the Dean of Cape Town, on leaving to take up the Bishopric of Bombay, is very touching and noble in its high sentiment. Or, again, his satire in Elizabethan style on the conduct of the festivities in the colony, when the then Prince of Wales was married, shows his versatile mind; the closing verse runs—

“ O shame to Knyghtes and gentlemen
That knaves should lerne them courtesie!
Yette on thys daie of loyall joie
The rabble dyd more gentillie ! ”

I cannot here touch upon his sonnets, but his Eurydice to Orpheus is worth a much wider audience than it ever had.

EURYDICE TO ORPHEUS.

“ Oh better for us both hadst thou not come !—
Here in dim Hades I abode at rest,
My joyless life fed by deep memories
Of thy last look of love unutterable,
When Death, unpitying, with an iron hand
Drew me from out the heaven of thine arms,
And led me to these sad and sunless shades.

“ A brief while since, this passionless Obscure
Astonished thrilled to those all-perfect tones
Which thou alone canst waken in the lyre,
And like a wind-swept field of ripening corn
The thin souls swayed to the unwonted sound,
And all the dusk became a stream of sighs
Bearing thee onward to dread Pluto's throne,
And I—I only—knew the notes divine
And thee the god-born player; but I strove
Vainly to find a voice wherewith to stay
Thine entrance to the presence, rashly sought,
Of the Inflexible.

“ I followed close,—
My love of thee o'ershadowed by cold fear
Of what might chance,—until that awful seat
Of blackest marble, redly interlaced
With veins of fire, from deepest gloom stood out
A denser darkness;

* * * * *

“ Then, as straight onward thou and music moved,
With joy I saw an alien tenderness
Glow on those brows immortal; strange delight
Stole unawares into the sombre heart
That governs Hell, and filled with throbbings sweet
The spirit of Proserpina. Thy foot

Paused on the first step of the ebon throne,
 And towered erect thy stature like a god's,
 While with full eye thou frontedst Pluto's frown,
 And from the lyre there rang one closing chord
 That pulsated throughout the dim expanse
 With wild intensest pathos of appeal.

“ O swift upon my heart there flashed a sense
 Of all thy music meant ! It was for me—
 For me, thy lost Eurydice,—that Hell
 Echoed thy dauntless footsteps and the notes
 That changed it to a palace of delight.

“ When silence had devoured that utterance
 Of quenchless love, the voice of Pluto spake ;—
 ‘ Orpheus—for none but thou could make the lyre
 A thousand times more eloquent than speech,—
 Ask what thou wilt, and take as god from god.’

“ ‘ Pluto,’ thou saidst, ‘ I ask Eurydice,
 Reft from me by the hateful serpent's tooth,
 And dwelling now in this thy drear domain.’

“ The great deep gaze of Pluto lit on me,
 Piercing through all the shadowy throng of souls ;
 And some strange tumult inly troubled me,
 As on that day among the Thracian flowers,
 And in the hearing of Ægean waves,
 When first I knew that thou wert surely mine.
 But though I strove to reach thee, I was stayed
 As by a triple chain, and sadly ware
 That thy swift-searching vision saw me not.

“ And then the voice of him who rules the Shades
 Spake yet again ;—‘ Eurydice is thine,
 All-daring Orpheus, and will follow thee
 Now to the upper air. But curb thy love
 Until again thou look upon the sun,
 For if thou turn to feast triumphant eyes
 Upon her beauty in this nether realm,
 Know well that thou wilt never see her more.’

“ Obeisance made for Pluto's kingly grace,
 Ah ! with what gladsome mien didst thou address
 Thy step heroic to the upward way,
 The while thy hand caressed the living lyre
 Into rich melody, subdued but full
 Of passionate joy in Love that conquers Death.
 And I, drawn onward by those magic tones,
 Nor unattended by the envying souls,
 Followed as in a dream. The way was long,
 And girt with utter blackness, till at length
 From far came rays of white and wavering light,
 Paining the fragile ghosts, who shrunk away,
 And left in lonely progress thee and me.

Still, as light gathered, grew my strength and hope,
 And nearer, nearer drew my steps to thine,
 And closer, ever closer seemed the bliss
 Ineffable of re-created love
 In the dear home of unforgotten Thrace,
 Until I saw the low-browed arch that gives
 Upon the living World—

“ Why ceased the sound
 Of thy prevailing lyre? O why the cry
 ‘ Eurydice, Eurydice!’ that fell,
 In the same instant as the yearning glance,
 Upon me shuddering, shrivelling back at once
 To death and darkness from the verge of life!

“ O woe is me! Thy madness was in vain—
 Thou didst not see me. In thine eyes divine
 There gleamed blank horror at the formless void
 In which I stood unseen. O lord and love!
 Most hapless Orpheus, wilt thou slay thyself,
 So gaining a poor right of entrance here,
 Where all is vague and barren of delight,
 And we should meet unknowing and unknown?
 Was ever grief like unto thine and mine?
 Is there no way of comfort? I will pray,
 With prayers infinite, Proserpina
 To bear with her to Enna my lorn sprite,
 And cast me loose upon Sicilian winds,
 Which thence may waft me to thee! I will cry
 To ruthless Pluto till I wrest from him—
 Even from him—some unimagined means
 To end our more than mortal misery;—
 Glad if he only grant I cease to be!”

Cape Town, August, 1870.

Ω.

Among his many other activities not connected with his museum work, it may be mentioned that he was Private Secretary to the Col. Secretary (South Africa), Mr. Rawin, from 1862-64; Secretary to the Tender Board, from 1862-66; Private Secretary to Mr. Southey (Col. Secretary), 1864-68, and again 1870 and 1876; Secretary to the Paris Exhibition Committee, 1866 and 1877; Acting Private Secretary to the Governor, Sir M. Bubby, in 1872; Secretary to the Philadelphia Exhibition Committee, 1875; and Private Secretary to the Prime Minister, Sir J. Molten, when on a special mission to England, 1876. His work on the many Phylloxera and other pest Congresses, is too well known to need recapitulation.

It may not be usual in a scientific periodical to enter into the details that I have given, but Roland Trimen was not a usual man, and whilst other notices have given the purely scientific side of his personality, I have rather sought to let our readers see him as a man, full souled, full of sympathy for his fellows—a man of high sentiment, and whose high ideals he ever endeavoured to make real.—G.T.B.B.

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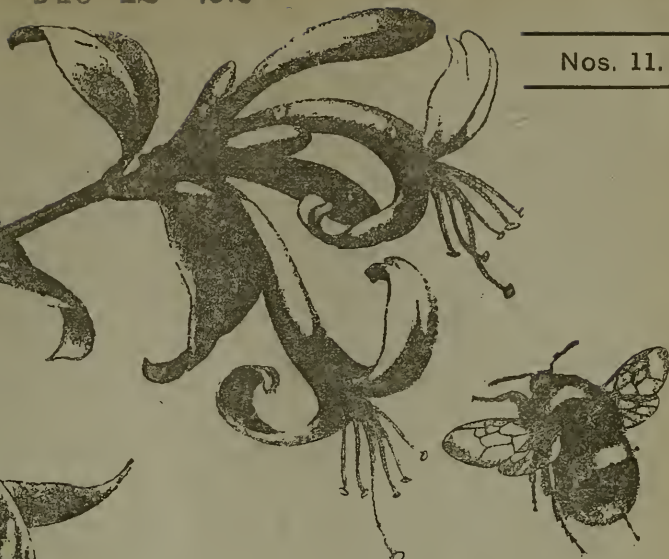
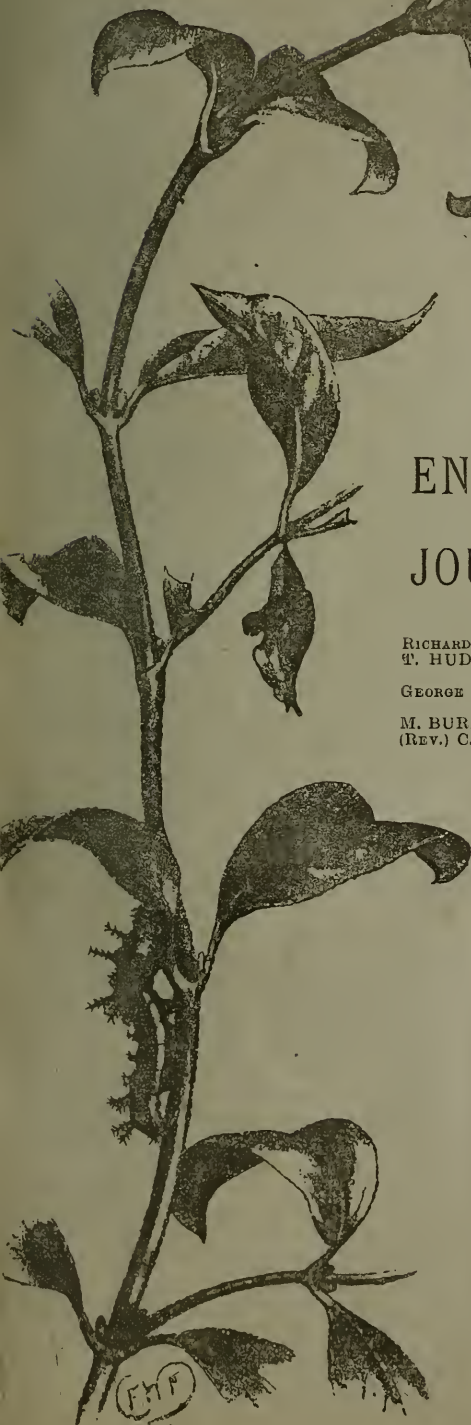
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Agriades coridon and A. aragonensis.*

By T. A. CHAPMAN, M.D.

It is a good many years since I made the acquaintance of a form of *Agriades coridon* on the Riviera, occurring in early spring, that obviously could not have passed the winter in the egg as *coridon* does with us. In 1910 I obtained eggs from this form of *coridon*, captured at St. Maxime early in May. These produced imagines at Reigate early in August. This fully satisfied me that we had here a form of *A. coridon* whose habits were quite different from those of our northern *coridon*, but almost identical with those of *Agriades thetis* (*bellargus*).

Without apparently any reference to this curious deviation from normal habit, Bartel¹ in 1904, and Reverdin² in 1910, gave varietal names to slightly different forms of this Riviera race, and Tutt³ in 1909 to the whole race, but in each case I think to examples of the spring brood. Tutt goes fairly fully into these varieties and their names in *British Butterflies*, vol. xi., p. 45, *et seq.* His account appears to have been written before he had the advantage of seeing my series of bred specimens of the summer form. That an insect should be single-brooded in one locality and double-brooded in another further south is a circumstance with which we are familiar, but I cannot recall another instance in which it hibernates in different stages in the two localities. That the double-brooded form followed the habits of so close a relative as *A. thetis* made me think it might be here possible, but left me rather puzzled.

In 1901 I took, in Central Spain (Tragacete, Albarracin), two forms of *coridon*, on closely adjoining and, at least once, identical localities. These two forms were, one (*aragonensis*) a very large and very pale form, almost as near to *albicans* as to our ordinary *coridon*, the other of ordinary size, but of a coloration much nearer to *thetis* than to our ideas of *coridon*, a very brilliant form. Could these two forms, occurring on the same ground at the same time, and not intermixing, be one species? Mr. Sheldon⁴ has since taken intermediate forms, that may very well be hybrids, but they are in any case so rare that I came across none of them. Were the two forms one species, they ought to weld into one form with only occasional aberrations approaching the present extreme forms. I examined the appendages of these races, however, without finding anything to support the view that they were not all one species. I felt sure that there was still something to be made clear, but did not know where to look for the further necessary facts to that end. I fancy that this statement of my attitude towards the known facts, *viz.*, one of complete indecision as to whether we had one species only, with several races or sub-species, or whether we had actually more than one, possibly several species, would not be altogether different from that of others who had paid any attention to the problem.

Dr. Roger Verity⁵ now advances, as a solution, that our present

* ? Recte *aragonensis*, Gerh.

¹ Bartel, *Ent. Zeit.*, Guben, p. 117, *rezniceki*

² Reverdin, *Bull. Soc. Lep. Geneva*, vol. ii., p. 17, *constanti*.

³ Tutt, *Ent. Record*, p. 290, *meridionalis*.

⁴ He has since referred to these in *Ent.*, 1916, p. 194.

⁵ Sur deux *Lycaena* confondus sous le nom de L. (*Agriades corydon*, Poda. "Ann. Soc. Ent. France," vol. lxxxiv. (1915), pp. 514-520.

coridon consists of two species. I. The northern single brooded *coridon*, with which he associates *hispana*, the brilliantly tinted Spanish form, and II., the more southern double-brooded form, as found on the Riviera, which he identifies with the large pale Spanish *arragonensis*, which name he attaches, but calls it *aragonensis*, to the new species, as the oldest name of any of its forms.

To support this conclusion he brings forward one very important new observation, and several minor facts of marking and coloration. He found in the neighbourhood of Florence and other localities in Tuscany, that there were three emergences of *coridon*, one in June, one early and one late in August. The June and late August (and September) emergences were of a double-brooded form, and the early August one of a single-brooded one. Dr. Verity says that the facies of these two forms is so different that he can at once distinguish them. The single-brooded form is *coridon*, Poda, the double-brooded, which he considers of the same species as the double-brooded Riviera form and as the Spanish *arragonensis*,⁶ he distinguishes under the latter name but varies it.

The occurrence in the same locality of the egg-hibernating, single-brooded and of the larva-hibernating double-brooded form, is unquestionably a strong piece of evidence that they are distinct species. That they should have a different facies would no doubt be the case, whether they were or were not one species.

As to actual structural differences between the two forms, Dr. Verity mentions in the first place that in *aragonensis* the radial veins are shorter than in *coridon*, and consequently the wings in *aragonensis* are shorter, broader, and more acuminate than in *coridon*. The margins of the wings are more convex, and these two facts taken together give rise to a difference in the form of the interneural spaces, and of the relations to each other of the spots proper to them.

There is no difficulty, I find, in selecting examples of either form that present quite the opposite wing forms, but taking half-a-dozen (perhaps hardly enough) specimens of each at random, I find that the six consisting of two *aragonensis*, two of the spring and two of the summer brood of the Riviera race, the ratio of length of costa plus length of inner margin to length of hind margin is 2.64, varying from 2.52 to 2.76, and of the six *coridon*, consisting of two English, two Swiss?, and two *hispana*, is 2.72, varying from 2.5 to 3.0. This confirms Dr. Verity's observation; of course the relative ratios may be more pronounced in the Tuscan forms, but Dr. Verity gives no numerical data.

It must be noted, however, that the *aragonensis* (Spanish form) and *hispana* in this calculation are adverse to Dr. Verity's position, the *aragonensis* having larger and sharper wings than *hispana*, the figures being *aragonensis* 2.72, *hispana* 2.55, but leaving these out, we have for *aragonensis* 2.6, and for *coridon* 2.9, still more confirmatory of Dr. Verity's observations.

In colour and marking, he notes the ground colour beneath in the male to be, in *coridon*, white or very pale pearly grey in the forewing, very pale reddish to dark chestnut in the hindwing, and whereas in

⁶ We have no actual knowledge whether one or both *hispana* and *aragonensis* are single- or double-brooded.—T.A.C.

aragonensis the pale reddish is only found in the summer brood, when it is always very pale, its characteristic is to have the anterior and posterior wings of the same grey tint, or at most the anterior pale grey, and the posterior of a darker grey. The upper surface in *coridon* ♂ is a beautiful electric-blue, approaching *thetis* (especially in var. *caucasica*). *Aragonensis* is of a more dead and greenish tint. As regards all this, I find it very difficult to draw any line between *coridon* (English) and *meridionalis*. By *meridionalis* I mean the Riviera form, *i.e.*, *aragonensis* minus *aragonensis*.

Aragonensis is said to have very often a discal line, *coridon* never to have it; this is correct except that in so far that some trace of a discal line does occur in *coridon*, but very rarely, and never in the pronounced form it often has in *meridionalis*. The underside markings differ chiefly in the large size and sharp angular form of the marginal black and orange chevrons, and the effect of approximating them to the discal row, and of the black spots generally being larger and more pronounced in *aragonensis*. This, as Dr. Verity says, is not an absolute distinction, as there is much individual variation, but in the mass my material fully confirms it as regards *meridionalis* and *coridon*. There are, however, some non-Rivieran specimens that are not readily placed, and some English specimens that would not be very easily separated from *meridionalis*.

My Spanish *aragonensis* are rather *coridon* than *meridionalis*, except as to the possession very frequently of a discal line.

The upper surface is of course very pale, but the difference in this point is not so great between *meridionalis* and *coridon*, as to make these necessarily identical with the former, and the pale underside, small spots, and weaker chevrons, all suggest *coridon* rather than *meridionalis*. The chevrons in *hispana* and *aragonensis* are almost alike in size, and vary in both from having their basal margins in some flat and rounded and in other specimens sharply angular. The distance between the chevrons and the post-discal row of spots is great, and about equal in both forms. In one *hispana* at least there is a discal line. In both forms there is frequently a variation that is very rare elsewhere, *viz.*, the row of white arches in the black margins of the forewings, often absent or ill-developed in most races, are here completed into white circles with black centres.

So far as the androconia are concerned there is not any very definite conclusion to be formed, they vary very much in form and size and number of rows of dots in almost every specimen; though I say, very much, I nevertheless mean between rather narrow limits, I ought perhaps rather to say that most of the various forms seen may be found in any specimen. Still examples in *coridon*, and to some degree in *hispana*, with the sides rather parallel and the near and distal ends very similar, are frequent, whilst in *meridionalis* and *aragonensis* the body of the scale is rather wider basally and the basal end shorter and blunter than the distal, in a certain number of specimens. It is quite possible, however, that examination of a larger number of specimens would show this amount of distinction not to hold.

There is, however, one important and interesting fact which Dr. Verity notes, that is that the spring and summer forms of *aragonensis* have androconia differing in a manner precisely similar to that which I found to occur between the first and second broods of *A. thersites*. This

circumstance is, of course, most interesting in itself, but it has no bearing on the question of whether there be one species or two.

Dr. Verity describes a difference in the ordinary scales of the two forms, but here it is difficult to follow him, since the scales on both seem very much alike, and on each example there are many gradations in the scales according to the position in the wing, and to whether the blue or the black scales are in question, and Dr. Verity gives no indication as to what scales he selects for comparison, nor have I been able to verify the differences he mentions as to any particular scales, or as to their average (if one can average such things) character.

I have examined the appendages of a considerable number of specimens, and can find no differences except such as are varietal and similar in the two forms. Dr. Verity says that the *uncus* in *aragonensis* tends to be shorter, straighter, and less pointed. What Dr. Verity calls the *uncus* I do not know, what corresponds to the *uncus*, if it does correspond, consists of two portions, one on either side of the middle line, rather soft and fleshy, and to those Dr. Verity's description does not appear applicable. He also says the valves are shorter and broader; so far as my observations go, they vary within certain limits equally in the two forms, *viz.*, from 2.7mm. to 3.2mm. in length. I have counted the number of teeth on the chitinous portion (*harpe*) of the clasps in a few specimens of *coridon*, and found they were 20 to 22, and in a few *aragonensis* they were 16 to 19, but extending my observations the next three *coridon* I counted gave 12, 15, 18. So that there is no indication of specific difference here, nor in any other portion of the male appendages I scrutinised. In the female appendages the form of the terminal plate of the (*heina*) rein often gives a specific character, but here variations of form and outline are slight and the same in both forms.

Dr. Verity's statement that the tibial spur (extremity of tibia) is shorter and thicker in *aragonensis* is fully borne out by my examination of them. They vary a little, but the spur in *aragonensis* averages about 0.18mm. long, and of *coridon* 0.24mm. The ratio would be the same if the measure differed, should some other point be taken as the base of the spur. We arrive then at these contradictory conclusions as to these Spanish forms. Wing form says *aragonensis* = *coridon*, *hispana* = *aragonensis*. Tibial spurs both equal to *aragonensis*. Discal line, *aragonensis* = *aragonensis*, *hispana* = *coridon*. Underside colour and markings, both = *coridon*.

That Dr. Verity's thesis does not solve satisfactorily the nature of these Spanish forms does not diminish the fact that he has solved, or come very close to solving, the *meridionalis* problem.

I thought now I had a definite structural difference between the two species, the same as we find, only more pronounced, between *aegon* and *argyrognomon*, where of course it is not the only structural difference between the species, but is a very convenient one to use. So I examined *aragonensis* and *hispana*, and found that *aragonensis* had a spur shorter if anything than in *aragonensis*, but unfortunately *hispana* had one even shorter, so that unless *aragonensis* and *hispana* are both *aragonensis*, which seems impossible, this character of the tibial spur is only racial and not specific.

The underside markings of *aragonensis* and *hispana* are very much alike, both agree closely with *coridon*, and are quite unlike *aragonensis* (*meridionalis*), the chevrons are small, rather round margined, less

frequently sharp and angular than in *coridon* (English). The spots small as in *coridon*, and the discal row similarly apart from the chevrons. The general tone of colour and difference between upper- and underwings is almost the same in both, and much as in *coridon*.

I should like to point out that in comparing *coridon* and *aragonensis* my examples came from widely separated localities for the two species (or forms), whereas Dr. Verity has obtained both from the same localities; this gives him a great advantage in making the comparison, and makes his opinion by so much the more valuable.

In whatever way further research may determine the point, the probability certainly stands at present rather in favour of these being two distinct species, and in any case Dr. Verity is to be congratulated on a very interesting and valuable research, if not quite determining the matter, at least adding most important facts towards that result.

Dr. Verity appears to be rather unfortunate in his nomenclature. I do not refer to the question of trinomialism, which is a trifling one, whether you shall say *Agriades coridon*, *meridionalis*, or *Agriades coridon* var. *meridionalis*, is hardly worth disputing about, and as to the third name, it is surely better to say in Latin Ag. Cor. Mer., than half in English, half in Latin, the double-brooded Riviera form of *Agriades coridon*. The weakness appears to be that he calls his new species *aragonensis*, and if it proves to be a separate species that is unquestionably its name, but this is very similar to *aragonensis*, and in fact was intended to be the same, but there is grave doubt as to whether *aragonensis* and *meridionalis* are the same species. Tutt's name *meridionalis* refers to the whole Rivieran form, i.e., the whole of the double-brooded form, and would have been a better name to have chosen. *Constanti*, *rezniccki* (and now Dr. Verity has added *reverdini* for the aestival brood), are names for sub-races of *meridionalis*. This is not perhaps certain as to *rezniccki*, which may be assumed to be equal to *meridionalis*, though it has up to the present been accepted and used as applicable to one race of *meridionalis* in contradistinction to *constanti*, another race. I will, however, say no more on this, than that the terrible multiplication of varietal names we suffer from, is an evil that ought in some way to be checked.

Synonymy of some Genera of Ants.

By HORACE DONISTHORPE, F.Z.S., F.E.S.

1. *Neomyrma*, Forel, and *Oreomyrma*, Wheeler.

Forel [*Rev. Suisse Zool.*, 22, 274 (1914)] described an ant from Lake Takeo under the name of *Aphaenogaster calderoni*, and made it the type of a new subgenus, *Neomyrma*; but as pointed out by Wheeler [*Psyche*, 22, 50 (1915)] it was not an *Aphaenogaster* but a *Myrmica*, and in fact the same species described by Wheeler under the name *Myrmica bradleyi* [*Journ. N.Y. Ent. Soc.*, 17, 77 (1909)]

In 1914 Wheeler erected the subgenus *Oreomyrma* [*Psyche*, 21, 118-122 (1914)], with type *Myrmica rubida*, Latr., which subgenus includes *M. bradleyi*.

As Forel's *Neomyrma* was published in May 1914, and Wheeler's

Oreomyrma in August 1914, the latter sinks as isonymous with the former, and will remain sunk so long as they are considered to belong to the same subgenus—but *Oreomyrma* is capable of revival should *rubida*, Latr., eventually be found not congeneric with *bradleyi*, Wheeler. The synonymy, therefore, is as follows:—

MYRMICA, Ltr.

=* *Aphaenogaster* (*nec* Mayr), Forel (1914); = NEOMYRMA, Forel (1914) = OREOMYRMA, Wheeler (1914).

Type 1: **Formica rubra**, L. (Latreille, 1810).
MYRMICA, Latr. (1804).

Type 2: **Myrmica bradleyi**, Wheeler (= *calderoni*, Forel; Forel, 1914).

NEOMYRMA, Forel (1914).

Type 3: **Myrmica rubida**, Ltr. (Wheeler, 1914).
OREOMYRMA, Wheeler (1914).

2. *Sima* or *Tetraponera*?

Emery [*Zool. Anz.*, 45, 265-66 (1915)] in a short paper under the above title, gives his views on this question of synonymy. As we are unable to agree with him, it seems best first to give a translation of his paper, and then to point out why we disagree.

"In his treatise on the Type-Species of the genera and subgenera of the *Formicidae*¹ Professor Wheeler gives as type-species of the genus *Sima*, Rog. (1863), the species *allaborans*, Walk., cited by Bingham (1903), and as type-species of the genus *Tetraponera*, F. Sm. (1852), the species *nigra*, F. Sm., cited by Wheeler himself (1911). As the species *allaborans* and *nigra* at present stand together in the genus *Sima*, and the name *Tetraponera* is eleven years older than *Sima*, therefore, in consequence, the name of the genus *Sima* must sink to the older name *Tetraponera*. The case, however, is not so simple as the Wheeler type-species list makes out.

"Frederick Smith, in the year 1852, published the descriptions of two species, one from India and the other from South America, on which he founded the genus *Tetraponera*: neither was brought forward as type; the generic diagnosis fits both, as it fits generally many *Pseudomyrma* and *Sima* females.

"But three years later the same author withdrew his own genus, as he declared that the genus *Tetraponera* was founded on females of *Pseudomyrma*.² At that time it was not for the reason that the Asiatic and African species should be separated from the American species.

"This was partly seen by Roger (1863) when he made the genus *Sima* for some not American *Pseudomyrma* species (für einige nicht amerikanische *Pseudomyrma*—Arten), and drew up a good generic diagnosis.

"First in the year 1877, F. Smith³ thought of saving his formerly published generic name, so he wrote a quite new diagnosis and sunk *Sima* as a synonym of *Tetraponera*.

"In Smith's 1877 diagnosis stands the sentence:—'Ocelli three in male and female, obliterated in the worker.' This character does not, however, fit *T. rufonigra*, Jerd., *natalensis*, F. Sm., and *aethiops*, F. Sm., which, nevertheless, are brought forward in the same work.

"Therefore I allowed myself⁴ to again use Smith's name *Tetraponera*, but in no way as the older generic name in the place of *Sima*, but rather to form a new subgenus, made up of Smith's later diagnosis. I held the use of the name *Tetraponera*, 1852, invalid, being withdrawn by the author, and I sank it as a synonym of the genus *Pseudomyrma* (*sensu lato*); the description of 1877 had made the name again applicable, but not with the date 1852, but rather the much younger 1877.

"I also divided the genus *Sima* into the subgenera *Sima* and *Tetraponera*. The subgenus *Sima* included the species with developed ocelli; *Tetraponera* those species without or with rudimentary ocelli. I did not, unfortunately, name types for the two subgenera. Still, for a few years in Continental Europe the signification of genotype had not become the mode, or at least the necessary custom! At any rate I believe that my proposition (1900) to divide the genus *Sima* into subgenera, still had priority over Bingham's (1903) type-naming.

"In my mentioned work two species were placed in the subgenus *Sima*: *rufonigra*, Jerd., and *pilosa*, F. Sm. As *pilosa* does not stand under *Sima* in the meaning of Rogers, only *rufonigra* remains, which must stand as the type of the genus and subgenus. The fixing of the type-species of the genus *Sima* is therefore implicitly shown by me in the year 1900."

We are unable to agree with Emery, who does not seem to realise the actual facts of the case. The question is entirely a matter of nomenclature. It is immaterial what part of the world the species came from, whether Smith was in error over the presence or absence of the ocelli, or as to what he thought he had founded *Tetraponera* upon at a later date. We can only follow the laws of nomenclature, and it is quite clear that *Sima*, Roger (1863), must sink as an isonym of *Tetraponera*, F. Smith (1852) (the types being congeneric), and no one can use them in any other sense.

F. Smith [*Ann. Mag. Nat. Hist.*, (2) 9, 44 (1852)] founded his genus *Tetraponera* on the two species *atrata* and *testacea*, and Wheeler (1911) gives as the type of *Tetraponera*—*T. atrata*, F. Sm. (= *Eciton nigrum*, Jerd., = *Sima nigra*, Emery).

Smith's second species, *testacea*, is not congeneric with *atrata*, but belongs to the genus *Pseudomyrma*; he was, therefore, in error when he stated in 1855 that his genus *Tetraponera* was founded on *Pseudomyrma* ♀ ♀, and he doubtless misled Emery, who incorrectly sunk *Tetraponera* as a synonym of *Pseudomyrma* in 1900. Emery states that *Sima* was founded for more than one species, whereas Roger [*Berlin Ent. Zeitschr.*, 7, 178 (1863)] founded his genus on a single

¹ *Ann. N. York Acad. Sc.*, 21, 157-175 (1911).

² *Trans. Ent. Soc. Lond.* (2). 3, 168 (1855).

³ *Trans. Ent. Soc. Lond.*, 68 (1877).

⁴ *Ann. Mus. Nat. Genova*, 40, 673, (1900).

species, *compressa*! [*Sima compressa*, Roger, 1863 = *Pseudomyrma? allaborans*, Walker (1859)], which is therefore the type and cannot be changed. The synonymy is therefore as follows:—

TETRAPONERA, F. Smith.

TETRAPONERA, F. Smith (1852); = SIMA, Roger (1863) = *PSEUDOMYRMA (*nec* Lund), Emery (p.) (1900).

Type 1: **Eciton nigrum**, Jerd. (= *atrata*, F. Smith; Wheeler, 1911).

TETRAPONERA, F. Smith (1852); F. Smith (1877); Wheeler (1911).

Type 2: **Pseudomyrma? allaborans**, Walk. (= *compressa*, Roger; Roger, 1863).

SIMA, Roger (1863); Bingham (1903); Wheeler (1911) = *TETRAPONERA (*nec* F. Smith), Emery (1900).

Type 3: **Eciton rufonigrum**, Jerd. (*Sima rufonigra*, Emery, 1900).

*SIMA (*nec* Roger); Emery (1900).

(To be continued.)

The Coloration Problems. 1.

By W. PARKINSON CURTIS, F.E.S.

(Continued from page 220.)

Now as to the method of argument, "which I have no love for." I used it, as Mr. Wheeler says, quite openly. I called attention to the fact that as an argument it was a poor one. I gave the reason for using it, which reason I still think holds good, *viz.*, that so many facts do fit into the theories so neatly that the mere process of demolition without construction will not of itself oust these theories. Certainly I know of no more effective way of destroying an irrational theory than by putting a rational one in its place. Personally I feel quite convinced that ultimate success will not crown the efforts of the opponents of the theories until they have done this, in which again I do not think they will succeed.

The present mental attitude of the opponents reminds one of the great flourish of trumpets with which it was announced that De Vries' mutational theory, or the Mendelian theory, or both, had completely superseded the Darwinian theory, and now the former is under the gravest suspicion, whilst the latter has probably done more to strengthen the belief in the correctness of the Darwinian theory than any other recent discovery.

With regard to scientific scepticism, Col. Manders had in his later notes, so far as they came under my notice, almost wholly confined himself to recording facts which militated against theories, and had expressed such views that it was safer to treat him as an opponent. It had struck me that his "neutrality" was not an armed one, but a dis-

tinctly hostile one, since it showed a greater alacrity, I thought, to help the opponents than the supporters. One of his notes in particular, *viz.*, that in the *Entomologist* [1913], p. 292, confirmed my view.

I should certainly not condemn an attitude of real neutrality, but Col. Manders (*Ent. Record*, vol. xxv., *l.c.*) classes the Batesian and Müllerian theories as working hypotheses, a distinctly less reputable class than the class amongst which theories are wont to congregate. Nor do I consider that my claim for universality of a theory would necessitate the belief that the Rev. Geo. Wheeler was a religious sceptic. Before leaving that part of my paper, may I remind Mr. Wheeler that his hopes have not yet materialized into the as yet adumbrated comments on experiments with birds in confinement, and I feel sure his comments would be of the greatest interest.

Now as to Mr. Colthrup, who really seems irrepressible. I shall first place on record all the information I have been able to find time to record since my last paper, and I will then discuss the evidence and deal with Mr. Colthrup's arguments. Whatever may be the value of our respective arguments and opinions, I believe that our respective observations must have a value, and both of us, I have recently discovered, have been calling the camera to our aid as a means of recording facts, and Mr. Colthrup is no mean performer with his apparatus, and shows a very full appreciation of what exceedingly dissimilar visual results can be obtained from the same subject by different modes of treatment. I shall discuss this more fully later on in the light of recent knowledge as to screens, plate and developers.

The last observation I appear to have recorded was under date April 5th, 1913. After that date both my brother and I cast around in our minds for some consistent practice in observation which would enable us to watch birds more closely, and more continuously, and as my brother is primarily a "birdman" we decided that the photography of birds feeding young at the nest offered great attractions.

It promised the opportunity of close and continuous study at a time when insect life was abundant. This promise was fulfilled; in other respects, however, we found that the scheme was not so good as it promised to be. All our birds do quite a great deal of their feeding of young, even up to within a few hours of the time that the young quit the nest, by regurgitation. As might be expected this rendered it almost impossible to be certain what the bird had swallowed, and it was only on the rarest occasions that we could conjecture what the pabulum had been.

It was a source of genuine vexation to both of us that what we regarded as our two most hopeful birds, *viz.*, *Dryobates major* sub-sp. *anglicus*, the Great Spotted Woodpecker, and *Picus viridis* sub-sp. *fluvius*, the Green Woodpecker, fed by regurgitation so habitually.

Another bird, *Caprimulgus europaeus*, the Nightjar, fed solely at a time when we were unable to see. Had we been living in times of profound peace we should have turned a search-light on to see what we could, but we are in a prohibited area (a military area, a munitions area, and a naval base), so we should merely have been a nuisance and got into trouble.

Another cause of disappointment was that the quickness of the birds, coupled with the smallness of our peepholes (which must be kept small), rendered it very difficult often to get a good enough look

at the bird to see what it had got. We found it a material improvement in this respect to have a hiding-tent with a narrow front and a wide back, as the side peepholes then gave us an extended angle of vision in front and enabled us to see birds approaching as well as actually at the nest.

Rarely indeed did a negative, when put on the enlarging camera, enable one to say what the bird had really got. Birds besides brought a great many different kinds of food at once, and one got time to see certainly only a percentage. It was noticeable that we often caught birds with Lepidoptera in their bills when we were popping in and out of the tents, and the birds were very close and temporarily "froze."

In fact we found that the difficulties were often insurmountable, and if it be accepted that the very rigid proof the opponents of the theories seem to demand is essential to the satisfactory support of the theories, then I think it will require far more accurate and painstaking observation, and far more extensive observation, than any that has yet been attempted.

However, I remind the opponents that, Mark Twain's *obiter dictum* to the contrary notwithstanding, circumstantial evidence is often as good and sometimes even more difficult to rebut than direct evidence, and hundreds of people have rightly been suspended by their necks till they were dead on infinitely slenderer evidence than Mr. Colthrop and his co-thinkers demand.

Sometimes, too, I regret to say, that the insistent demands that bread and butter matters make upon my brother's and my own time, lead to the failure to record most interesting facts, since we often see interesting facts when moving about on business, and then the business crowds them out of our minds till they are recollected at a time when the sharpness of the mental impression has been degraded and we no longer feel it to be safe to make a note.

In the observations below set out I have recorded all observations over the period covered by the notes of birds with *food*: my reason for so doing is that it seems to me necessary that there should be no picking and choosing of evidence, but that it should be viewed as nearly as possible as a whole, for the purpose of determining the relative habitual preying on the lepidopterous imagines. Hence food which is not even *Insecta* is noted. A reference to the calendar will show that the dates are Saturdays (when we usually get a couple or three hours to devote to field work) and Sundays. A reference to the meteorological records will show that about 50% of these days were unsuitable for observations from one cause or another, and it must also be borne in mind that from October to March there is very little insect life available comparatively for our purpose. Hence the body of evidence below is more forcible than it seems at first sight, as a short calculation will show the available number of days on which we could observe.

(To be continued.)

Records of some New British Plant-galls. IV. More New Cecidomyid Galls.

By RICHARD S. BAGNALL, F.L.S., F.E.S., and J. W. H. HARRISON, M.Sc.

(Continued from page 203.)

The following records are chiefly of September captures, though some are the residue of earlier collecting, whilst three names are given of galls previously recorded without name. In one or two cases, such as in *Perrisia praticola*, we have discovered old galls without the larvæ, but hope to remedy such cases next year.

[*Trotteria galii*, Rübs. (= Houard, no. 5,290)].

This is the Cecidomyid no. 5,290 of Houard, which we recorded in our last notes (*Ent. Rec.*, 1916, p. 203) from Lancashire.

[*Antichira striata*, Rübs.].

This is the Cecidomyid sp. recorded by us from leaf-sheaths of bulrushes (*l.c.*, p. 208), which is known on the continent from the sheathing leaves of grasses, sedges, and the like if they are coarse and large.

DURHAM, leaf-sheaths of *Phragmites* near Swalwell, of *Carex pendula*, Gibside woods, R.S.B., and of *Typha latifolia* near Birtley, J.W.H.H.

Antichira caricis, Kieff.

In leaf-sheaths of *Carex goodenowi*, larvæ gregarious, reddish.
CUMBERLAND, Alston, September, R.S.B.

Rhopalomyia florum, Kieff.

Flowers of mugwort (*Artemisia vulgaris*).

DURHAM, Wear banks between Lambton and Cox Green, rare, R.S.B.,
Greatham and Port Clarence, J.W.H.H.

Oligotrophus ulmi, Kieff. (= Houard, no. 2,046).

Wych elm leaves, parenchymous.

NORTHUMBERLAND, near Allendale.

DURHAM, Winlaton Mill and Gibside.

CUMBERLAND, Alston, R.S.B.

YORKSHIRE, Great Ayton, J.W.H.H.

Oligotrophus tympanifex, Kieff. (= Houard, no. 1,061).

Hazel leaves, parenchymous.

DURHAM, Winlaton Mill.

NORTHUMBERLAND, near Staward.

LANCASHIRE, Grange, R.S.B.

Oligotrophus coryli, Kieff.

Hazel leaves, gall analogous to *Perrisia pustulans* on *Spiraea ulmaria* leaves.

CUMBERLAND, Alston, and DURHAM, Gibside, R.S.B.

YORKSHIRE, near Marton, J.W.H.H.

LANCASHIRE, Grange, R.S.B.

Oligotrophus hartigi, Liebel.

Lime leaves, parenchymous.

DURHAM, Gibside, local ; CUMBERLAND, near Alston, R.S.B.

Oligotrophus sp. (Houard, no. 1,154, probably *O. annulipes*).

Beech, resembling gall of *O. annulipes*, but entirely glabrous.

DURHAM, Gibside, Fencehouses.

CUMBERLAND, Alston.

NORTHUMBERLAND, Langley Woods, R.S.B.

Oligotrophus sp. (Houard, no. 1,157).

Beech leaves, gall of a very distinct type—see Houard.

NORTHUMBERLAND, Ninebanks, Rev. J. E. Hull. This is a very interesting discovery, as the gall has previously been recorded from Russia and Asia Minor only.

Mayetiola hordei, Kieff. (= Houard, no. 347).

On *Hordeum vulgare*—gall somewhat irregular, just under the lower sheathing leaves.

DURHAM, between Vigo and Birtley, J.W.H.H.

Mayetiola avenae, Marchal.

On stem of *Avena fatua*, gall shaped like a turnip, about 8mm. in diameter and some three inches above the ground.

YORKSHIRE, Nunthorpe, J.W.H.H.

Cystiphora, sp.

Leaves of *Hypochaeris radicata*.

CUMBERLAND, Alston, R.S.B.

Rhabdophaga superna, Kieff.

DURHAM, on a hybrid *Salix cinerea* × *viminalis*, larvæ dirty yellow, extremities orange ; Billingham, J.W.H.H.

Macrolabis stellariae, Liebel.

DURHAM, on *Stellaria graminea*, Birtley, J.W.H.H.

Dasyneura schmidtii, Rübs.

Twisted heads of *Plantago lanceolata*, point shortened and broadened.

DURHAM, Greatham, J.W.H.H.

LANCASHIRE, Grange, R.S.B.

Dasyneura tetensi, Rübs.

On crisped gooseberry leaves.

DURHAM, Gibside, R.S.B.

Dasyneura raphanistri, Kieff.

DURHAM, on rape, Fatfield, Fencehouses, and Penshaw, R.S.B.

Perrisia rostrupiana, Kieff.

Meadow-sweet. Leaf wrinkled along secondary nervures, larvæ white, on upper surface.

DURHAM, Birtley, J.W.H.H., Gibside, R.S.B.

NORTHUMBERLAND, Ninebanks, J.W.H.H.

CUMBERLAND, Alston and Nenthead, R.S.B.

YORKSHIRE, between Ormesby and Nunthorpe, J.W.H.H.

Perrisia abietiperda, Henschel.

Picea excelsa, small barrel-shaped galls on young branches.

NORTHUMBERLAND, near Hexham.

DURHAM, Gibside, Eastgate, R.S.B.

Perrisia laricis, F. Loew.

Larch (*Larix europaea*), bud deformed into a scaled cone-like gall; larva rose-coloured.

DURHAM, Lanchester, J.W.H.H., and Winlaton Mill, R.S.B.

YORKSHIRE, Eston, J.W.H.H.

Perrisia ballotae, Rübs.

Ballota nigra, flower remaining closed.

NORTHUMBERLAND, Denton Burn, R.S.B. and H. S. Wallace.

Perrisia braueri, Handl.

A bud-like root-gall on *Hypericum pulchrum*.

NORTHUMBERLAND, near Staward, and DURHAM, near Lanchester, R.S.B.

Perrisia, sp. (Houard, no. 5,289).

Galium verum, small terminal rosette with leaves purple.

DURHAM, Penshaw district, affecting one clump, R.S.B.

Perrisia lupulinae, Kieff.

As in *Asphondylia lupulinae*, but pilose, and larvæ gregarious.

DURHAM, near Burnmoor, R.S.B.

Perrisia gentianae, Kieff. (= Houard, no. 4,696).

Gentiana campestris, flower closed, somewhat swollen. Containing several creamy-yellow larvæ.

DURHAM, not uncommon on Penshaw Hill, R.S.B.

Although not in Swanton this species is recorded by Houard from the British Isles and from nowhere else.

Perrisia holosteeae, Kieff.

Stellaria graminea, in fruit capsule, which remains somewhat small and slightly aborted; larvæ white. This and the next species are recorded abroad from *S. holostea*.

NORTHUMBERLAND, Carsbog, between Langley Woods and Whitfield, R.S.B.

Perrisia silvicola, Kieff. (= Houard, no. 2,311).

Stellaria graminea, two upper leaves together, feebly hypertrophied and concave basally, containing larvæ.

NORTHUMBERLAND, Carsbog, R.S.B.

Perrisia praticola, Kieff.

Ragged-robin (*Lychnis flos-cuculi*), flowers remaining closed, small; larvæ reddish, gregarious.

DURHAM, Gibside, R.S.B., Billingham, J.W.H.H. In both cases too late to get the larvæ.

Perrisia, sp. (= Houard, no. 3,509).*Medicago lupulina*, leaf folded as in *Perrisia trifolii* on clovers.

DURHAM, quarries near Hylton (1914) and on Penshaw Hill, R.S.B.

Perrisia populeti, Rübs.

Aspen, margin of leaf rolled longitudinally; larvæ white.

DURHAM, near Winlaton Mill, R.S.B.

Perrisia traili, Kieff. (= Houard, no. 2,420).*Ranunculus acris*, L., flower remaining closed, petals thickened, discolored; larvæ gregarious, flesh-colored.

DURHAM, in a field near Penshaw, R.S.B.

Perrisia ulicis, Kieff. (= Houard, no. 3,396).

Whin, bud-like terminal gall.

DURHAM, on a bush in Gibside woods, and signs of the species near Chester-le-street, R.S.B.

YORKSHIRE, old galls, Eston, J.W.H.H.

Perrisia virgaureae, Liebel.

Golden-rod, terminal gall formed of four or more discoloured leaves, or leaf-rolling; larvæ white to yellow, black point at each extremity.

NORTHUMBERLAND, several near Staward, R.S.B.

Perrisia sanguisorbae, Rübs.*Sanguisorba officinalis*, leaves folded longitudinally, very slightly hypertrophied or swollen, the outside yellowish-green and the inside often blotched with bright reddish-purple; larvæ bright red, yellowish at extremities.

DURHAM, near Penshaw, R.S.B.

Perrisia ericina, F. Loew.On *Erica cinerea*.

DURHAM, Waldrige, R.S.B.

YORKSHIRE, Great Ayton Moor, J.W.H.H.

Myricomyia mediterranea, F. Loew.On *Erica tetralix*.

NORTHUMBERLAND, Blanchland, R.S.B.

DURHAM, Killhope, R.S.B., Waldrige and Birtley, J.W.H.H.

CUMBERLAND, Killhope, R.S.B.

YORKSHIRE, Eston and Ayton, J.W.H.H.

Asphondylia lupulinae, Kieff. (= Houard, no. 3,506).*Medicago lupulina*.

DURHAM, Birtley, J.W.H.H.

CUMBERLAND, near Alston, R.S.B.

Asphondylia proxima, Kieff. (= Houard, no. 4,914).

Thyme, corolla of flower very slightly deformed, swollen, remaining closed, calix two or three times larger than normally, broader than long; larva solitary, red.

CUMBERLAND, Alston; probably not uncommon, but requires special search.

LANCASHIRE, Grange, R.S.B.

Hormomyia kneucheri, Kieff. (= Houard, no. 368).

Carex stellulata, small pointed, unilocular gall, only 2mm. long, at the base of the stem.

DURHAM, near Chester-le-Street, J.W.H.H.

Pseudhormomyia subterranea, Kieff. et Trotter.

Carex divulsa, at roots.

DURHAM, near Lanchester. J.W.H.H.

LANCASHIRE, Grange, R.S.B.

Dichelomyia campanulae, Rübs.

DURHAM, leaves of *Campanula medium* and *C. persicaefolia* in a garden at Birtley, J.W.H.H.

CUMBERLAND, on *C. persicaefolia*, Alston, R.S.B.

[*Contarinia tremulae*, Kieff.]

This is Swanton's no. 172, and Houard's 502A.

Contarinia coryli, Kieff. (= Houard, no. 1,062).

Hazel, leaf folded, analogous to *Cont. quercina*, etc.

DURHAM, Winlaton Mill, R.S.B.

LANCASHIRE, Grange, R.S.B.

Contarinia gei, Kieff. (= Houard, no. 3,091).

Water avens, leaf crisped with hypertrophied nervures; larvæ situated on the upper surface.

CUMBERLAND, not far from Nenthead, R.S.B.

Contarinia rubicola, Rübs.

DURHAM, *Rubus caesius*, causing flowers to remain closed or to open slightly with deformed petals; larvæ dirt white; Birtley, J.W.H.H.

LANCASHIRE, Grange, R.S.B.

Contarinia sorbi, Kieff.

Mountain Ash, folded leaves without hypertrophy other than torsion of the midrib.

YORKSHIRE, Great Ayton Moor, J.W.H.H.

CUMBERLAND, near Alston.

DURHAM, Westgate, R.S.B.

CHESHIRE, Bidstone, R.S.B.

Clinodiplosis trifolii, Kieff.

Twisted flowers of *Trifolium pratense*; larvæ yellow, minute.

DURHAM, Birtley, J.W.H.H.

Arnoldia quercicola, Kieff.

Oak, leaf-bud remaining closed; larvæ red.

NORTHUMBERLAND, near Whitfield.

DURHAM, near Fatfield, R.S.B.

Parallelodiplosis galliperda, Loew.

On galls of *Neuroterus lenticularis* (oak spangle gall), causing them to be slightly swollen and somewhat pale and irregular; larva wriggles, whitish.

YORKSHIRE, Nunthorpe, J.W.H.H.

* * * * *

Cecidomyid, sp.

Atriplex patula, affecting fruit, seed-cover more or less studded with points, red; larvæ gregarious, light yellow, strongly leaping.

DURHAM, Penshaw, Hylton, R.S.B., Birtley, J.W.H.H.

YORKSHIRE, Redcar, R.S.B.

Cecidomyid, sp.

Euphrasia officinalis, affecting terminal flowers much as the *Eriophyid*, but the flower ultimately dying; larvæ solitary (? *Janetiella*, sp.). Several records from the North of England; local.

Cecidomyid, sp.

On *Pimpinella saxifraga*, leaflet folded, weakly hypertrophied as in the gall of *Perrisia sanguisorbæ*.

DURHAM, Penshaw Hill, R.S.B.

Cecidomyid, sp.

Yellow larva in seeds of *Geranium dissectum*.

DURHAM, Fatfield, R.S.B.

Cecidomyid, sp.

Yellow larva in seeds of *Geranium molle*.

YORKSHIRE, Redcar, R.S.B.

Cecidomyid, sp.

Creamish-yellow larvæ about the seeds of *Erodium cicuturum* and in the flower.

YORKSHIRE, Redcar, R.S.B.

(To be continued.)

Field Notes from Salonika. II.

By CAPTAIN M. BURR, D.Sc., F.E.S.

(Continued from page 193.)

July was not a very exciting month entomologically, partly for lack of time, partly owing to the uncertain weather, which was a marked change after the heat of June.

The tame *Dinarchus dasypus*, referred to ante, p. 145, had become a great favourite, after a whole month in captivity; he was a very friendly fellow, and perfectly tame. His numerous friends in the mess tried hard to find a wife for him, but without success. A good number of males were brought in, but after a time it was found inadvisable to keep them together; when four were put into the cage, one opened his huge jaws and attacked our old friend savagely, so he was promptly condemned by court martial to death by drowning in alcohol. Altogether about a dozen males were found; they were fairly often brought

in by friends, who would hardly believe that they were insects, much less grasshoppers. They seemed to live in little colonies, and to stay in one place, even on one shrub, unless disturbed, when they scuttle off pretty quickly. Our old friend was taking a constitutional one afternoon, under observation; he was quietly nibbling a bit of green stuff that was not yet quite dried up by the southern sun, when he caught sight of the cold eye of a *Saga* fixedly staring at him; he turned at once and scuttled off at a fine pace, in spite of his embonpoint, and nothing would induce him to come back to that shrub.

One evening there was a gale; the Vardar was blowing, the Tramontana of this district, the wind that brings those terrible blizzards in winter, like the one that caused our troops so much suffering in Serbia at the end of November, which seemed more penetrating than the sleigh drive at Torneå the previous January, with the thermometer touching 30° Reaumur, although the temperature was not nearly so low. The creature's cage, which was left in the open because he was too valuable at night to be a good tent-fellow, was blown over and carried a considerable distance, while the lid was picked up some several hundred yards away; of our pet there was no sign, and he was reluctantly entered as "missing." But to our astonished delight next evening we heard a familiar voice, and found a bedraggled, dissipated, and very dusty *Dinarchus*, sitting outside the mosquito-door of the mess-tent, plaintively chirping for admittance. This mark of faithfulness and affection endeared him more than ever to the mess, and there was genuine regret when he was found dead in his cage one morning; he had lived a little over a month in captivity, but his declining days must have been painful, for his end was no doubt hastened by a swarm of ants, which chewed off his tarsi and his antennæ. After this misfortune he became very depressed and lethargic, and his end was no doubt a happy release.

The tall thistle on which the first found *Dinarchus* was discovered is an early species, and was shrivelled and dried up by the middle of June. We found a colony of *Dinarchus* on a low shrub on Lembet plain, but all were males. Their voice is penetrating and carries to a considerable distance, and these big, black, sluggish creatures, that hardly look like insects, are visible a long way in the scanty herbage, so it would appear that they have few enemies. Yet they would afford a luscious morsel to birds that like a rich diet, of which there are plenty in Macedonia. Perhaps the apparently inoffensive yellow fluid referred to in the previous note is sufficient protection. They never ejected it in captivity when gently handled. When opening their portly abdomens for stuffing, I found that some specimens were dry inside, but others had an ample supply of fluid, apparently free inside the exoskeleton; and there was a bladder of a thick greenish-brown juice, which was perhaps the mother-liquor.

The other most interesting creature kept alive was a big female *Saga*, referred to in the previous note. She was a handsome creature, marbled with white, brown, and green, but one can hardly get attached to these fierce carnivores, as one can to a gentle but corpulent *Dinarchus*. This specimen had the ovipositor malformed, probably due to an accident in early youth. Instead of the typical powerful scimitar-like weapon, the upper valves were reduced to mere stumpy cones, and the lower valves were malformed, weak, and short. This deformity

made her accouchement the more interesting. The event came off on the evening of July 17th, twenty-three days after her fertilisation; she was very big, and towards the evening became very restless, hunting round for a suitable spot to bore a hole; but the metal floor of her cage was unyielding, so I put in a small box full of loose earth; but her poor crippled ovipositor opened like a pair of scissors, and she could make no impression, for next morning I found eight long, flat, narrow, smooth, olive-brown eggs, about a quarter of an inch long, lying on the earth. On the 25th, after the same performance, she laid four more; at the moment of writing (August 8th) she is still big, and has just laid three more. Perhaps this delay in oviposition is due to the fact that she is living under highly artificial conditions, or it may be due to the inconvenience of the crippled ovipositor; but it may be a natural provision to prevent the eggs all being laid in one place, as a colonial or social existence is hardly suitable for such fierce and active carnivores.

She sits all day on a sprig of succory and does not move; matching wonderfully with the light and shade of the green twigs; her tarsi are dilated at the tips, and in spite of her weight she can cling to a pane of glass almost like a fly; she pays a lot of attention to these pads, and frequently cleans them with her mouth. When let loose, she stands high on her legs, and moves slowly and deliberately, swaying her body to and fro, as a *Mantis* will do; perhaps this is an imitation of the swaying movement of the twigs on which the *Sagas* live, for like the *Mantis*, *Saga* is only a living trap or ambush; but when startled she can move rapidly enough, with a series of ungainly springs. She is a voracious feeder, rapidly devouring two fat females of *Caloptenus italicus*, but she is nervous, for directly a couple of these chubby but vigorous grasshoppers are put into her cage, and start banging their horny heads against the roof, she dashes clumsily about in a great state of alarm. I have not seen her catch her prey, but when she has caught it she grips it between her powerful and spiny forelegs, much as a *Mantis* does, and starts chewing methodically, beginning with the head, paying no attention to the grasshopper's convulsive kicking, which only stops when the whole head is eaten away. *Saga* shears off the elytra and wings together, and the posterior femora, but a freshly emerged soft specimen seems to be a great dainty, for she chews them right down to the very end, like a piece of fresh green asparagus.

Several specimens of both sexes of *Saga* have been taken round Lembet, but all plain green; it is not a big species, being in fact a little smaller than the usual south European *S. serrata*, and cannot compare in stature with the formidable monsters of Asia Minor.

On the evening of July 26th, Captain Powell and I strolled over to the Lembet brook; a stiff breeze was blowing, as usual, but there was shelter in this secluded dell. Except a few shrubs and a few tall trees something like a maple, everything was burnt dry. We found *Caloptenus italicus* as obtrusive and numerous as everywhere from the Caspian to Madeira, and its diminutive relative, *Platyplyma giornae*, was common. The *Edipodidae* were represented by *Edaleus nigrofasciatus*, De Geer, which is common round here, and no less than three species of *Edipoda*, that is, *O. caerulescens*, L., *O. miniata*, Pall., and *O. salina*, Eversm. (= *gratiosa*, Serv.). This is the only place where I have found all these three species together. *Decticus albifrons*, Fabr., is

obtrusive; a couple of species of the *Platypleis grisea*, Fabr., group were common, and there were two other Decticeids which I cannot name, one the "*Gampsocleis*" referred to previously, and another recalling *Thyreonotus*, with a characteristic rich brown and black frons, straight ovipositor, and apparently persistent black spot on the upper surface of the posterior femora near the base; there are also two small *Platypleis* of the *P. nigrosignata* group. I was interested to find *Ochrilidia* (? *pruinosa* or *tryxalicera*). *Acrida nasuta*, L., was still in the nymph stage, the first adult was brought me on July 28th. *Epacromia strepens*, Fabr., is common. We were interested to observe a big black and yellow spider (? *Epeira*), which had spun her web across a shrub down in the dell and caught a grasshopper; we put a male nymph of *Acrida nasuta* in her web; in a flash she had pounced on it, and loosely wound it in an elastic shroud of web, where it could struggle to its heart's content.

In the previous note I have referred to the early disappearance of *Glyphanus*; after writing, I found a single female early in July, and we came across one belated female on the Baldza road as late as July 30th. The same day, sweeping with an improvised net among some herbage left green by a brook in a nullah where there is still some moisture, we took *Tridactylus variegatus*, Latr., a small cricket which I think is *Mogoplistus brunneus*, or its relative, *Arachmocephalus vestitus*. Mantids now begin to appear, and both green and yellow nymphs, and one adult female, of *Mantis religiosa* are to be found; one minute nymph of a female *Ameles* was taken sweeping; if it is the Greek species *A. heldreichi*, Br., it is to be hoped that we secure a series. A small cricket, probably *Gryllus burdigalensis*, is a frequent visitor to tents; its erratic flight, nimble runs and hops, make it difficult to catch; to this species I attribute the fellow that finds its way between the walls of my double tent, and tries to sing me to sleep at night.

Outside entomology there is plenty of interest; the Tree Frog *Hyla arborea*, L., is common; the handsome marbled toad, *Bufo viridis*, is common, and supplied food for the tame stork in the camp; the tortoise, *Testudo graeca*, L., is a general favourite; lizards and snakes are pretty common; wild geese often fly overhead; twice wolves have been reported; bee-eaters rejoice the eye with their brilliant colouring and dashing flight; one young one has been tamed, and sits on one's finger fearlessly, greedily taking grasshoppers from the hand.

(To be continued.)

NOTES ON COLLECTING, Etc.

AFRICAN RACE OF *PYRAMEIS CARDUI*.—In reference to Dr. Verity's notes on *Pyrameis cardui*, L., in the *Ent. Rec.* for June, 1916, I think perhaps that my experience of this species in South Central Africa is relevant.

I found *P. cardui* in some abundance on the plains of the Lukanga Valley last August; of a considerable series netted, the average size was distinctly smaller, and the colour more bright, than those usually found in England.

This statement is not made from memory, but from actual comparison, while I was home on leave some months back. I regret that I cannot give measurements, all my specimens being at present in

Europe. I also found the larvæ of *P. cardui* in some numbers at the same time. They were feeding on a small yellow-flowered plant—one of the *Compositæ*, a near relation, I fancy, of the European genus *Hieracium*. * The larvæ were, of course, contained among spun-up leaves of their food-plant. (These bred examples were, as was to be anticipated, even smaller than those captured on the wing.)—HEREWARD DOLLMAN, (F.E.S.), Solwezi, Northern Rhodesia. August 20th, 1916.

NEW GLAMORGANSHIRE COLEOPTERA.—With the hope of making additions to the Glamorganshire list of beetles recently published in the *Trans. Cardiff Nat. Soc.*, I paid a short visit to the county last August, with good results. An asterisk is prefixed to the species which are new county records.

At Pontneathvaughan, on the northern border of the county, I had the pleasure of Mr. H. M. Hallett's company. Several raids on *Formica rufa* nests produced **Leptacinus formicetorum*, Märk, in abundance; **Notothecta flavipes*, Gr., scarce; **N. anceps*, Er., one; **Thiasophila angulata*, Er., common; **Oxypoda formiceticola*, Märk, not common; **Ptilium myrmecophilum*, All., in one nest only, common; **Monotoma coniecollis*, Aub., and **M. formicetorum*, Th., both common; *Trichius fasciatus*, L., and *Strangalia quadrifasciata*, L., occurred on *Spiræa ulmaria*; **Hydrocyphon deflexicollis*, Müll., was not uncommon in river shingle; **Cis villosulus*, Marsh, rare in *Polyporus* on stumps. Wet moss in and about the River Perddyn produced the following, most of them fairly commonly:—**Homalota currax*, Kr., **Ischnopoda caerulea*, Sahl., **Myllaena minuta*, Gr., **Mycetoporus lepidus*, Gr. (one only), **Quedius umbrinus*, Er., **Q. auricomus*, Kies., **Stenus guynemeri*, Duv., **Ancyrophorus aureus*, Fauv., **Lesteva punctata*, Er., and **Geodromicus nigrita*, Müll. A few **Patrobus assimilis*, Chaud., occurred by the river, as well as one specimen each of **Hydraena atricapilla*, and **Liodes punctulata*, Gyll.—J. R. LE B. TOMLIN, Reading. October, 1916.

A NOTE ON EGYPT.—It occurred to me that the entomological items in the enclosed letter I have just received from my friend Sergt. Harry Inkson, in Egypt, might make an interesting note.

"Anthony and Cleopatra are supposed to have made this place one of their favourites, and one can well imagine that they would do so. It is on the coast, and the reputed spot is indeed a charming little place. A small bay of just sufficient depth for swimming, and the water the bluest of the blue, bordered by sand the finest I have seen, and then high ground, not exactly a cliff, covered with grape-vines and fig-trees. Really a most charmingly pretty spot, and I often go down there for a swim and a sprawl on the sands. . . . There is the old town of Matruh, which is now a ruin, and some little distance from our camp. There are innumerable Death's-head Moths (*Manduca atropos*) here. It is quite a common occurrence to get half a dozen attracted into the tent by the light of an evening. Some of the fellows in the regiment have caught them and set them, none too well, I am afraid, and are quite proud of their handiwork. The flies are a great nuisance here in the day time, luckily they leave us alone at night, or I don't know what would happen if we had twenty-four hours of their perpetual teasing. As we wear shorts they crawl up our legs and tickle us in a most unpleasant manner."—JOSEPH ANDERSON, Alre Villa, Chichester. October 16th.

PSELNOPHORUS BRACHYDACTYLUS IN GREAT BRITAIN.—In the *Entomologische Zeitung*, vol. xlvii., 1886, there are some notes on Lepidoptera by G. Strange. On page 286 he mentions *Pselnophorus brachydactylus*. He says one finds the the young larvæ commonly in shady woods on the underside of the leaves of *Lampsana communis*, in August, very seldom on *Lactuca muralis*. They are however easily missed, because snails eat the leaves much in the same manner. The larvæ cease feeding at the end of August and change their colour from green to whitish-yellow. In the spring, it is easy to rear them in a pot in which *Lampsana* has been sown, or on lettuce (salad), but they are often attacked by parasites. "*Lampsana*" is evidently a misprint for *Lapsana*. This plant, *Lapsana communis*, is very common in England, growing on hedge banks and weedy corners, and might, therefore, very well serve as the food plant of this plume in Britain.—**ALFRED SICH.**

CURRENT NOTES AND SHORT NOTICES.

A meeting of the Entomological Club was held on Thursday, October 19th, at "Durandesthorpe," 19, Hazlewell Road, Putney, Mr. H. Donisthorpe being the host. The following Entomologists were present:—R. Adkin, A. Sich, J. H. Durrant, H. Willoughby Ellis, Dr. C. J. Gahan, E. E. Green, A. H. Jones, The Hon. N. C. Rothschild, The Rev. F. D. Morice, The Rev. G. Wheeler, Dr. E. A. Cockayne, Dr. C. B. Longstaff. The first portion of the evening was spent in the Museum where Mr. Donisthorpe's Entomological experiments are carried out, and later the guests sat down to a very excellent repast, the table being decorated in red and white with a large Red Cross for "Our Day." The Menus were quite original, being hand-painted with war pictures of Aircraft and Naval and Military scenes. A most enjoyable evening was spent.

WICKEN FEN.—The Council of the National Trust appeal to naturalists interested in the preservation and upkeep of Wicken Fen to defray the expenses of the watcher who guards the property against abuse, and performs the duties of forester generally. As entomologists, we are, perhaps, more concerned for the integrity of the fenland than any other workers in the field of Science. I write, therefore, to invite subscriptions and donations for the purpose indicated. The amount required is not large, and I shall be happy to receive contributions. Cheques and Postal Orders should be crossed "London and South Western Bank, Bloomsbury Branch. Wicken Fund," and made payable to H. ROWLAND-BROWN, Hon. Treasurer, Oxhey Grove, Harrow Weald, Middlesex.

Our colleague Mr. R. S. Bagnall continues to prosecute with much zeal his work in the Order Thyanoptera. We have recently received four separata from his pen containing descriptions of numerous new or little known species. (1) From the *Geological Magazine*, "Fossil Insect in Amber. *Stenurothrips succineus* an interesting Tertiary Thysanopteron," with plate. A new genus and species. (2) From the *Sarawak Museum Journal*, "A Preliminary Account of the Thysanoptera of Borneo," with figures. (3) From the *Bulletin of Entomological Research*, "Notes on a Thrips injurious to vines in Cyprus." A new species; and (4) From the *Linnean Society's Journal*, "On a Collection

of Thysanoptera from the West Indies, with Descriptions of New Genera and Species," with two plates.

The date of the Annual Exhibition of Varieties of the South London Entomological and Natural History Society has been altered from November 23rd to December 14th. No doubt the evening will again be a most successful one and a hearty welcome will be given to all friends and visitors. The chair will be taken at seven o'clock.

We understand that Mr. H. C. Dollman is in the Medical Department at Solwezi, Northern Rhodesia.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

June 7th, 1916.—ELECTION.—Miss Alice Balfour of Whittinghame, Prestonkirk, Scotland, and 4, Carlton Gardens, S.W., was elected a Fellow of the Society.

DEATH OF A FELLOW.—The death of Mr. F. Enock was announced.

WICKEN FEN.—The President read a letter from Mr. H. Rowland-Brown, inviting a continuance of subscriptions to the upkeep of Wicken Fen.

EXHIBITIONS.—SPECIMENS COLLECTED DURING A VOYAGE TO AUSTRALIA, WITH VIEWS OF SCENERY.—Dr. F. A. Dixey exhibited specimens of insects collected by him during the visit of the British Association to Australia in 1914.

A BRED FAMILY OF *PAPILIO DARDANUS*, BROWN, AND RARE SOUTH AMERICAN BUTTERFLIES.—Mr. G. Talbot exhibited on behalf of Mr. J. J. Joicey:—

1. A family of *Papilio dardanus*, Brown.—This series was bred in 1914 by Mr. G. F. Leigh of Durban, Natal, from the ova laid by a single ♀.

2. Rare butterflies from French Guiana:—*Papilio coelus*, Boisd. ♂ ♀, the ♀ mimicked by *P. ariarathes*, Esp. ♀. *Agrias narcissus*, Styr., perhaps the rarest of the genus. *Morpho hecuba*, L., this is the true *hecuba*, and differs from the form found on the Amazons. *Morpho marcus*, Schall. (= *eugenia*, Peyr.), one of the rarest of Morphos, possibly a wet-season form of *adonis*, Cram. *Morpho adonis*, Cram.

A LETTER WRITTEN BY THE LATE COLONEL N. MANDERS ON THE DISCUSSION FOLLOWING HIS PAPER ON MARCH 3rd, 1915.—Prof. Poulton read a letter written by Col. Manders just before he started for the Dardanelles, where he gave his life for his country.

POLISTES GALLICUS, L., TAKEN IN BRITAIN.—The Rev. F. D. Morice exhibited a worker of the social wasp *Polistes gallicus*, L., taken by Mr. J. W. H. Harrison, August 1915, at Wolsingham, in the hilly west of Co. Durham, at about 1200 ft.

EGG-POCKETS MADE BY SAWFLIES.—Dr. Chapman showed some dried leaves of birch and hawthorn, with the egg-pockets of *Cimbex sylvarum* and *Trichiosoma tibiale* respectively, from which the larvæ had hatched.

OBSERVATION NESTS OF ANTS ON BATTLESHIPS.—Mr. Donisthorpe announced that on some of our battleships the men were much interested in observation nests of ants; and it was found that the ants were entirely unaffected by the firing of the great guns.

PAPERS.—"On new and little-known *Lagriidae* and *Pedilidae*," by G. C. Champion, F.Z.S. "On certain forms of the genus *Acraea*. A reply to M. Ch. Oberthür," by H. Eltringham, D.Sc., M.A., F.Z.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

August 10th.—NEW MEMBER.—Mr. H. M. Stewart, M.A., M.D., of Dulwich, was elected a member.

ABERRATIONS OF *H. LEUCOPHAEARIA*, ETC.—Mr. Leeds exhibited a series of *Iliberia leucophaearia* from Herts, with aberrations, including *ab. merularia*, together with a female *Polyommatus icarus* with paler to whitish areas.

OCCURRENCE OF *VESPA NORVEGICA* IN SURREY.—Dr. Chapman, a series of *Vespa norvegica*, which has this year occurred in some numbers near Reigate; and also bred living specimens of *Selenia bilunaria* showing both spring and summer forms from the same brood.

DETAILS OF LIFE-HISTORY OF *CICINDELA CAMPESTRIS*.—Mr. Main, pupa of the tiger-beetle, *Cicindela campestris*, produced in one of his small observation cages.

DETAILS OF LIFE-HISTORIES OF SEVERAL SPECIES OF MICRO-LEPIDOPTERA, ETC.—Mr. Turner, the life-history of *Coleophora nigricella* on hawthorn; the larval "winter cots" of a species of *Limenitis* from N. America; cocoons of *Nepticula euphorbiella* from mined leaves of *Euphorbia dendroides*; leaves of the cork tree, *Quercus suber*, with mines of the larva of *Nepticula suberis*; cocoons of *Nepticula catharticella* from mined leaves of *Rhamnus alaternus*; leaves of *Quercus suber* with mines of *Nepticula suberivora*; and cocoons and webs of the larvæ of *Zelleria phillyrella* among twigs of *Phillyrea angustifoliella*. These Micro-lepidoptera are some of the actual specimens referred to and described in Stainton's "Tineina of Southern Europe," pp. 224-229.

August 24th.—DETAILS OF LIFE-HISTORIES.—Mr. Main, (1) larva, pupa and imago of the water-beetle, *Pelobius tardus*; (2) the curious result of an attack of fungus on a Syrphid fly; (3) the ova of the Neuropteran *Hemerobius concinnus*.

BRED SPECIES OF *CLEORA* AND AN ASYMMETRICAL *XANTHORHÖ*.—Mr. Curwen, bred series of *Cleora lichenaria* and *Cleora jubata (glabraria)* from the New Forest. The larvæ of the latter species fed on a lichen, *Cladonia*. He also showed an asymmetrical example of *Xanthorhœ fluctuata*.

DETAILS OF LIFE-HISTORIES OF SPECIES OF MICRO-LEPIDOPTERA.—Mr. Turner, details of the life-histories of some micro-lepidoptera:—(1) Mines of *Lithocolletis lantanella* in lauristinus; (2) Pyramidal cones in oak leaves of larvæ of *Gracilaria alchimiella (swederella)*; (3) Galleries of larvæ of *Gelechia pinguinella (turpella)* on poplar leaves; (4) Mines of *Lithocolletis leucographella* in leaves of *Crataegus pyracantha*; (5) The beautiful network cocoons of *Epiblemia strictellus*; and (6) Larval cases of a Coleophorid said to be *Coleophora salinella* from the seeds of *Chenopodium maritimum*. He also exhibited coloured figures of a dozen striking aberrations of *Dryas paphia*.

ABERRATIONS OF *A. CORIDON*.—Mr. H. Moore, *Agriades coridon* *ab. semisyngropha* and *ab. roystonensis*, with an asymmetrical male from Royston.

ABERRATIONS OF *A. CAJA*.—Mr. Frohawk, a very rare form of *Arctia caja*, with the forewings uniformly chocolate, hindwings almost wholly black, with several others less striking, bred from larvæ taken in the Scilly Isles.

ABERRATIONS OF *S. PAVONIA*.—Mr. Wolley Dod, a *Saturnia pavonia* female in which the antennæ were considerably pectinated.

TERATOLOGICAL EXAMPLE OF *L. NOCTILUCA*.—Mr. Bunnett, the rare plant *Trifolium resupinatum* from Hayes Common, and a glow-worm, *Lampyris noctiluca* with the tibia of the hind leg on the right side bifurcate.

A SUGGESTED SECOND BROOD OF *A. POPULI*.—Several specimens of *Amorpha populi* had been taken by members, and it was suggested that they belonged to a second brood.

REVIEWS AND NOTICES OF BOOKS.

RHYNCHOPHORA OR WEEVILS OF NORTH-EASTERN AMERICA.—By W. S. Blatchley and C. W. Leng. Published by The Nature Publishing Co., 1558 Park Avenue, Indianapolis, Ind.—September, 1916, 682 pp. with numerous illustrations.

This work was begun by our esteemed correspondent, Prof. W. S. Blatchley, as a continuation or supplement to his "Coleoptera or Beetles of Indiana," published in 1910.

After about one-third of the M.S. had been completed, the junior author, Chas. W. Leng, wrote that he had a similar work in progress on the Atlantic Coast species of Rhynchophora, and proposed that the two works be combined and the geographical scope enlarged so as to include the United States and Canada east of the Mississippi River. Hence the arrangement of a joint authorship was agreed upon, and the works were merged, enlarged, and mostly re-written.

The only other general work on the weevils of the region covered by this book is that entitled "The Rhynchophora of America North of Mexico," issued in 1876 by Le Conte and Horn. This work is now out of print and difficult to obtain.

The primary object of the authors has been to furnish to students in Entomology a simple manual which would enable them in the most direct way possible to arrange, classify and determine the scientific names of the weevils in their collections. Keys to families, sub-families, tribes, genera and species have been made an important part of the work. These keys are based on the more salient or easily recognised characters separating the divisions to which they pertain. Following the description of each species are notes on its distribution, food habits, etc. The classification used is mainly that of Le Conte and Horn modified where necessary by the recent studies of Casey, Hopkins, Pierce, and certain European authors. No effort has been spared to secure accuracy in identification, the senior author having visited Cambridge, New York, Philadelphia and Washington for the purpose of comparing doubtful specimens with the types and with those of the larger public and private collections.

Some idea of the scope of this volume will be gathered from the fact that 1084 species are described and in addition there are seven pages of closely printed matter dealing with the bibliography, and also an index of the plants mentioned, and an index to Families, Sub-families, Tribes, and Genera.

We have pleasure in offering our congratulations to Prof. W. S. Blatchley at the successful consummation of this important work and express the hope that he will not rest from his labours until he has added yet more to the sum total of scientific knowledge.—H.E.P.

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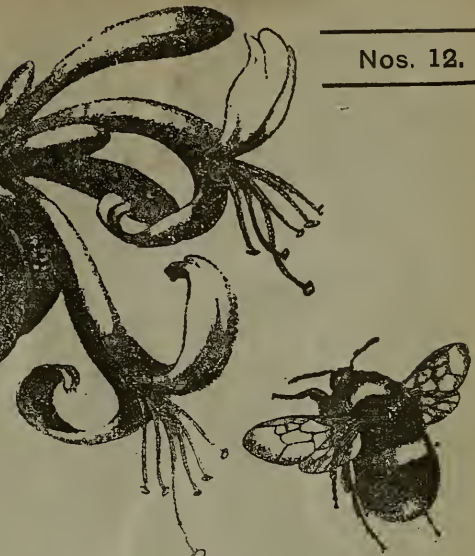
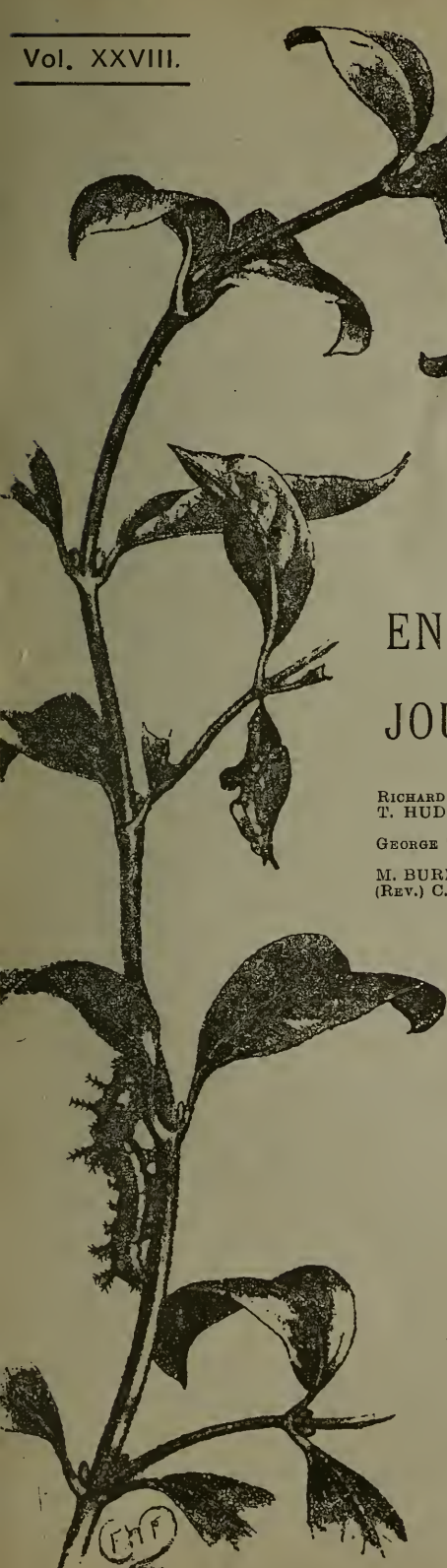
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VOL. VI.

THE TITLES of some of the articles are as follows:—Notes on Butterfly Pupæ, with some remarks on the Phylogenesis of the Rhopalocera."—Dr. T. A. Chapman, F.E.S., "Phytophagic Species."—Prof. A. Radcliffe Grote, M.A. "Varieties and aberrations of Noctua from Doncaster."—H. H. Corbett, M.R.C.S. "The frenulum of the British species of *Smerinthus*."—G. C. Griffiths, F.Z.S., F.E.S. "*Eudryas stæ-johannis*."—A. Radcliffe Grote, M.A. "Parthenogenesis or Agamogenesis."—J. W. Tutt, F.E.S. "Larvæ."—Rev. G. M. A. Hewitt, M.A. "Retrospect of a Lepidopterist for 1894."—J. W. Tutt, F.E.S. "Generic Names in the Noctuidæ."—Prof. A. R. Grote, M.A. "Pupa hunting in October."—J. W. Tutt, F.E.S. "Polygamy and Polyandry in Moths." "The nature of certain insect colours."—W. S. Riding, M.D., R. Freer, M.B., J. W. Tutt, F.E.S., Rev. C. R. N. Burrows, J. Anderson, Jun. "The Lepidoptera of Swansea."—Major R. B. Robertson. "Caradrina ambigua in the Isle of Wight."—A. J. Hodges. "The insects of Bourg St. Maurice."—J. W. Tutt, F.E.S. "Orrhodia erythrocephala ab. glabra from Devonshire and comparison with *O. vaccinii*."—Dr. W. S. Riding, F.E.S. "Notes on Caradrina ambigua and *C. superstes*."—J. W. Tutt, F.E.S. "Entomology and Entomologists, being the Annual Address to the City of London Entom. Society." Notes on *Aphomia sociella*" (with plate).—W. P. Blackburne Mass, F.E.S. "Apterous females and Winter Emergence."—E. F. Studd, M.A., B.C.L., F.E.S., L. B. Prout, F.E.S. "Collecting Noctuidæ by Lake Erie."—A. Radcliffe Grote, M.A. "Coleoptera at Ipswich."—Claude Morley, F.E.S. "Notes on *Bombus visurgie*." "Synonymic Notes on *Acidalia humilata* and *A. dilutaria*."—L. B. Prout, F.E.S. "The Lepidoptera of Gréssy-sur-Aix."—J. W. Tutt, F.E.S. "Apatura iris."—Rev. G. M. A. Hewitt. "Scheme of Classification of the Rhopalocera founded on the structure of the Pupæ."—T. A. Chapman, M.D., F.E.S. "Glimpses of American Entomology."—J. W. Tutt, F.E.S. "The Genus *Smerinthus*."—A. Bacot. "Variation considered biologically: Some notes suggested by the Romanes Lecture of 1894."—J. W. Tutt, F.E.S. "Wing structure."—J. Alston Moffatt. "On the development of sex in social insects."—J. W. Tutt, F.E.S. "The British representatives of the Genus Caradrina."—L. B. Prout, F.E.S. "Habits and variation of *Lithosia lutarella* and its variety *pygmaeola*."—J. W. Tutt, F.E.S. "On the gradual disappearance of Lepidoptera from South-Eastern London and its neighbourhood."—C. Fenn, F.E.S. "A hunt for *Neuroterus aprillinus*."—T. A. Chapman, M.D., F.E.S. "On the development of pigment in *Nemeobius lucina*."—F. J. Buckell, M.B. "The Macro-Lepidoptera of Keswick."—H. A. Beadle. "Varieties of *Argynnis selene*" (with plate).—S. G. C. Russell, F.E.S. "Hadenoid genera with hairy eyes."—Prof. A. R. Grote, M.A. "*Zygaena minos* and its varieties."—J. W. Tutt, F.E.S. "Notes on the pupæ of *Castnia* and *Anthocharis*."—T. A. Chapman, M.D., F.E.S. Besides these articles, a large number of short notes are contained in every number under the following titles: "Scientific Notes and Observations," "Variation," "Notes on Larvæ and Life-histories," "Notes on Collecting," "Current Notes." The reports of Societies are very carefully edited, and only scientific paragraphs published. The "Practical Hints" and "Field work" for each month are quite unique.

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The male Ancillary Appendages of European species of the *Athalia* Group of the Genus *Melitaea*. (With three plates.)

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

Who that has studied European or Palæartic Rhopalocera has not wrestled more or less unsuccessfully with this group of species, so difficult, and in certain cases impossible, to determine with certainty from the wing markings. Even that most acute detector of minute specific differences, the late J. W. Tutt, confessed to the writer on one occasion his inability to make sure to what species certain specimens belonged, and he left the following record of his views at the time in *Ent. Record*, vol. xi., p. 228, "I do not know whether we have a lepidopterist in Britain, who is comfortably at home when considering *M. athalia*, *M. dictynna*, *M. parthenie*, and relatives. One might fairly divide the specimens obtained here (Pré St. Didier) into the larger, coarser *M. athalia*, and the smaller, neater looking *M. parthenie*, one suspects, however, that they have all hatched from the same batch of eggs, and one observes also that the dark *M. dictynna* occurs with some very ordinary looking *M. athalia* in the Val Ferrex."

Some years ago the lepidopterist of the National Hungarian Museum at Buda Pest, Dr. Antal Schmidt, asked me to name the museum series of the group, consisting of about two hundred examples. In this rather hopeless task I consulted the Rev. G. Wheeler, unquestionably the best authority on the *Melitæe* in Britain. Mr. Wheeler, after carefully studying the series, admitted that there were specimens in it which he could not determine with certainty, because certain characteristics on which he relied in Swiss and French specimens did not exist in those from Hungary.

During the expedition which Mr. A. H. Jones and I made to the Basin of the Volga, in 1914, certain *Melitæe* were met with, and to determine these with certainty preparations of the genitalia of the whole of the species in the *athalia*-group had to be made.

This task was undertaken by Mr. A. L. Rayward, and in view of the excellence of his preparations, and the fact that, so far as I am aware, photographs do not exist, in any British work, it seemed desirable that they should be reproduced and their chief characteristics briefly described.

It should be understood, however, that this paper deals only with the main outlines of the subject. It would require far more material than I could place at Mr. Rayward's disposal to make quite sure as to the exact value of certain points.

The appendages, for a group of which the wing markings of the various species so closely resemble each other, are extraordinarily diverse, and there is reason to believe that there is a good deal of minor variation between the local races of the species, and this may make any conclusions arrived at as to the specific value or otherwise of a local race or sub-species subject to revision, whenever preparations are made of the organs of a number of examples from each locality in which the species occurs.

The appendages in addition to being very diverse are highly developed, and this of course makes the sub-specific or local divergences more apparent than would be the case if they were simple. They are

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very dense organs, and in order to preserve their natural appearance Mr. Rayward has found it necessary to mount them in deep cells, to avoid flattening and consequent distortion. This method has the disadvantage that in photographing them the whole of the organs are not in focus in the same photograph. Consequently it has been necessary to photograph separately portions of the claspers of the majority of the species, as in these the chief differences of specific value exist. The whole of the preparations are mounted to show from the same viewpoint, *i. e.*, underneath.

The most remarkable feature in the organs of the group is that whereas two of the species, *M. athalia* and *M. parthenie*, have as an uncus a pair of pronounced spines, the others are without anything in the nature of a dorsal armature that would assist them in clasping the female. *M. parthenie* and *M. varia*, which until recently were considered to be forms of one species, are shown by the genitalia to be abundantly distinct, and *M. berisalensis* has important divergences from its parent species, *M. deione*, which seem to point to its distinctness as a species.

The aedoeagus, which is usually of much value in giving specific distinctions, is in this group somewhat uniform, and as the claspers alone are abundantly sufficient to determine the species, I have not dealt with any differences I have perceived in this organ. The saccus varies a good deal in shape in the different species, but so far as I have gone, it varies almost as much in individuals of the same species, and therefore it would be necessary before relying upon the variations of this organ to examine a great many more examples than I have done.

Only the most salient points of difference are called attention to in the following descriptions; for the lesser points study of the figures is necessary.

M. athalia.—The uncus consists of a pair of prominent spines which, in Pl. iii., fig. 1, can be seen behind the aedoeagus. The lower claw of clasper has a very distinct armature of serrations on the inner surface, which are shown in Pl. iii., figs. 1 and 2; the outer surface is smooth.

M. athalia var. *dictynnoides*.—This form, which was originally described in *Iris*, vol. xi., p. 2, by Hormuzaki, from specimens taken near Czernowitz, in the Bukovina, was considered by him to be a form of *M. aurelia*. Reference to Pl. iii., figs. 3 and 4, which are made from a specimen kindly handed to me by the Rev. G. Wheeler, who obtained it from Hormuzaki, and which was captured on Monte Cecina, near Czernowitz, shows that it is not that species, but a form of *M. athalia*.

In this sub-species the claw is somewhat more slender, and the serrations more pronounced than is the case in typical *M. athalia*.

Unfortunately the preparation does not show this latter point to advantage.

M. parthenie.—In this species the uncus consists of a pair of spines similar to those obtaining in *M. athalia*; the claspers, however, are quite different in form from those of that species; in the upper claw the outer surface is smooth and the inner surface is serrated, whereas in the lower claw the inner surface is smooth and the outer surface has several not very pronounced serrations. See Pl. iii., figs. 5 and 6.

M. varia.—The striking difference between this and the last species includes the absence of the bifid prolongation of the uncus. The upper

claw of clasper in *M. varia* is bifid; the latter point is very striking, as will be seen by reference to Pl. iv., figs. 1 and 2.

M. deione.—Differs from *M. athalia* by the absence of the bifid prolongation of the uncus; the inner surface of the lower claw of clasper is serrated almost its whole length; the serrations are very uniform in size. See Pl. v., figs. 3 and 4.

M. berisalensis.—This species, or sub-species, differs somewhat unexpectedly and strikingly from its parent,* *M. deione*. The serrations of inner surface of lower claws of clasper are more pronounced in *M. berisalensis* than in *M. deione*, and the teeth on upper claws are more numerous, and the clasper itself, as will be seen by Pl. iv., fig. 5, is much different in outline, being less produced to a point than is the case in *M. deione*.

These distinctions seem sufficient to constitute a species, but before definitely deciding the point it would be necessary to make preparations of a number of specimens of *M. berisalensis*, and also of *M. deione* from various localities, to ascertain if the differences are constant.

M. aurelia.—Entirely without the bifid prolongation of the uncus, differs also from *M. athalia* by the serrations on the lower claw being fewer in number and not extending so far from the base. See Pl. v., figs. 1 and 2.

M. asteria.—This has the simplest appendages of any species of the group, therefore, as Mr. Wheeler suggests in the *Entomologist*, vol. xli., p. 177, it is probably the most ancestral. It is without prolongation of the uncus, and has only rudimentary serrations on lower claw, but the upper claw has a pronounced tooth on outer edge. See Pl. v., figs. 3 and 4.

M. dictynna.—As the superficial markings of the wings would suggest, the appendages show this to be the most aberrant member of the group. The lower claw of clasper is without serrations, but the upper claw has a very remarkable spine, which is turned the reverse way to the direction of the claw itself. See Pl. v., fig. 5.

M. dictynna var. *britomartis*.—A preparation of a specimen kindly handed to me by Mr. A. H. Jones, and which was obtained by him at Reazzino, was made by Mr. Rayward. I am unable to find in it any points of difference from *M. dictynna* type.

EXPLANATION OF PLATES.

- PLATE III.—Fig. 1. *Melitaea athalia*, Buda Pest. × 20.
 ,, 2. ,, ,, lower claw. × 75.
 ,, 3. *Melitaea athalia* var. *dictynnoides*, Czernowitz. × 20.
 ,, 4. ,, ,, lower claw. × 75.
 ,, 5. *Melitaea parthenie*, Stalden. × 20.
 ,, 6. ,, ,, upper claw. × 75.
- PLATE IV.—Fig. 1. *Melitaea varia*, Abriès. × 20.
 ,, 2. ,, ,, upper claw. × 75.
 ,, 3. *Melitaea deione*, Digne. × 20.
 ,, 4. ,, ,, both claws. × 60.
 ,, 5. *Melitaea berisalensis*, Martigny. × 20.
 ,, 6. ,, ,, both claws. × 60.
- PLATE V.—Fig. 1. *Melitaea aurelia*, Lugano. × 20.
 ,, 2. ,, ,, lower claw. × 75.

* As a matter of Nomenclature one speaks of *M. deione* var. *berisalensis*, but phylogenetically *berisalensis* is the "parent" of *deione*. Distribution, the early stages and details of neuration alike point to this.—G.W.

Fig. 3. *Melitaea asteria*, Brenner Pass. × 20.

 " 4. " " " upper claw. × 75.

 " 5. *Melitaea dictynna*, Martigny. × 20.

PHOTOGRAPHS.—Plate III., figs. 1, 2, 4 and 6; Plate IV., figs. 2, 3 and 6; and Plate V., figs. 1, 2 and 4, are by Mr. F. Noad Clarke, and the remainder by Mr. E. M. Montgomery.

Notes on Entomology, etc., in England, 1916.

By E. B. ASHBY, F.E.S.

The following notes were written this year, as occasion allowed me, in the neighbourhood of the camp at Fovant, Wilts, some eleven miles from Salisbury.

April 25th.—To-day has been the first entomological day as regards bright sunshine, and in close vicinity to the camp lines, I noticed for the first time this year a *Pieris rapae*, apparently just escaped from its pupa-case and slowly flying, as though not quite sure yet of its powers of flight, together with an *Aglais urticae*, hibernated of course, but vividly bright and fresh-looking, as it settled frequently quite close to me. I am trying to make a point of recording in these notes first dates of emergences of our butterflies, etc., this year throughout the entire season, in the hope that these points may be of interest in attracting entomologists to this neighbourhood, which bids fair to be a district full of rewards to the persistent worker, as it is just possible that this particular part of England has not been very much worked.

April 30th.—The day being fine and still, the males of *Euchloë cardamines* put in a first appearance, but from that day until May 17th continuous rain and dull weather prevented butterflies and many other insects appearing on the wing.

May 17th.—I observed at Tisbury, 4½ miles from Fovant camp, the spring flight of *Celastrina argiolus*, together with the males of *E. cardamines* becoming common, and *Pieris brassicae* and *P. rapae* in abundance.

May 18th.—The sun being powerful to-day butterflies are becoming numerous, the spring brood of *Pararge megera* is out, hibernated *Aglais urticae* and *Vanessa io* are dashing about in the hot sun, and the females of *E. cardamines* are emerging in perfect condition in the environs of Tisbury.

May 19th.—Another perfect entomological day. I walked up a stream leading from behind the vicarage at Tisbury to some fine woods about two miles distant. Along the stream *Pieris napi*, males and females in perfect condition, were flying in abundance, with many males of *E. cardamines*. On reaching the woods mentioned, which are private, I came across *Hamearis lucina* and *Brenthis euphrosyne* both just emerging on a small space, where a mass of blue bells and rhododendron blossom afforded a feast of colour for the eyes. These together with a few *E. cardamines* of both sexes and *C. argiolus*, were all the products of this particular spot in the above mentioned woods, which I find is termed "the valley" by the owners; but unless I am mistaken this locality and doubtless others in these woods bid fair to be a rich ground for butterflies as the season advances if the weather holds. I thought I saw one specimen of *Leptosia sinapis* this morning flying along the above mentioned stream, but as I failed to secure it I cannot be positive.

May 20th.—To-day being brilliantly fine, in the morning I collected in the woods towards Wardour Castle from Tisbury, but I failed to find anything of interest there; in the afternoon I collected in private grounds at Fonthill Abbey, by the kind permission of the owner, and found *Brenthis euphrosyne* emerging in increasing numbers, and took one nice specimen of *H. lucina*, quite fresh, in "the valley," together with a fine female of *C. argiolus* as it was ovipositing on a species of laurel bush.

May 21st.—This afternoon I collected again at Fonthill Abbey, but added nothing fresh to my list except the first *Rumicia phlaeas* that I have seen on the wing this year; weather perfect. I also found another locality for *H. lucina* in Fonthill Abbey woods in the clump of bushes round the two red and white maythorn bushes which grow together in one place at the narrow end of the lake.

May 22nd.—Rain; but I was asked to inspect a fine grass snake, a yard in length, taken near Tisbury. I am told snakes are numerous at Bucksbury on the Downs above Sutton Row, and that adders are numerous in the bottoms at Dinton. Unfortunately this particular snake had been killed so clumsily that to preserve it properly would have affected the patience of any taxidermist. I have been much struck by the abundance of bird life in this district generally, Herons abound at Fonthill, wild Swans are seen flying across the downs, Jays and Wood-pigeons crowd the woods, and a couple of Goldfiches think it is quite correct to call sometimes at Tisbury Vicarage. Owls abound in the neighbourhood, and a Guillemot has before now been shot on the downs at Fovant. Finches and Wagtails are numerous, and are certainly good judges of pretty country.

May 23rd.—Collecting again at Fonthill Abbey I found *Brenthis euphrosyne* exceedingly abundant. *H. lucina* was out in increasing numbers, but nowhere abundant, and the males of *Nisoniades tages* were out fresh to-day. I forgot to mention that I first saw *Hesperia malvae* at Tisbury on May 17th, but to-day the species was abundant everywhere in first rate condition.

May 24th.—Empire Day. Between the festivities of Empire Day at Tisbury I managed to snatch an hour or two's collecting at Fonthill Abbey. The females of *B. euphrosyne* were emerging to-day and I secured five in grand condition. Weather still perfect and spring broods above mentioned getting quite abundant.

May 25th.—Rain.

May 26th.—This afternoon collecting in the neighbourhood of Tisbury mill, I observed the males of *Polyommatus icarus* and *Coenonympha pamphilus* amongst the butterflies, and *Hypocrita jacobaeae* and the Geometer *Eulype hastata* as first emergences of these species this season. The females of *E. cardamines* are becoming much more abundant in grand condition.

May 27th.—To-day at Fonthill Abbey I took a female of *H. lucina*, the first I have seen this season, together with a female of *Hesperia malvae*. The weather being thundery, insect life was generally quiet.

May 29th.—After two days of thundery weather nothing fresh on the wing to-day.

May 30th.—I collected this morning in Castle Ditches wood near Tisbury. People tell me that from the "Ditches" artificially made round the west end of this wood they fired from cannon, in the time of

the Commonwealth, against Wardour Castle, due west. At any rate the "Ditches" are there unto this day. Further in the wood along the main path which leads in the end to Sutton Row, I took two *N. lucina* fresh and two *R. phlaeas* in good condition. This latter butterfly is now becoming abundant. I also saw several hibernated *Gonepteryx rhamni* and one hibernated *Pyrameis cardui*. The moths "Mother Shipton," *Euclidia mi*, and the "Speckled Yellow," *Venilia maculata*, have both been on the wing during the past few days, and I noticed the first hornet of the season flying in Castle Ditches Wood to-day.

May 31st.—To-day *Callophrys rubi* is out and I took three fresh specimens in Castle Ditches Wood.

June 2nd.—To-day at Fonthill Abbey I took three more *H. lucina* in perfect condition, also a fine specimen of *Spilosoma mendica*, "the muslin moth." I noticed that the females of *P. icarus* were emerging to-day for the first time.

June 3rd.—To-day by the quarry on the way to Castle Ditches Wood from Tisbury, I took a very fine variety of the female of *P. icarus*, the upperside of all the wings being almost entirely suffused with blue, I also secured a hibernated female of *G. rhamni* in extremely good condition after its ten months or longer life as an imago.

June 6th.—After two days of incessant rain I ventured out this morning only to return with two males and one female of *Pieris napi* in perfect condition. I have seen nothing of the spring brood of *Pararge aegeria* var. *egerides* so far in this district, but at Fonthill this afternoon, during a game of croquet, I noticed a larger wood than most in this neighbourhood in which this species might occur.

June 8th.—In spite of much rain yesterday and to-day I have found both the larvæ and pupæ of *Zygaena filipendulae* in such huge abundance in the grass grown quarry between Tisbury and Castle Ditches Wood that one hopes we are in for an Entomological year as a "set-off" to the horrors of the war.

June 18th.—We have had so much rain for more than a week, and the sun so over-cast that I have observed but little, but to-day the sun is out like a giant, and I have been watching the females of *C. argiolus* busily engaged in ovipositing on the tender leaves and flower buds of holly, in preparation for the summer emergence of this pretty butterfly.

June 21st.—At Wood Green, near Breamore, New Forest, to-day being fine though overcast, I had to content myself with selecting fine females of *C. pamphilus* from the heather, together with males and females of the dragon-fly, which I believe to be *Orthetrum caeruleum*, flying over the ponds and bogs near Wood Green.

June 26th.—At Wood Green to-day, on account of heavy overcast weather with some rain I got nothing but the females of *C. pamphilus*, with the moth "the green oak Tortrix," *Tortrix viridana*.

June 27th.—The weather showing slight improvement I took a good series of the males of *Epinephele jurtina* (*janira*) apparently freshly emerged, and a female of *P. icarus*, with blue suffusion strongly extended.

July 1st.—I had the great pleasure of meeting Dr. Buller, a keen botanist, who tells me the bee orchid flower is frequently found on the Downs in the neighbourhood of the Roman Camp at Chiselbury above Fovant, and I have also been separately informed that the white

butterfly orchid is to be obtained in abundance in July on the right hand side of the only road in the neighbourhood of Win Green.

July 2nd.—At Castle Ditches Wood to-day, although the entomological weather conditions were good, practically nothing was flying in the clearings except the males of *E. jurtina*, and both sexes of *Augiades sylvanus*, but in the "Quarry" between Castle Ditches Wood and Tisbury, in addition to these, *C. pamphilus* of both sexes were abundant, also a considerable sprinkling of fresh males of *P. icarus*, and one belated *E. cardamines* male, looking rather miserable, as a solitary survivor one might almost say, of the spring butterflies.

July 8th.—To-day in the woods, just behind Sutton Mandeville, I found the skipper *Augiades sylvanus* in great abundance, and still quite fresh, with the females of *E. jurtina* just emerged in perfect condition. I also caught a magnificent dragon-fly with large body of purple-blue, in fine condition, which I feel sure is the male of *Anax imperator*. I am told that one of the best localities in this district for dragon-flies is "Panters," a bridge crossing a good fishing stream on the main road between Fovant and Tisbury. I notice that on the chalk downs here the females of *P. icarus* are suffused with blue to an abnormal extent, bearing out Mr. Wheeler's remarks on this point at a meeting of the Entomological Society of London some time ago.

July 15th.—To-day at Fonthill Abbey the males of *Aphantopus hyperantus* are well out in the "Valley," and the females of *E. jurtina* are now abundant. On the way back to Tisbury I noticed the first fresh male of *Aglais urticae* I have seen of this year's brood rejoicing in the afternoon sun.

July 16th.—To-day at Wood Green, near Breamore, as the sun did not shine, I had to content myself with selecting fine females of *E. jurtina*. I saw one *Bithys quercus*, but failed to secure it. I took one *Adopaea flava* (*thamias*), the first I have seen this year. In this district, round Salisbury, *A. sylvanus* seems much more common than *A. flava*. I found a "nest" (such as it is) of the "Night-jar," as the hen bird was disturbed from it. There were two eggs.

July 22nd.—In perfect summer weather to-day I noticed that the males of *Dryas paphia*, and *Epinephele tithonus* are both flying in perfect condition just emerged, a somewhat late date for *Dryas paphia* and that the females of *Aphantopus hyperantus* are well out. *Adopaea flava* is becoming more common, and is in splendid condition. The summer brood of *Pieris napi* is well out in both sexes, and is in perfect condition. I collected this afternoon and saw all the above between Fovant Camp and Chilwark Quarries via Teffont.

July 23rd.—A perfect collecting day. In Castles Ditches Wood, between Sutton Row and Tisbury *Limenitis sibylla* and *Dryas paphia* (all males), were flying freely with a few *Bithys quercus*. *A. hyperantus* were swarming and the summer brood of *Pieris napi*, both males and females, were well out, *Zygaena filipendulae* were swarming in the fields, though they were first on the wing in the third week of June.

July 29th.—At Castle Ditches Wood to-day *L. sibylla* was still flying freely but already somewhat ragged, the males of *D. paphia* were dashing about in the hot sun in search of the females, which were emerging to-day in beautiful condition. Both sexes of *E. tithonus* are on the wing in perfect condition, adding freshness of colour to the

hedgerows, and *A. urticae* are beginning to swarm along railway banks and other suitable places.

July 30th.—On the way to Castle Ditches Wood to-day, just beyond Sutton Row, I noticed the second (the summer) brood of *R. phlaeas* out in splendid condition. The weather was too hot for much collecting but I secured a male and a female of the large emerald moth *Geometra papilionaria*, in Castle Ditches Wood, and I noticed that *Vanessa io* were out in their perfect beauty.

August 7th.—To-day on the Downs between Fovant Down and Swallowcliff Down, the males of *Agriades coridon* are swarming in fresh beauty and the females are just beginning to emerge. *Vanessa io* is becoming much more common in the lanes and outskirts of woods, whilst round a wooded knoll on the Downs to the high-left of Bucksberry, I noticed the males of *Satyrus semele* in fair numbers and in perfect condition, also the males of the summer brood of *Pararge megaera*, whilst a few *Argynnis aglaia* were dashing about in the hot sun.

August 12th.—The Downs to-day from Fovant to Swallowcliff and beyond are alive with the males of *A. coridon*, though the females are not yet fully out. I have seen no Coliads here so far, I find many of the females of *P. icarus* from the Chalk Downs here are very strongly suffused with blue of a very fine form.

August 18th.—The weather to-day, after almost unbroken sunshine from the middle of July, shows signs of a change and insect life is much disturbed by a strong breeze. Though *Melanargia galathea* occurs in Wiltshire, I have not noticed it in this district, which abounds in most English butterflies, even in likely spots where I expected to meet with it. Though I noticed the first males of *G. rhamni* out in perfect condition on August 7th this common butterfly is not so abundant at present in this locality as one would have expected.

August 19th.—To-day I collected along the Downs from Fovant to Swallowcliff. This latter village is very prettily situated under the Downs towards Castle Ditches Wood, and about two miles from Tisbury. The females of *Agriades coridon* are to-day numerous and in splendid condition, the males being now decidedly *passés*, and requiring careful picking. I did most of my best collecting in the copse, etc., known as Bucksberry on the Downs, which is in the straight line due south from Sutton Row, a group of cottages, between Sutton Mandeville and Castle Ditches Wood, most conveniently situated for obtaining tea, etc., and probably the most central place for a naturalist to stay at who wishes to work this district thoroughly. To-day I noticed on the Downs for the first time this year two perfect specimens of *Aricia medon* (*astrarche*) evidently just emerged.

August 20th.—To-day walking from Fovant Camp to Tisbury I found *Vanessa io* abundant in grand condition on teasles, at the outskirts of Castles Ditches Wood, at the Sutton Row end, also returning from Tisbury in the afternoon at the railway end of this wood, approached from the wooded knoll above Tisbury Mill, I found *Vanessa io*, swarming together with both sexes of *G. rhamni* in fair quantity, all on teasle which still attracted males of *D. paphia* in wonderfully fair condition even at this late date. I have seen nothing yet of the pearl skipper *Urbicola comma*, which should fly, perhaps, on the downs,

in this district. There is quite a plague of the summer brood of *P. brassicae*, *P. napi* and *P. rapae* now.

August 26th.—Notwithstanding the break up of the weather there were enough sunny intervals this afternoon to enable me to work with some success amongst the "blues" on the downs between Fovant and Swallowcliff. The females of *P. icarus* were fine and numerous and many specimens extremely suffused with blue were obtainable. Though the males of *A. coridon* are quite *passés*, the females of this species were abundant and many in good condition, but the butterfly of the day was *Agriades thetis* (*bellargus*), the males of which were just emerging. For some reason I missed the spring brood of this butterfly in May and June, though I looked for it in one or two likely places in this locality.

August 31st.—The weather for the last five days has been disastrous, both to the harvest and also to insect life, but this afternoon on the downs between Fovant and Swallowcliff, it kept sufficiently fine to enable me to continue my observations amongst the "blues."

The females of *A. coridon* are now nearly all *passés*, but the males of *A. thetis* are now out in some quantity and the females of this butterfly are emerging to-day. I took some more extremely fine specimens of the "blue" form of the female of *P. icarus*, which is swarming in both sexes, but have not noted any appearance yet of *Pyrameis cardui*, which is quite due. I have noted no *Coliads*, but we are probably too far inland here to expect them in general.

September 2nd.—The sun never got out this afternoon, nevertheless I found *Vanessa io* and *A. urticae*, and some females of *R. phlaeas*, in some numbers at rest in teasle fields in open parts skirting Castle Ditches Wood, very fresh specimens of *P. napi* were also fluttering slowly about.

September 3rd.—In an afternoon of little sun and much wind, collecting was difficult to-day, but in sheltered places on the downs between Fovant and Swallowcliff, I picked out a few males of *A. coridon* still worth taking, an occasional *V. io*, and *A. medon* (*astrache*), and a few females of *P. icarus* with marked blue suffusion. A fine fresh *Pyrameis atalanta* was noticed for the first time this summer, but the butterfly season of 1916 is rapidly drawing to a close, unless the weather takes up again to enable our hibernating species to be seen in their autumn abundance. No sign yet of *P. cardui*.

September 16th.—To-day in teasle fields on the outskirts of Castle Ditches Wood, the hibernating *Aglais urticae*, *V. io* and *G. rhamni* were in abundance, also *Pyrameis atalanta* in some numbers and fresh, whilst on the downs between Fovant and Swallowcliff the males of *A. thetis* were still to be found in fresh condition. The females of this last butterfly are in superb condition. I have not seen *P. cardui* in this district yet.

September 2nd.—To-day on the downs between Fovant and the Tumulus, near Bucksberry, I took some males of *Gonepteryx rhamni* in fine condition, and I saw several *Aglais urticae*, but no more *Vanessid* species. The day clouding over in the afternoon I took the opportunity to examine the *Lycænidae* resting at Bucksberry, and took several specimens of *A. thetis* still in good condition, although careful selection was needed. A further brood of *Polyommatus icarus* is again emerging.

Since writing the above account of the Lepidoptera of this district

as I have had opportunity of observing it, I have had the pleasure of meeting Dr. Clay of Fovant, who informs me that *Eugonia polychloros* and *Ruralis betulae* are to be met with at their proper season in Sutton Row, that *Pyrameis cardui* is frequent and fairly common in most years, and he has taken it in his own garden, that *Urbicola comma* is to be taken in a clearing of Grovely Wood near Dinton, that *Pararge aegeria* var. *egevides* is always to be taken in the woods near Dinton, and that *Cupido minimus (alsus)* is to be found regularly in early June at Bucksberry. He further showed me a lovely specimen of the male "purple emperor," *Apatura iris*, which he had caught some years ago at Dinton and in looking through his excellent collection of moths I could see that the district is very rich in species.

Dr. Clay also informed me that *Melitaea aurinia* used to be taken in this immediate neighbourhood and confirmed my suspicion that *Melanargia galathea* and *Brenthis selene* are absent from it. He told me that the district had been left almost unworked by naturalists in general, though in both his opinion and my own it is extremely rich in all branches of our natural fauna. [Every place I have mentioned is to be clearly found in the pocket touring map of Salisbury Plain District (scale two miles to an inch) from the ordnance survey by J. Bartholomew, the Geographical Institute, Edinburgh.]

Gynandromorphism in a Mongrel Brood of *Lymantria dispar* and its race var. *japonica*. (With plate.)

By P. A. H. MUSCHAMP, F.E.S.

(Concluded from page 105.)

A very slight degree of gynandromorphism seems to be far more rare. What are a Lycaenid female that shows a little more of the male colouring than is usual, a beardless, woman-breasted, or a motherly-hearted man, a bearded woman, etc., if not cases of partial gynandromorphism? The gynandromorphous tendency would seem to be inherited in some cases by the operation of positive, in others by that of negative cellular quantities. When a female butterfly assumes a male garb, or a partial male garb, the operation would appear to be a positive one, whereas in the case of the moths before me I should say that the operation is a negative one. I mean to say that it is not so much that the female characteristics that have been adopted, were received in excess as that certain inherited male characteristics are wanting.* This is not in contradiction with Dr. Schweitzer's formulæ, but rather bears them out. According to Goldschmidt's theory the normal male is liable to inherit all the characteristics of the male parent plus all those of the female that may be called positive, when the negative male characteristics are developed in the egg the result will be a normal female. Var. *japonica* is a moth possessing in both sexes the male characteristics more richly developed than in the type. We have therefore a very dark moth, the female adopting an almost

* The white-winged examples that are white to the marginal border do not generally possess the characteristic black moons that rise from the wing margin and interrupt the fringe in both typical *dispar* and var. *japonica* (save certain *japonica* in which the ground colour is so dark that these marks become invisible) all the other transverse forewing markings are there. This is why the examples with four white wings at first glance seem rather to be atavic than gynandromorphous forms.

male colouring, the male being of a very dark almost uniform colour. In experimental mongrelisation Goldschmidt discovered that a certain combination resulted in a series of gynandromorphous females. Similarly by another combination Schweitzer obtained a series of gynandromorphous males. I had a number of ova of the combination that had succeeded so well with Schweitzer, but they gave me nothing but normal males. It is, of course, possible that the mongrel females had already been coupled to males in their own breeding cage before they were separated and put in with the males that were destined to become their lawfully wedded lords. The ova that gave my gynandromorphous males were, as I have said, a one in four chance, and I was lucky. The whole thing is mathematically worked out by Schweitzer in the *Zürich Transactions*, and makes most interesting reading, though it has the distinct disadvantage for Englishmen of being written in German.

In conclusion, I would say that judging from the few gynandromorphous butterflies and notes I possess, I am almost inclined to believe that there are two distinct expressions of this phenomenon.

1st.—Insects that might perhaps be almost correctly termed hermaphrodites, having the exterior and interior genitalia of both sexes more or less developed. These in their turn may be divided into sub-classes, those in which only the sexual organs partake of the characteristics of two sexes and those in which the wings, antennæ, etc., are similarly affected. In the first sub-class I have before me the *lycaon*, of which I have spoken; of the second sub-class I have a *Malacosoma alpicola*, with male secondary sexual organs, a full allowance of ova, wings, antennæ, thorax, and abdomen on the one side male, on the other side female: *Lycaena arion*, with crippled genitalia (abdomen I have not explored), and two wings to the left male, to the right female, abdomen crippled female; *Lycaena icarus*, with a similar arrangement to that of *M. alpicola*.

2nd.—Insects having genitalia of one sex, but hair and scale coloration and (or) form of wing belonging to the two sexes. To this class belong by far the greater part, perhaps nearly all, of the *dispar* mongrels in question. I have also before me a *Lasiocampa quercus* female having the colour of a male, but whose genitalia are perfectly developed; and here, too, I believe, should fit in, in a rather lower degree of gynandromorphism, all those butterflies and moths whose coloration approaches in any degree that of the other sex, as for example *Lycænid* females that are beginning to adopt male colouring even when this becomes the general rule (cf. *meleager* female and the form *steeverni*, which latter I take to be the older and really female form).

I should like to provoke a reply from one of our authorities as to what we should really understand by the word gynandromorphous. In my French encyclopædic dictionary (Larousse) I find the definition: "An hermaphrodite having the sexual characteristics of the male more developed than those of the female." Is there any historical basis for this?

The Alate Females of the Ant-aphis *Forda*. (*With plate.*)

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

Forda formicaria is the commonest aphid found with ants, and it is remarkable that the winged form should have escaped notice for so long. It is not unusual to find the nymphs, but it was not until this year that I succeeded in breeding the alate females. Nymphs of *F. formicaria* were taken at Porlock, Somerset, on May 13th, 1916, and one hatched on May 27th. Almost immediately after emergence, the aphid began to display great activity, greater than I have ever seen in any other aphid, running with rapidity up and down a grass stem, evidently trying to escape. Nymphs of *F. viridana* were taken in the same locality on May 30th, and two alate♀ emerged on June 15th. These displayed similar activity to that of *F. formicaria*.

It seems clear that these forms escape from the nest directly they hatch, and this accounts for their not having been taken before.

It would be extremely interesting to know their subsequent terrestrial existence.

Both these species were taken on grass roots, with apteræ and larvæ, in nests of *Lasius niger* var. *alieno-niger*.

The nymphs are very like the apterous ♀♀, with the exception of wing-covers. The eyes in the nymph are larger and more developed, and the whole body almost destitute of hairs.

Mr. F. V. Theobald very kindly verified the determination of these two forms.

I give the descriptions below. The antennæ are remarkable for the number of large sensoria on the 3rd segments.

Forda formicaria, Heyden. (Pl. vi., fig. 1. head and antenna.)
Alate viviparous ♀ (hitherto undescribed)

L. 2.6 mm. Abdomen dull green, cauda and rims of apical segments black, the following segments with broad transverse dark bars diminishing in length and breadth, and finally disappearing before the thorax is reached; head, thorax, antennæ and legs black; eyes dull red.

The rostrum is about half as long as the body, the last segment long and narrow.

Antennæ 5-jointed, the 1st segment as broad as or broader than long; the 2nd somewhat narrower and longer, swelling slightly at apex; the 3rd by far the longest, and almost completely covered on its underside with large oval and round sensoria, more than 50 on the right, and rather less than 50 on the left antenna; 4th segment a little more than one-third as long as the 3rd, with one extremely large irregular sensorium at its apex, and a row of four of normal size behind it; the 5th shorter than the 4th, with a short nail, under which is the usual large sensorium and a group of three small ones. The whole antenna is less than half the length of the body.

Head short and broad, vertex with a deeply impressed line, and convex on each side of the line.

Eyes large, with a projecting lower portion; one ocellus above each compound eye, and a third in centre of vertex.

Body flatter than in the apterous form, and legs longer.

Cornicles mere pores, hardly visible. Cauda short and rounded.

The wings are faintly imbricated all over, except near the insertion of the cubitus, and the stigma is more coarsely and densely so, and smoky, as are the nervures. The 1st and 2nd oblique nervures rise from the same point in the cubitus, and the cubital nervure is single, and rises some distance from the cubitus. The lower wing has two oblique nervures.

The antennæ, legs, and vertex have short fine hairs, and the cauda longer ones.

Forda viridana, Buckton. (Pl. vi, fig. 2, head and antenna, fig. 3, wing.) Alate viviparous ♀ (hitherto undescribed).

L. 1.9 mm. Dull reddish brown; abdomen with central transverse bars of dusky brown; longest and widest near cauda, diminishing in size towards thorax. Meso- and metathorax dark brown; prothorax with a dark patch on each side, and a central rectangular space of red surrounded by a dark line; head nearly black, eyes dark red; first two segments of antennæ and basal half of third, dark, also the tip of fifth; the remainder whitish. A portion of both wings, on the lower part a little distance from the base, is tinged with a reddish shade.

The rostrum reaches considerably beyond the centre of body; the last joint is long and thin, hardly wider at base than near apex.

Antennæ five-jointed; the 1st as broad as long, the 2nd narrower and slightly longer, swollen at apex, the 3rd longest, rather more than one and a half times as long as the 4th plus 5th, its under surface covered with large oval and round sensoria, 45 to 48 in number; they are not so large nor so prominent as in *formicaria*; 4th segment slightly longer than 5th, with one large irregular sensorium at the apex, and three (right antenna) or four (left) small circular sensoria in a row from the apical one to the base; 5th segment with a short blunt nail under which is a large sensorium and a group of three smaller ones. The whole antenna is less than half as long as the body.

Vertex with a central impressed line, and slightly convex on each side of this. Eyes large, with a lower projecting portion. There is an ocellus above each compound eye and a 3rd in centre of vertex.

Legs long, considerably longer than in the apterous form. Cauda short and rounded. The abdomen is flatter than in the apterous form. Cornicles mere pores.

Upper wing with a single cubital vein arising some distance from the cubitus. The 1st and 2nd oblique veins rise from the same point in the cubitus. Both wings are delicately imbricated over their entire surface, except along the cubitus in the upper wing; the stigma is more coarsely imbricated, and also is coloured a smoky brown, like the nervures.

Pilosity rare; a few short hairs on the antennæ, and a tuft of longer ones on apex of nail of 5th segment; and fine hairs on cauda.

Random Notes from France.

By Capt. W. BOWATER, M.C., F.E.S.

I have had no opportunity whatever for collecting, but have kept an eye open for Lepidoptera whenever possible; although when out of doors, I was usually riding a horse or in an ambulance car.

Insects flying, or at rest, or larvæ, to be noticed under these circumstances must be fairly prominent, so that although I can record no varieties, I desire to testify how valuable to me an interest in Lepidoptera has been, especially when feeling the need for something on which the mind could dwell, exactly opposite to war and its horrors.

Thus, on a certain rather trying occasion, when all that could be done was "to stand and wait," the flight of *Limenitis sibylla* (a fresh experience for me) served admirably to please the eye and calm the thoughts.

Again after many hours of continuous work, the dashing arrival of *Cosmotriche potatoaria* at the lamp made a moment's distraction, and reminded one that there were other better things on earth than man slaughtering man, so graphically typified by the brave fellows filing through the dressing station.

On July 1st, I saw a communication trench along which men, wounded but able to walk, were passing back to the dressing station. This "Via Dolorosa" was dotted occasionally with drops of blood, on which many Hesperids, oblivious of the strife between the "lords of creation," regaled themselves between their flights over the ground between the trenches which was bright with wild flowers and from

which skylarks rose and sang although just in front of our massed guns that were firing incessantly.

How incongruous! In many cases war has a fairly appropriate setting:—A rugged gorge, a barren plain, or even a mudflat, but surely it has seldom had a less appropriate terrain than this part of “La Belle France” with its smiling valleys and richly wooded slopes.

In early August *Papilio machaon* displayed himself on several occasions during our marches. Of the Vanessids *Aglais urticae* was very common; and, in fact, throughout the year was almost daily in evidence. Three specimens hibernated in a room in a house which served as my abode for the last three months of last year. I noted that they moved their position slightly twice during this period. A *Gonoptera libatrix* rested within an inch of them, a careful sketching of their attitude and relative position makes me sure of this point. I visited the room in April of this year, and with the aid of a packing case and a rifle with fixed bayonet just managed to dislodge the *G. libatrix* from his position twelve foot or more above the floor. Curiously enough the specimen was undamaged, and is now in my collection. One of the *A. urticae* was dead, and one had disappeared. The house enjoyed out of doors temperature, as it lacked furniture, windows and window frames, and had other forms of ventilation, not seen in pre-war days. Eight *A. urticae* hibernated on the landing, one on the stair banister, but he is to be listed as “accidentally killed” by a despatch rider who leant against the banister.

Of *Vanessa io*, *Pyrameis atalanta* and *P. cardui*, I have not seen more than a dozen specimens this year. Larvæ of *V. io* were fairly common last year.

I took pupæ of *Eugonia polychloros* from walls in August. Larvæ of *Abraxas grossulariata* were common on hedges in July.

In September *Pieridae* were common, especially fine specimens of *Pieris brassicae*, the larvæ of which swarmed in gardens, where often every cabbage was attacked and of the outer leaves only a “*chevaux de frise*” remained, and scores of larvæ of all sizes were to be seen. Turnip fields were ravaged in less degree, a dozen larvæ full-fed were often to be seen climbing an elm tree, but nearly every one was ichneumonid and the yellow cocoons dotted the tree-trunks along the roads, and garden walls and fences, and even bedrooms. I have never seen such a plague in England, and it was worse than last year; when the inhabitants considered it a specially bad year.

The ash trees supporting our horse lines at one village were much infested by *Cossus ligniperda*, and half grown larvæ often wandered about round the trunks, I took one, which spun a cocoon but was disturbed and escaped. Two days after, on donning a pair of slacks, on which I had lain twice during slumber in order that the vitally important creases should persist, the missing larva was found quite vigorous in a pocket. The survival after this hazardous experience deservedly obtained “sick leave” for him, and he again enjoys freedom.

Other larvæ seen on September 15th, were *Pygaera bucephala*, *Amorpha populi*, *Sphinx ligustri*, and a solitary *Smerinthus ocellatus*, which underwent much shaking in a tobacco tin full of soil in an ambulance, during several marches, but safely pupated.

The district seemed a most promising one for the entomologist.

Sallow, birch, poplar, ash, and beech abounded, and were accessible everywhere, as there are practically no fences to the fields or to the numerous small and large woods.

On September 18th, *Coenonympha pamphilus*, *Pararge megera*, *Polygonia c-album*, *Rumiccia phlaeas*, and *Gonepteryx rhanni* were seen, and larvæ of *A. urticae* less than half grown, as well as imagines.

Full fed *Dasychira pudibunda* larvæ were common on tree-trunks, and I noted a fine specimen of *Ennomos autumnaria* drying its wings on September 30th, and on the 8th I took *Catocala nycta* from a telegraph post full in the sun. On October 10th, *P. atalanta* and *A. urticae* were seen.

I have seen the lordly *Apatura iris* in flight here, a pleasure denied to me in England. Few Lycaenids were noted, although there is much chalk about. *Celastrina argiolus* was not uncommon in the spring; of *Agriades coridon*, *Lycaena arion* and *Pararge aegeria* I have seen none in the two seasons. *Argynnis paphia*, *Aphantopus hyperantus*, *Epinephle tithonus*, *Colias edusa*, *Callophrys rubi*, *Lasiocampa quercus*, *Macrothylacia rubi*, *Orgyia antiqua*, *Malacosoma neustria*, *Arctia caia*, and *Amphidasis betularia* were each represented by a few specimens.

I saw *Phaenocarpa rumicis* ♀ on the south side of a tree at 2 p.m., June 22nd, and there she remained till 6 p.m., 24th. Is not this apathy unusual?

In July I noted that the kilometre stones were used by *Epinephle jurtina* (*janira*) as resting places for the night, and that they almost invariably settled on the iron plate which bore the letters and numbers in raised characters, and often actually on these. The sun had set, but the plate felt warmer than the stone. As many as nine specimens were seen on one plate. I should be glad to learn the explanation.

Finally, what a welcome sight the entomological magazines afforded! In what curious scenes and abodes have their leaves been scanned by some of their readers in the years 1914-16 of the Christian era!!

Synonymy of some Genera of Ants.

By HORACE DONISTHORPE, F.Z.S., F.E.S.

(Continued from page 244.)

3. On *Lasius*, Fabricius nec Jurine.

In 1915 Morice and Durrant [*Trans. Ent. Soc. Lond.*, 1914, 339-436 (1915)] reprinted with notes a paper by Jurine [*Erl. Litt.*, 153-165 (1801)], over the validity of which there is a considerable difference of opinion. If one accepts this paper it is necessary (among other changes in nomenclature which are brought about) to find a new name for *Lasius*, F. (1804), a genus of ants which sinks as a synonym of *Lasius*, Jur. (1801), a genus of bees. This was done by Morice and Durrant, who proposed the name of *Donisthorpea*. At that time they considered *Acanthomyops*, Mayr (1862), to be a good genus, and not a sub-genus of *Lasius*, F., as it is usually regarded; and they were not aware of Ruzsky's sub-genera *Dendrolasius* and *Chthonolasius* (1912).

Wheeler [*Science*, n.s. **43**, 316-18 (1916)], in a very generous and appreciative review of my book, *British Ants*, stated that he was not prepared to accept Jurine's paper, and he also expressed the opinion that neither Forel nor Emery would do so. In this, however, he was mistaken, as both Forel and Emery have accepted the Erlangen List. Forel [*Rev. Suisse Zool.*, **24**, 460 (1916)] substitutes Mayr's *Acanthomyops* for the genus *Lasius*, F., but he incorrectly treats the sub-genus *Donisthorpea*, Mor. and Drnt., with type *nigra*, L., as a synonym of *Chthonolasius*, Ruzsky, with type *flavus*, F.! He also states that he is prepared to accept the name *Formicina* instead of *Lasius*, if this will put an end to any further changes of names.

Emery (*Acad. Sci. Ist. Bologna*, **1916**, 61) on the other hand selects *Formicina*, Shuckard (1840), as a substitute for *Lasius*, F.; but the use of this name is invalid, as Wheeler [*Ann. New York Acad. Sci.*, **21**, 164 (1911)] fixed *Formica rufa* as the type of *Formicina*, and sunk it as a synonym of *Formica*, L. Emery also gives the dates of Ruzsky's subgenera as 1908, whereas they were published in 1912.

If the validity of Jurine's paper be accepted the synonymy is as follows:—

ACANTHOMYOPS, Mayr.

= § *LASIUS* (*nec* Jurine) F. (1804); = * *FORMICINA* (Shuck., p., 1840), Forel and Emery (1916) — *nec* Wheeler (1911); = *ACANTHOMYOPS* Mayr (1862); = *DENDROLASIUS* Ruzsky (1912); = *CHTHONOLASIUS*, Ruzsky (1912); = *DONISTHORPEA* Mor. and Drnt. (1915); = * *CHTHONOLASIUS* (*nec* Ruzsky), Forel (1916).

Type 1: *Formica clavigera*, Roger (**claviger**, Mayr; Mayr 1862; Wheeler, 1911).

ACANTHOMYOPS, Mayr, Verh. Zool-Bot. Ges. Wien, **12**, 699-700 (1862); Wheeler, Ann. N.Y. Ac. Sc., **21**, 157 (1911); Forel, Rev. Suisse Zool., **24**, 460 (1916).

Type 2: *Formica fuliginosa*, Ltr. (Ruzsky, 1912).

DENDROLASIUS, Ruzsky, Kasani Zap. Veterin. Inst., **29**, 629-33, tf. 2 (1912); Forel, Rev. Suisse Zool., **24**, 460 (1916).

Type 3: *Formica flava*, L. (Ruzsky, 1912).

CHTHONOLASIUS, Ruzsky, Kasani Zap. Veterin. Inst., **29**, 629-33, tf. 3 (1912). * *FORMICINA*, Shuck. (p.), Lardner's Cab. Cycl., **10** (Hist. Nat.-Arr. Ins.), 172 (1840); Forel, Rev. Suisse Zool., **24**, 460 (1916); Emery, Acad. Sci. Ist. Bologna, **1916**, 61.

[*nec* *FORMICINA*, Shuck., Lardner's Cab. Cycl., **10** (Hist. Nat.-Arr. Ins.), 172 (1840); Wheeler, Science, **33**, 859, 860 (2, vi., 1911); Ann. N.Y. Ac. Sc., **21**, 164 (17, xi., 1911)—Type: *rufa*, L. (**FORMICA**, L.)].

[*nec* * *CHTHONOLASIUS*, (Ruzsky) Forel, Rev. Suisse Zool., **24**, 460 (1916)—Type: *nigra*, L. (**DONISTHORPEA**, Mor. and Drnt.)].

Type 4: *Formica nigra*, L. (Mor. and Drnt., 1915).

DONISTHORPEA Mor. and Drnt. = § *LASIUS* (nec Jurine), F. Syst. Piez., pp. xi., 415-8, no. 78, sp. 1-10, Ind. 18 (1804); Auctt. . . . DONISTHORPEA Mor. and Drnt., Tr. Ent. Soc. Lond., 1914, 423 (1915). * *CHTHONOLASIUS* (nec Ruzsky) Forel, Rev. Suisse Zool., 24, 460 (1916).

This synonymy will appear in the Transactions of the Entomological Society of London.

CURRENT NOTES AND SHORT NOTICES.

In the *Entomologist* for October Mr. Jas. Edwards has an article with figures on the so called Norfolk *Hesperia alveus*. By the genitalia he gives it as has his opinion that the specimen is *H. armoricanus*, and illustrates his notes with diagrams of the genitalia of both *H. alveus* and *H. armoricanus*. He has also some interesting remarks re the "ædeagus-guides," which will no doubt cause some discussion. Mr. C. B. Williams is commencing a series of articles on the British Thysanoptera with Biological and Systematic Notes. Mr. G. T. Lyle contributes additions to our knowledge of the British *Braconidae*.

At a recent sale of insects in Stevens' Sale Rooms some £50 was obtained for the Red Cross from a series of lots contributed by a few entomologists. The idea we understand originated not far from Enfield.

From pamphlets which are continually reaching us we understand that very considerable attention is being paid to tree-crickets in America. These insects have been found to be carriers of various fell diseases which attack fruit and forest trees and cause immense injury to the trunks and branches, by the spread of which injuries large areas are much devastated. Spores and mycelium of many kinds of fungi have been found in the excreta of these insects, and since they plaster the oviposition punctures in the bark with their excrement, germination readily occurs on the moisture of the atmosphere reaching the patches. "Canker" thus sets in and in time the tree attacked is doomed. Messrs. Gloyer and Fulton of New York State have for some time been experimenting with these crickets and have published their observations from time to time in the *Technical Bulletins* published by the Department of Agriculture of New York State.

In the *Canadian Entomologist* for October the editor of the Bulletin of the Brooklyn Entomological Society makes some interesting remarks anent an Editor's duties. Some of his statements are quite interesting. "I do not believe that the average subscriber to our entomological journals finds an average of more than two interesting papers out of a dozen in an average number." "The Editor has to read all papers." "The casual reader gives two minutes, where he gives hours." "Most amateurs are interested in Lepidoptera." "The greatest number of students are collectors of Coleoptera." "Additions to the sum total of human knowledge are more in the lesser known Orders; of these there are few amateurs to read." The Editor "tries to balance his subjects . . . in the effort to please as many as possible, one succeeds in pleasing almost no-one." We call special attention to the following remark when speaking of how necessary it is for every worker to possess

a good library. He says, "A Synonymical Catalogue of all known American Lepidoptera was prepared by H. G. Dyar and a staff of specialists, known as Bulletin 52 of the U.S. National Museum, but this wonderful work was treated, as are most of the Government publications, sent to an army of legislators who cared nothing for them, and within a few months, out of print for the entomological students to whom the volume is of priceless value." The bulk of the article contains remarks on the books that are probably needed by a student of the American insect fauna.

The *Irish Nat.* for October contains an account of the Lepidoptera from East Tyrone in 1916. *Melitaea aurinia* was common, *Zygaena lonicerae* was less common but many cocoons were found torn open and the contents gone, *Z. filipendulae* was not so attacked the cocoons being placed low down, and it was common, *Dyschorista suspecta*, which has not been found in Ireland for many years, was met with in August, *Agrotis vestigialis* was new to the district, etc. There is also a series of Entomological Notes from South Donegal, where *M. aurinia* occurred in the larval stage.

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SPECIAL INDEX.

By H. J. TURNER, F.E.S.

Coleoptera arranged in order of Genera. The other orders arranged by Species. Species, Genera, etc., new to Britain are marked with an asterisk, those new to Science with two asterisks. Unnamed varieties and aberrations with heavy numerals.

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CORRIGENDA, &c.

(Most of the errors in the spelling of scientific names have been corrected in the Special Index.)

Page	41, line 23.	For "Twice" read "Since."
"	41, " 29.	For "even" read "ever."
"	44, " 28.	For "Rhyncophora" read "Rhynchota."
"	91, " 48.	For "Tridomyrmex" read "Iridomyrmex."
"	135, " 30.	For "1822" read "1801."
"	141, " 36.	For "satruelis" read "patruelis."
"	240, lines 42-50	to be inserted after "spur" in line 34.
"	257, line 42.	For "Thyanoptera" read "Thysanoptera."

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Lomechusa	3		
strumosa, Lomechusa	228		

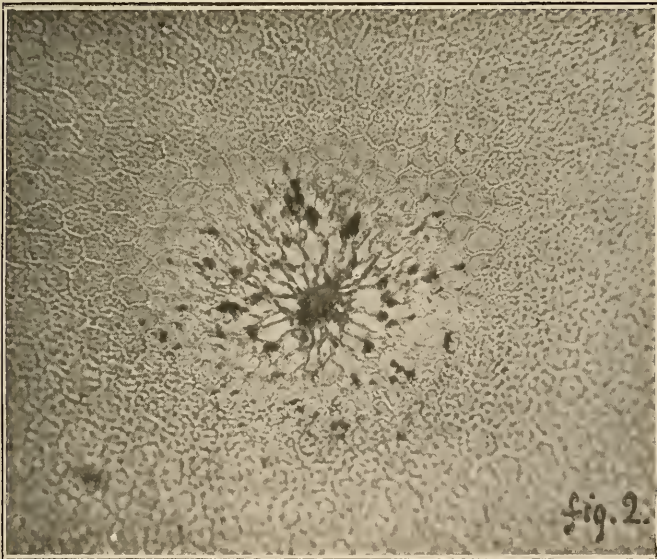


Photo. F. N. Clark.

EGG OF *LIPHYRA BRASSOLIS*.

Fig. 1. Vertical and lateral views, $\times 25$.

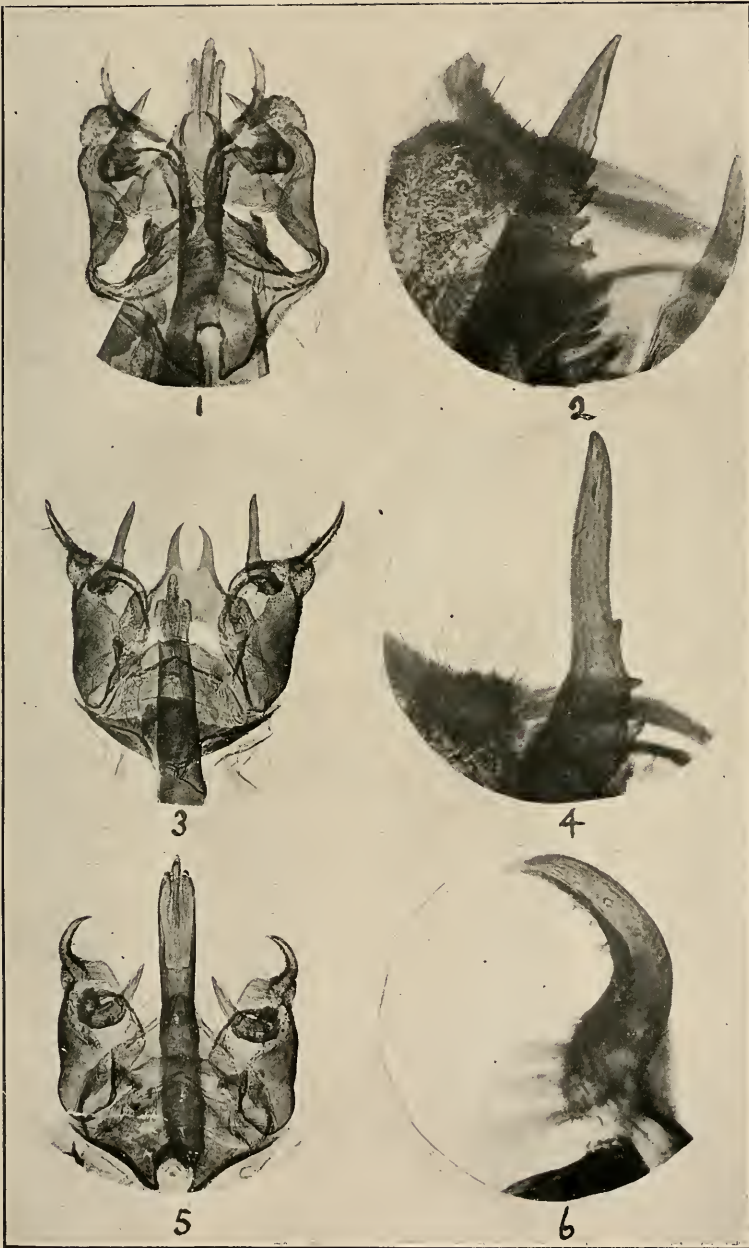
„ 2. Micropyle, $\times 200$.



Photo. F. N. Clark.

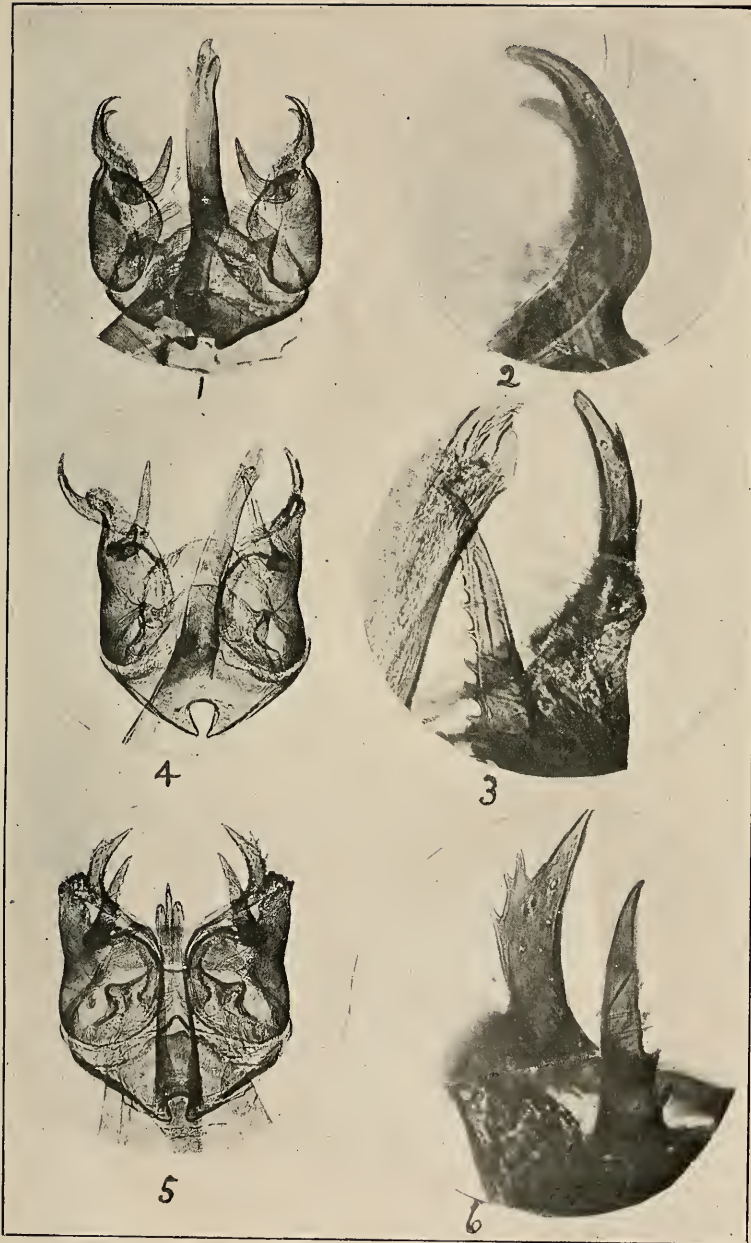
EGG OF LIPHYRA BRASSOLIS.

- Fig. 1. Top of egg, $\times 40$.
,, 2. Lower portion of egg viewed from above to show number and position of ribs, $\times 40$.



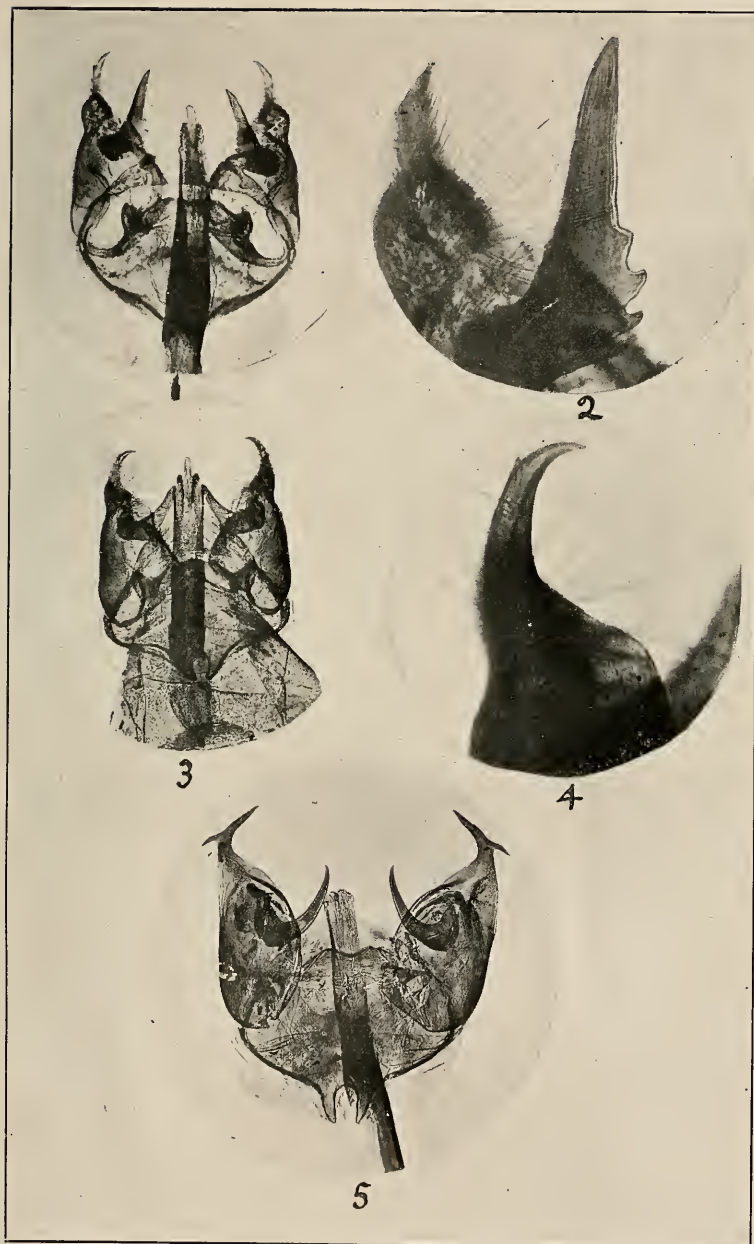
ANCILLARY APPENDAGES OF

Melitaea athalia, figs. 1, 2; *M. athalia* var. *dictynnoides*, figs. 3, 4; and
M. parthenie, figs. 5, 6.



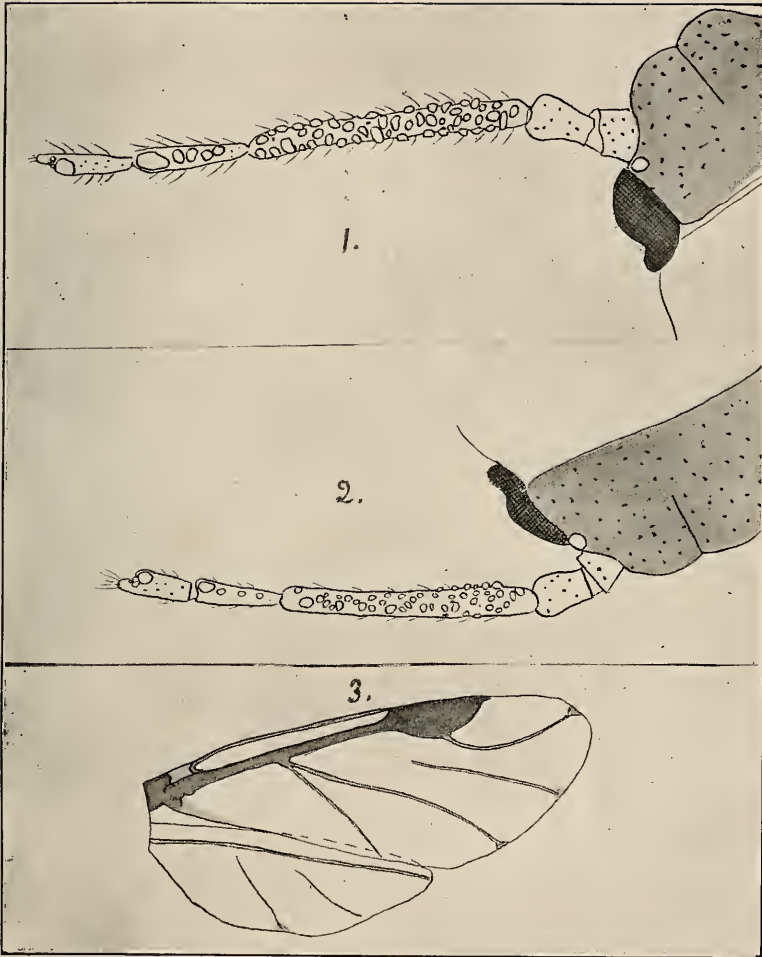
ANCILLARY APPENDAGES OF

Melitaea varia, figs. 1, 2; *M. deione*, figs. 3, 4; and *M. berisalensis*, figs. 5, 6.



ANCILLARY APPENDAGES OF

Melitaea aurelia, figs. 1, 2; *M. asteria*, figs. 3, 4; and *M. dictynna*, fig. 5.



del. W. C. Crawley.

Fig. 1. Head and Antenna of *Forda formicaria*.

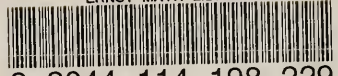
Fig. 2. " " " " *viridana*.

Fig. 3. Wings of *Forda viridana*.

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